



The Explosive Weapons Monitor is a civil society initiative that conducts research and analysis on harms from and practices of explosive weapon use in populated areas for the International Network on Explosive Weapons (INEW).

# 2021-2022: TWO YEARS OF GLOBAL HARM TO CIVILIANS FROM THE USE OF EXPLOSIVE WEAPONS

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The Explosive Weapons Monitor is a civil society initiative that conducts research and analysis on harms from and practices of explosive weapon use in populated areas for the International Network on Explosive Weapons (INEW). It produces a monthly bulletin, which publishes data on incidents of explosive weapon use around the world as reported in open sources, including data from Action on Armed Violence (AOAV) and Insecurity Insight, respectively providing information on:

- Incidents of explosive weapon use and casualties, including deaths and injuries
- Incidents of explosive weapon use affecting aid access, education and healthcare

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## KEY TERMS

**EXPLOSIVE WEAPONS** – Explosive weapons are a broad category of weapons that use high explosives to create a zone of blast and fragmentation in the area around the point of a detonation. They range from relatively small weapons, such as hand-grenades, to significantly larger aircraft bombs and ground-launched rockets and missiles.<sup>1</sup> While the term ‘explosive weapons’ can encompass numerous categories, the Explosive Weapons Monitor focuses on four key categorizations based on the broad ‘method of delivery’:

**GROUND-LAUNCHED EXPLOSIVE WEAPONS** – Ground-launched explosive weapons are launched from any surface-level platform, including weapons thrown by a person, or fired from warships or vehicles. These include artillery shells (projectiles fired from a gun, cannon, howitzer, or recoilless rifle), tank shells, ground-launched missiles, mortars, rockets (typically missiles which do not contain guidance systems), non-specific shelling, rocket-propelled grenades, and hand grenades.

**AIR-LAUNCHED EXPLOSIVE WEAPONS** – Air-launched explosive weapons include any weapon fired from a rotary of fixed-wing aircraft, including unmanned aerial vehicles or drones. These include air-dropped bombs (bombs reported as being delivered by air), airstrikes (attacks from a helicopter, drone, or plane), and missiles or rockets launched from an aircraft.

**DIRECTLY-EMPLACED EXPLOSIVE WEAPONS** – Directly-emplaced explosive weapons encompass weapons that are physically placed in the location at which they detonate. These include anti-personnel mines, anti-vehicle mines, landmines, non-specific IEDs (including so-called ‘suicide vests’), car bombs and roadside bombs.

**COMBINATIONS OF EXPLOSIVE WEAPONS** – ‘Combinations’ of explosive weapons includes two or more categories of weapons used at one time (such as the simultaneous use of air- and ground-launched weapons), and in instances where it was unclear which weapons caused which categories. In the case of incidents affecting aid access, education and healthcare reported by Insecurity Insight, this category also includes explosive remnants of war (ERW).

**POPULATED AREAS** – Populated areas refers to “any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as in camps or columns of refugees or evacuees, or groups of nomads,” synonymous with the term “concentration of civilians” which appears in existing international humanitarian law (IHL). The references to refugees, evacuees and nomads and the use of the term “inhabited” suggests that the presence of civilians and civilian objects – which need not be in great numbers – is a defining characteristic of areas in which the use of certain weapons should be restricted.<sup>1</sup>

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<sup>1</sup> See, for example, Article 36 (2018), ‘Explosive Weapons: Protecting civilians from the use of explosive weapons in populated areas’; UNIDIR (2022), ‘FAQ on the Use of Explosive Weapons in Populated Areas’.



**WIDE AREA EFFECTS** – An explosive weapon is considered to have wide area effects when the area effects of the weapon are likely to extend beyond a particular military objective. Wide area effects from explosive weapons can result from three characteristics, either individually or in combination: a substantial blast and fragmentation radius resulting from a large explosive content; inaccuracy of delivery, meaning that the weapon may land anywhere in a wide area; and use of multiple warheads or multiple firings, sometimes designed to spread, affecting a wide area. These effects are cumulative, with blast and fragmentation effects always present. Inaccuracy of delivery and the use of multiple warheads, where applicable, extend those effects across a wider area.<sup>3</sup>

**DIRECT EFFECTS** – The direct effects of explosive weapon use are those immediate impacts caused by the explosion as a result of the high-pressure blast wave from the detonation and the fragmentation from the munition. Examples include deaths and injuries, as well as damage and destruction to buildings, homes, property, and other critical infrastructure.<sup>4</sup>

**INDIRECT (REVERBERATING) EFFECTS** – Indirect, also known as reverberating, effects are those that result as a consequence of the direct impacts from an explosion. These effects cause civilian harm beyond the time of the explosion and immediate blast zone. For example, damage and destruction to critical infrastructure caused directly by explosive weapons disrupts and degrades the provision of essential services (for example, water, sanitation, and healthcare), which can result in death and injury, as well as long-term human suffering, as reverberating consequences.<sup>5</sup>

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2 See Article 1(2), Protocol on Prohibitions and Restrictions on the Use of Incendiary Weapons (1980). See also ICRC (2016). 'Explosive Weapons in Populated Areas – Factsheet'; Human Rights Watch and Harvard Law School International Human Rights Clinic (2022). 'Safeguarding Civilians: A Humanitarian Interpretation of the Political Declaration on the Use of Explosive Weapons in Populated Areas', pp.8-9.

3 See, for example, Article 36 and PAX (2016). 'Areas of Harm: Understanding explosive weapons with wide area effects'; ICRC (2021). 'Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas', p. 63; UNIDIR (2022). 'FAQ on the Use of Explosive Weapons in Populated Areas'.

4 UNIDIR (2022). 'FAQ on the Use of Explosive Weapons in Populated Areas'.

5 Ibid.

## KEY FINDINGS

- **The use of explosive weapons continues to be widespread and have severe and devastating consequences on civilians and communities across the world.** High numbers of civilians were killed and injured by explosive weapon use in 2021 and 2022. Beyond death and injury, civilians experienced other indirect (reverberating) effects with far-reaching humanitarian consequences, including damage and destruction of critical civilian infrastructure that affected access to healthcare, education, and humanitarian aid.
  - Data recorded by Action on Armed Violence (AOAV) in 2021 and 2022 shows that at least 32,136 civilian casualties were reported in 71 countries and territories across the globe.
  - Data recorded by Insecurity Insight shows there were at least 1,158 reported incidents of explosive weapon use affecting access to healthcare, education, and humanitarian aid reported across 40 countries and territories in 2021 and 2022.
- **The use of explosive weapons in populated areas is a major cause of civilian harm in contemporary armed conflict, where fighting in urban areas puts civilians at heightened risk of harm.** While explosive weapon use and civilian harm and suffering was widespread and severe across the globe in 2021 and 2022, the emergence and escalation of armed conflict presented increased challenges to the protection of civilians.
  - In 2022, AOA V recorded an 83% increase in civilian casualties reportedly caused by explosive weapon use compared to 2021, due in large part to the emergence and extensive media coverage of armed conflict in Ukraine, escalations of conflicts in Ethiopia, Myanmar, and Somalia, and increased use of explosive weapons in populated areas across these contexts.
  - In 2022, Insecurity Insight recorded 603 incidents of explosive weapon use affecting the provision of healthcare, compared to 165 incidents recorded in 2021. This was also due in large part to the emergence of armed conflict in Ukraine, where an average of 47 incidents of explosive weapon use affecting health systems were recorded each month from April through the end of 2022.
- **Explosive weapons, particularly those with wide area effects, cause high levels of death and injury to civilians when used in towns, cities and other populated areas.** The blast and fragmentation generated by explosive weapons cause a predictable pattern of harm when used in areas where civilians and civilian infrastructure are concentrated. The risk to civilians increases where there is a large blast and fragmentation radius, inaccuracy in the mechanism of delivery, use of multiple munitions across an area, or a combination of these factors.
  - Data recorded by Action on Armed Violence (AOAV) shows that in 2021 and 2022, the pattern of harm to civilians from the use of explosive weapons was consistent with that of the last decade.<sup>6</sup> Of all those reported killed and injured by the use of explosive weapons in populated areas, 90% were civilians.

6 This pattern of harm from the last decade is evidenced in Action on Armed Violence (AOAV) (2022). 'Explosive Violence Monitor 2021'.

- **A significant proportion of civilian harm caused by the use of explosive weapons comes from the indirect (reverberating) effects that result from damage to civilian infrastructure and the disruption of essential services.**<sup>7</sup> When civilian infrastructure is destroyed by explosive weapon use, the provision of essential services is often disrupted beyond the impact area, resulting in a wider pattern of harm that leads to long-term civilian suffering. In 2021 and 2022, incidents of explosive weapon use damaged and destroyed hospitals, schools, and aid infrastructure, which then affected civilian access to healthcare, education, and humanitarian aid.
  - Data recorded by Insecurity Insight shows that in 2021 and 2022, there were at least 768 recorded incidents of explosive weapon use affecting access to healthcare, including incidents affecting hospitals, ambulances and healthcare workers; at least 301 incidents affecting education, including incidents affecting schools and teachers; and at least 195 incidents affecting humanitarian aid, including incidents affecting aid workers and programmes.
- **The direct and indirect (reverberating) effects of explosive weapon use often overlap and intertwine, ultimately compounding and amplifying harm to civilians.** In such cases, monitoring efforts and data collection on the full scope of harm to civilians from explosive weapon use is challenging. Reports of incidents of explosive weapon use from Ukraine, Myanmar, the Occupied Palestinian Territories, Syria, and Ethiopia, illustrate the multitude of ways that civilians suffer from explosive weapon use and the challenges in identifying the full scope of harm to civilians the result from such use. For example:
  - On 16 March 2022, an attack on the Drama Theatre in Mariupol, Ukraine, on 16 March 2022, killed and injured civilians who had taken shelter after bombing and shelling by Russian armed forces in the city left homes destroyed and residents without access to water, electricity, gas, phone service, or internet. At the time of the attack, hospitals in Mariupol had already been damaged by or destroyed, diminishing access to care for civilians in need.
  - On 7 January 2022, an armed drone dropped three bombs on a camp for internally displaced persons (IDPs) in Dedebit, a town in the Tigray region of Ethiopia. Women, children, and elderly people who had already been displaced had turned a school complex into an IDP camp. As a result of the attack, at least 56 people were killed and 30 more injured, the school was damaged, and humanitarian agencies were forced to suspend their operations.
- **The recently adopted *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons*<sup>8</sup> in Populated Areas recognises the humanitarian consequences of such use and provides a framework for civil society, international organisations, and other stakeholders to work together to improve policies and practices to strengthen the protection of civilians, reduce and mitigate the risk of harm, and to, over time, move away from bombing and shelling in urban and other populated areas.** Its data collection provisions can likewise serve to set norms and establish good practice for all stakeholders to record not only deaths and injuries from explosive weapon use, but also broader economic and social impacts.

7 ICRC (2021). 'Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas', p. 42.

8 For the full text of the declaration, see Ireland Department of Foreign Affairs (2022). *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas*.

## KEY FIGURES<sup>9</sup>

### *Civilian and armed-actor casualties from explosive weapon use recorded by AOA V in 2021 and 2022*

| CASUALTY TYPE  | 2021   | 2022   | TOTAL  |
|--|--------|--------|--------|
| Total civilian and armed-actor casualties (killed and injured) | 19,722 | 31,273 | 50,995 |
| Total killed (civilians and armed actors)                      | 9,275  | 14,235 | 23,510 |
| Total injured (civilians and armed actors)                     | 10,447 | 17,038 | 27,485 |
| Civilian casualties (killed and injured)                       | 11,343 | 20,793 | 32,136 |
| Civilians killed   | 3,502  | 6,886  | 10,388 |
| Civilians injured  | 7,841  | 13,907 | 21,748 |

### *Incidents of explosive weapon use affecting aid access, education and healthcare recorded by Insecurity Insight in 2021 and 2022*

| INCIDENT TYPE                         | 2021       | 2022       | TOTAL      |
|---------------------------------------|------------|------------|------------|
| <b>Incidents affecting healthcare</b> | <b>165</b> | <b>603</b> | <b>768</b> |
| Incidents affecting hospitals         | 130        | 520        | 650        |
| Incidents affecting ambulances        | 15         | 37         | 52         |
| Incidents affecting health workers    | 19         | 71         | 90         |
| <b>Incidents affecting education</b>  | <b>133</b> | <b>168</b> | <b>301</b> |
| Incidents affecting schools           | 126        | 145        | 271        |
| Incidents affecting teachers          | 16         | 22         | 38         |
| <b>Incidents affecting aid access</b> | <b>111</b> | <b>84</b>  | <b>195</b> |
| Incidents affecting aid programmes    | 44         | 35         | 79         |
| Incidents affecting aid workers       | 15         | 24         | 39         |

<sup>9</sup> The Explosive Weapons Monitor works with partner organisations to collect and publish data on incidents of explosive weapon use around the world as reported in open sources, including data from Action on Armed Violence (incidents of explosive weapon use and casualties, including deaths and injuries), and Insecurity Insight (incidents of explosive weapon use affecting aid access, education and healthcare). For more information, see the Methodology section of this report. For complete data, see Annexes.

Large areas of Bodoryanka were destroyed during intense and sustained bombardments. Ukraine 2022.  
© MAG/Sean Sutton





# INTRODUCTION

For more than a decade, civil society and international organisations have documented the patterns of harm from the use of explosive weapons, in which civilians overwhelmingly bear the brunt of their use in populated areas. This report shows that in 2021 and 2022, the patterns of harm remain much the same – when explosive weapons are used in cities, towns and other populated areas, civilians suffer disproportionately.

Explosive weapons, particularly those with wide area effects, cause high levels of death and injury to civilians when used in populated areas. Beyond casualties, however, the indirect effects of this use cause yet more civilian harm. When civilian infrastructure is damaged or destroyed, for example, the provision of essential services is often disrupted beyond the impact area. This results in a wider pattern of harm that leads to long-term civilian suffering, as these effects often overlap and intertwine, ultimately compounding harm to civilians.

FROM RELATIVELY SHORT MILITARY OPERATIONS IN GAZA CITY, WHERE AIRSTRIKES LEVELLED HIGH-RISE RESIDENTIAL BUILDINGS IN 2021, TO DRAWN OUT SITUATIONS OF ARMED CONFLICT IN UKRAINE WHERE BOTH GROUND- AND AIR-LAUNCHED EXPLOSIVE WEAPONS WERE USED ACROSS MAJOR TOWNS AND CITIES IN 2022, EXPLOSIVE WEAPONS WERE FREQUENTLY USED DESPITE THE WELL-DOCUMENTED RISK THEY POSE TO CIVILIANS.

In contemporary armed conflict, where fighting in urban areas has increased, the use of explosive weapons in populated areas is a significant cause of civilian harm. From relatively short military operations in Gaza City, where airstrikes levelled high-rise residential buildings in 2021, to drawn out situations of armed conflict in Ukraine where both ground- and air-launched explosive weapons were used across major towns and cities in 2022, explosive weapons were frequently used despite the well-documented risk they pose to civilians.

The recently adopted *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the Use of Explosive Weapons in Populated Areas*<sup>10</sup> is the first formal international recognition that the use of explosive weapons in populated areas has severe humanitarian consequences and poses unacceptable risks to civilians, particularly when the weapons have wide area effects. The agreement of this new international instrument, and its endorsement by 83 states to date, represents a shared recognition of this harm to civilians both during and after conflict and a commitment to take action to address it directly. The declaration provides a framework for governments, including

their armed forces, to work in collaboration with civil society, international organisations, and other stakeholders, to improve policies and practices to strengthen the protection of civilians and move away from bombing and shelling in urban and other populated areas over time.

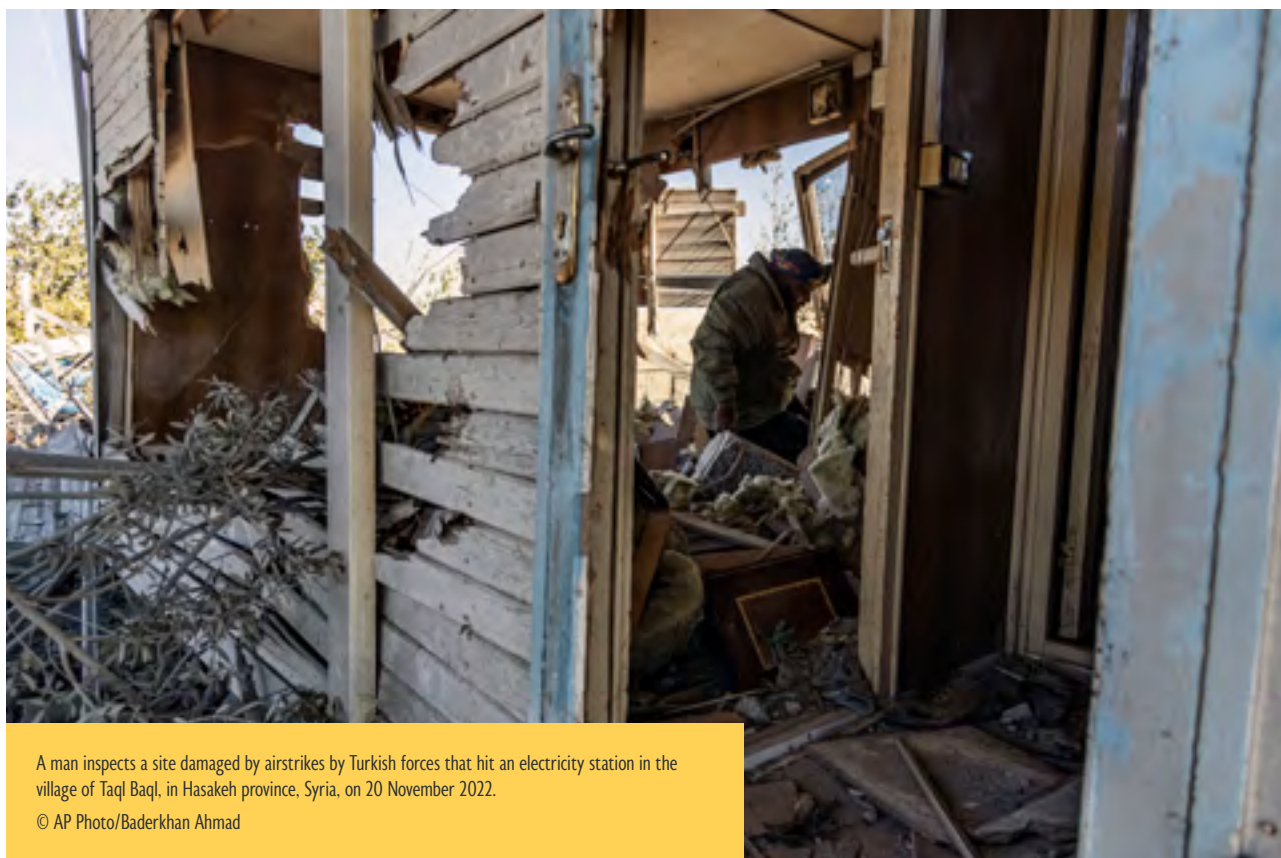
The declaration also provides an opportunity for the international community to work together to significantly reduce and mitigate the risk of harm to civilians from the use of explosive weapons in populated areas by placing limits on the use of explosive weapons in towns, cities and other populated areas, and by providing assistance to victims and affected communities. Its data collection provisions can likewise serve to set norms and establish good practice for all stakeholders to record not only deaths and injuries from explosive weapon use, but also broader economic and social impacts.

<sup>10</sup> For the full text of the declaration, see Ireland Department of Foreign Affairs (2022), *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas*.

Documenting civilian casualties and the broader impacts of explosive weapon use on civilians helps to improve our collective understanding of the full impact of such use. The documentation of these harms fulfills a moral obligation to understand and recognise victims of armed conflict, but it can also provide an evidential basis for harm reduction that can inform operational changes and responses. As such, the data in this report can support ongoing understandings of civilian harm as well as efforts to address it, including through implementation of the declaration's commitments.

The Explosive Weapons Monitor presents in this report its findings on the patterns of harm to civilians from the use of explosive weapons in populated areas, as shown in its first two years of data collection on incidents of explosive weapon use and casualties, including deaths and injuries, recorded by Action on Armed Violence (AOAV), and incidents of explosive weapon use affecting aid access, education, and healthcare, recorded by Insecurity Insight in 2021. The findings of this report are supplemented with incident reports compiled from open sources from Ukraine, Myanmar, the Occupied Palestinian Territories, Syria, and Ethiopia. These incidents illustrate the complexity of identifying the full scope of harm to civilians and the ways in which different patterns of harm overlap.

The data presented in this report does not aim to capture every casualty or incident of explosive weapon use that occurred in 2021 and 2022, recognising that the impact of explosive weapon use is much greater than is presented here. Instead, this report aims to identify patterns of harm from the use of explosive weapons around the globe and to demonstrate a clear need to mitigate risk to civilians, take steps to prevent the harm to civilians caused by the use of explosive weapons, and to provide necessary and lifesaving assistance to victims and survivors.



A man inspects a site damaged by airstrikes by Turkish forces that hit an electricity station in the village of Taql Baql, in Hasakeh province, Syria, on 20 November 2022.

© AP Photo/Baderkhan Ahmad

# DIRECT AND IMMEDIATE RISK: CIVILIAN DEATH AND INJURY FROM THE USE OF EXPLOSIVE WEAPONS

Explosive weapons – a broad category of weapons that use high explosives to create blast and fragmentation in the area around the point of a detonation – cause harm to people and damage buildings and other civilian objects, by nature of their ‘blast wave’, fragmentation, and heat effects.<sup>11</sup> Their specific effects vary, however, depending on their unique characteristics, as well as where and how they are used.

Explosive weapons form a direct and immediate risk of death and injury to civilians when used in towns, cities, and other populated areas, as the blast and fragmentation generated by these weapons causes a predictable pattern of harm when used in areas where civilians and civilian infrastructure are concentrated. When explosive weapons were used in populated areas in 2021 and 2022, 90% of all those reported killed and injured were civilians, according to AOA, a pattern of harm that has been consistently evidenced over the last decade.<sup>12</sup>

The use of explosive weapons in populated areas causes broad, substantial, and ongoing harm to civilians, including injuries suffered by survivors of explosive weapon use that often result in long-term debilitating physical conditions and patterns of psychological harm. The effects of explosive weapon use are felt globally by civilians, including in armed conflict, across many countries and different contexts. The extent of this harm varies, as explosive weapons that are prone to wide area effects, like artillery guns, rocket artillery, multi-barrel rocket launch systems, and air-dropped bombs, have varied effects on civilians in different contexts, as does the ebb and flow of explosive weapon use in ongoing, emerging, and escalating conflicts.

The use in populated areas of explosive weapons with wide area effects – those that have a substantial blast and fragmentation radius from large explosive content, inaccuracy of delivery, or multiple warheads and/or firings – significantly increases the likelihood of harm to civilians.

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11 A ‘blast wave’ is a wave of pressure that radiates out from the detonation at high speed; fragmentation occurs when material is broken up and projected outwards from around the point of detonation, creating high-velocity fragments – this can include both ‘primary fragmentation’ (such as shrapnel from the munition itself) and ‘secondary fragmentation’ (such as debris from the surrounding area); and heat occurs when the detonation of explosives creates high temperatures. See Article 36 (2018). ‘[Explosive Weapons: Protecting civilians from the use of explosive weapons in populated areas](#)’, p. 8.

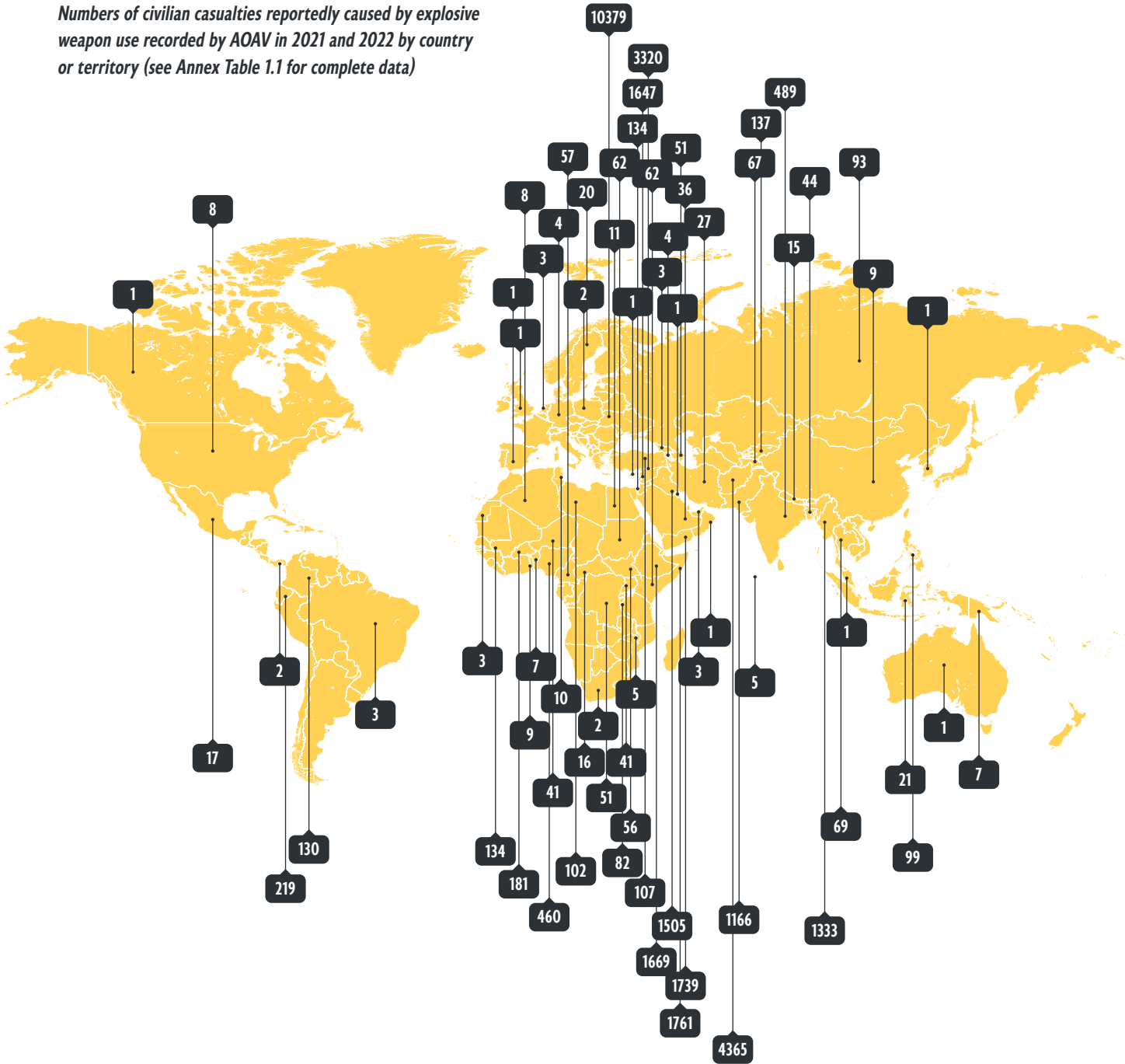
12 AOA (2021). ‘[Explosive Violence Monitor 2020](#)’, p.1.



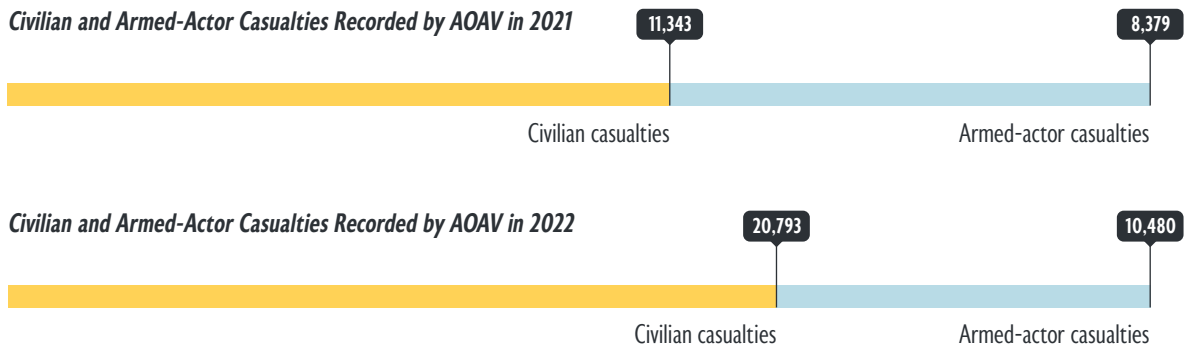
## Incidents of explosive weapon use and casualties recorded by Action on Armed Violence

AOAV, which records incidents of explosive weapon use that cause civilian and armed-actor casualties from English-language media reports, recorded 6,822 incidents of explosive weapon use that caused at least one casualty in 75 countries and territories in 2021 and 2022. Civilian casualties were recorded by AOA in 4,703 incidents in 71 countries and territories, more than half of all incidents.

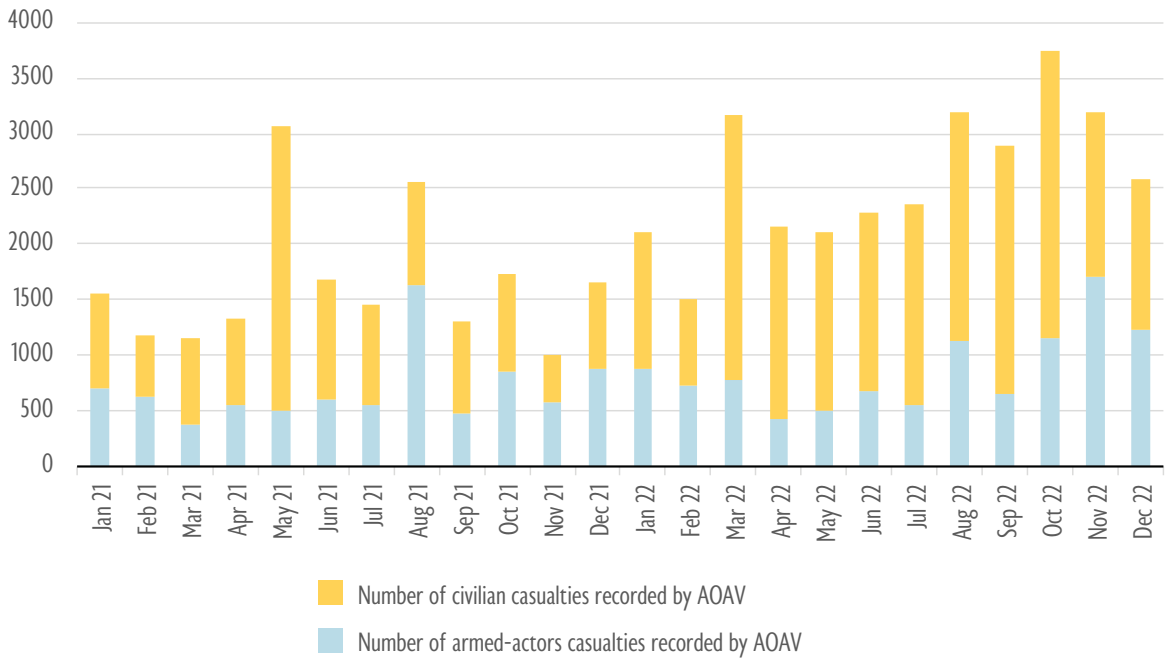
*Numbers of civilian casualties reportedly caused by explosive weapon use recorded by AOA in 2021 and 2022 by country or territory (see Annex Table 1.1 for complete data)*



In total, AOVAV recorded at least 50,995 deaths and injuries of civilians and armed actors as a result of explosive weapon use globally, including 32,136 civilians. Civilians continued to suffer disproportionately from this harm, accounting for an average of 63% of all those recorded killed or injured by explosive weapons in 2021 and 2022.



Civilian and armed-actor casualties recorded by AOVAV in 2021 and 2022 by month (see Annex Tables 1.3 and 1.4 for complete data)



### Explosive weapon use and emergence and escalation of armed conflict

In 2022, AOVAV recorded an 83% increase in civilian casualties reportedly caused by explosive weapon use compared to 2021, due in large part to the emergence and extensive media reporting of armed conflict in Ukraine, escalations of conflicts in Ethiopia, Myanmar, and Somalia, and increased use of explosive weapons by state and non-state actors across these contexts.<sup>13</sup>

In Ukraine, numbers of civilian casualties were higher in 2022 largely as a result of explosive weapon use by Russian armed forces. AOVAV also recorded increased numbers of civilian casualties in 2022 in Somalia, where both state and non-state actors increased attacks amidst the Somali government's renewed military campaign; Ethiopia, where Ethiopian and allied armed forces conducted airstrikes in populated areas in Tigray and neighbouring regions; and in Myanmar, as Myanmar military forces conducted air and ground-attacks.

In 2021, AOVAV recorded higher numbers of civilian casualties in the Occupied Palestinian Territories compared to 2022. This was due largely to the high numbers of recorded civilian casualties from Israeli armed forces' use of ground- and air-launched explosive weapons during an 11-day escalation of violence and explosive weapon use in Gaza City from 10 May – 21 May 2021.

#### *Numbers of civilian casualties reported by AOVAV in Ethiopia, Myanmar, Occupied Palestinian Territories, Somalia, and Ukraine in 2021 and 2022*

| Country                          | Number of civilian casualties recorded by AOVAV in 2021 | Number of civilian casualties recorded by AOVAV in 2022 |
|----------------------------------|---|---|
| Ethiopia                         | 531   | 1,138   |
| Myanmar                          | 353   | 980   |
| Occupied Palestinian Territories | 1,478   | 169   |
| Somalia                          | 537   | 1,224   |
| Ukraine                          | 28  | 10,351  |

### Civilian casualties from a broad range of explosive weapon systems and munitions

All explosive weapons will affect an area to some degree, as the immediate heat, blast, and fragmentation around the point of detonation are always present. This will vary to a greater or lesser degree depending on the weapon type.

Explosive weapons range from relatively small weapons, such as hand-grenades, to significantly larger aircraft bombs and ground-launched rockets and missiles.<sup>14</sup> While the term 'explosive weapons' encompasses numerous categories used in their classification, the Explosive Weapons Monitor looks at the use of explosive weapons across four categories of weapon type: air-launched, ground-launched, directly-emplaced, and combinations of explosive weapons.

<sup>13</sup> See Tables 1.3 and 1.4 in Annex 1 for complete data on civilian and armed-actor casualties recorded by AOVAV by month in 2021 and 2022.

<sup>14</sup> Article 36 (2018), 'Explosive Weapons: Protecting civilians from the use of explosive weapons in populated areas'.

Globally, civilians were more likely to have been reported killed or injured by ground-launched weapons than any other explosive weapon type in 2021 and 2022, as compared to armed-actors. When ground-launched explosive weapons were used, an average of 83% of all reported casualties (civilian and armed-actor) were civilians, according to AOVAV.

***Numbers of incidents of explosive weapon use and casualties recorded by AOVAV by explosive weapon type in 2021***

| Weapon Type       | Number of Incidents | Total casualties (civilian and armed actor) | Civilian casualties | Civilian casualties as % of total casualties |
|-------------------|---------------------|---|---------------------|--|
| Air-launched      | 441                 | 6613  | 2451                | 37%  |
| Ground-launched   | 792                 | 4424  | 3411                | 77%  |
| Directly-emplaced | 1236                | 8015  | 5084                | 63%  |
| Combination       | 21                  | 569   | 310                 | 54%  |

***Numbers of incidents of explosive weapon use and casualties recorded AOVAV by explosive weapon type in 2022***

| Weapon Type       | Number of Incidents | Total casualties (civilian and armed actor) | Civilian casualties | Civilian casualties as % of total casualties |
|-------------------|---------------------|---|---------------------|--|
| Air-launched      | 518                 | 7661  | 3865                | 50%  |
| Ground-launched   | 2273                | 12689                                       | 10901               | 86%  |
| Directly-emplaced | 1315                | 8633  | 4763                | 55%  |
| Combination       | 51                  | 1130  | 347                 | 31%  |

Directly-emplaced explosive weapons, such as mines and improvised explosive devices, were the cause of the highest number of civilian casualties recorded by AOVAV in 2021.<sup>15</sup> In 2022, ground-launched weapons reportedly killed and injured the highest number of civilians, due mostly to the high number of incidents recorded by AOVAV in which ground-launched weapons were used in Ukraine.

<sup>15</sup> Incidents of explosive weapon use involving directly-emplaced weapons, specifically IEDs, are more likely to be captured in media reporting as they are often singular, high-casualty events. Incidents involving air-launched and ground-launched explosive weapons, such as airstrikes and rocket attacks, may involve multiple strikes in an area, sometimes over the course of days. As such, civilian harm monitoring methodologies that require incidents of explosive weapon use to meet specific criteria (for example, a clearly identified date and location for one incident of explosive weapon use), may not include incidents reported without such detail.

### Air-launched explosive weapons

AOAV recorded at least 6,316 civilian casualties when air-launched weapons (such as air-dropped bombs or airstrikes)<sup>16</sup> were used in 2021 and 2022, representing 20% of all civilian casualties recorded globally by AOA. Between 2021 and 2022, AOA recorded a 17% increase in incidents of air-launched weapon use, and a corresponding 58% increase in civilians harmed by such attacks. This increase was visible predominantly in Ukraine, Ethiopia, and Yemen.

For example, air-launched weapons, specifically airstrikes, were reportedly the primary cause of civilian casualties from explosive weapon use in Ethiopia in 2021, accounting for 509, or 96%, of civilian casualties recorded by AOA. In one incident, on 21 June 2021, an Ethiopian state airstrike hit a busy market in Togoga, Tigray. The attack killed at least 64 civilians and injured 180 more. There was a high concentration of civilians at the marketplace, primarily women, children and elderly people, and emergency ambulance services were reportedly prevented by Ethiopian military forces from reaching the site of the airstrike in the hours following the attack.<sup>17</sup>

### Ground-launched explosive weapons

AOAV recorded at least 14,258 civilian casualties when ground-launched weapons (such as artillery shells and ground-launched missiles, mortars and rockets)<sup>18</sup> were used in 2021 and 2022, representing 44% of all civilian casualties recorded by AOA. AOA recorded a 218% increase in civilian casualties reported as a result of ground-launched explosive weapons between 2021 and 2022, due in large part to the war in Ukraine and increased attacks in Myanmar. Syria, Yemen, and Afghanistan were heavily-impacted by ground-launched weapons in 2021, and Ukraine, Syria, and Myanmar reportedly experienced the highest levels of civilian harm from ground-launched weapons in 2022.

For example, in Syria, ground-launched explosive weapons were reportedly the cause of most of the civilian death and injury from explosive weapon use in 2021, accounting for 1,176, or 58%, of all recorded civilian casualties in Syria that year. In one incident on 5 March 2021, four civilians and, at least 42 others, were injured as a result of reported Russian and/or Syrian regime shelling with surface-to-surface missiles on oil refinery stations in Tarhin and Hamran villages in Jarablus, Aleppo. Those who were injured suffered burns as a result of the fires that burned for more than 19 hours. The fires caused by shelling led to an explosion that killed a volunteer among the team working to put out the fires.<sup>19</sup>

16 Air-launched explosive weapons include any weapon fired from a rotary of fixed-wing aircraft, including unmanned aerial vehicles or drones. These include air-dropped bombs (bombs reported as being delivered by air), airstrikes (attacks from a helicopter, drone, or plane), and missiles or rockets launched from an aircraft.

17 Guardian (2021). 'Scores killed in Ethiopian airstrike on Tigray market'; Reuters (2021). 'Medical official: air strike kills at least 43 in Ethiopia's Tigray'.

18 Ground-launched explosive weapons are launched from any surface-level platform, including warships, hand delivery, and vehicles. These include artillery shells (projectiles fired from a gun, cannon, howitzer, or recoilless rifle), tank shells (shells fired from tanks), ground-launched missiles, mortars, rockets (typically missiles which do not contain guidance systems), non-specific shelling, rocket-propelled grenades, and hand-delivered grenades.

19 Syrian Observatory of Human Rights (SOHR) (2021). 'Nearly 30 people killed and wounded in Russian rocket attacks on oil market and refineries in rural Aleppo'; Airwars (2021). 'Airwars assessment of incident R4299'.

### Directly-emplaced explosive weapons

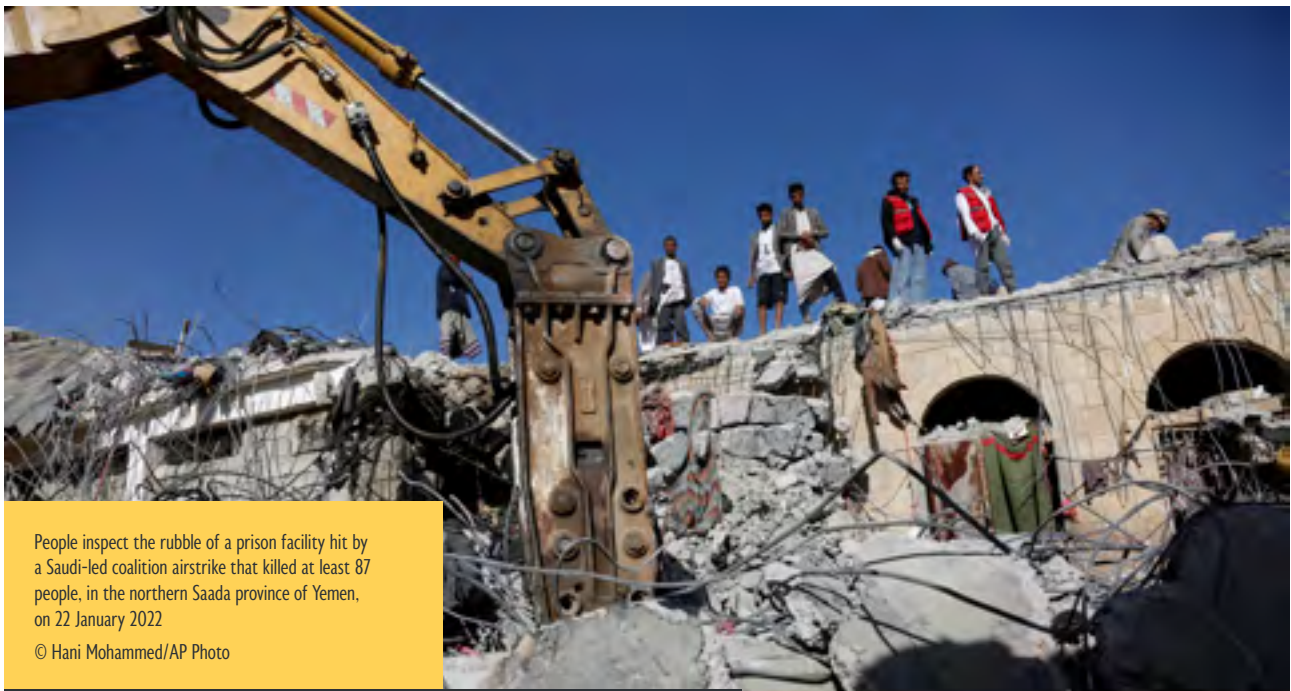
AOAV recorded at least 9,847 civilian casualties when directly-emplaced explosive weapons (such as IEDs and mines)<sup>20</sup> were used in 2021 and 2022, reportedly accounting for 31% of all civilian casualties recorded by AOA. IEDs reportedly accounted for 9,004 civilian deaths and injuries, and anti-personnel mines, anti-vehicle mines and landmines accounted for 843 civilian casualties. In 2022, AOA recorded the lowest levels of civilian harm from directly-emplaced weapons globally since 2010.

For example, directly-emplaced weapons reportedly killed and injured 90% of all civilians casualties recorded by AOA in Somalia in 2022, as car bombs caused 821 civilian casualties, non-specific IEDs caused 184, and roadside bombs killed and injured 86 civilians. In one incident on 23 March 2022, 48 people were killed, including a parliamentary candidate, and 108 more injured, in two suicide car bombings by Al Shabaab targeting public buildings in Beleweyne city, Hirshabelle.

### Combinations of explosive weapons

AOAV recorded at least 657 civilian casualties when combinations of explosive weapons (two or more categories of weapons used at one time)<sup>21</sup> were used in 2021 and 2022, reportedly accounting for 2% of all civilian casualties recorded by AOA.

For example, combinations of explosive weapons reportedly caused 292 civilian casualties in Ukraine in 2022. In one incident, on 9 October 2022, 14 civilians were killed (including one child), and 89 injured (including 11 children), when Russian armed forces reportedly attacked residential areas in Zaporizhzhia city with ground- and air-launched missiles. Over 70 civilian objects were damaged in the attack.



People inspect the rubble of a prison facility hit by a Saudi-led coalition airstrike that killed at least 87 people, in the northern Saada province of Yemen, on 22 January 2022

© Hani Mohammed/AP Photo

<sup>20</sup> Directly-emplaced explosive weapons encompass two forms of weapons that are both physically and directly placed in the location in which they detonate. These include anti-personnel mines, anti-vehicle mines, landmines, non-specific IEDs (including suicide vests), car bombs and roadside bombs.

<sup>21</sup> 'Combinations' of explosive weapons includes two more categories of weapons used at one time (such as the dual use of air- and ground-launched weapons), in instances where it was unclear which weapons caused which categories. In the case of incidents affecting aid access, education and healthcare reported by Insecurity Insight, this category also includes unexploded ordnance (UXO) and ERW.

## BEYOND THE DATA: TYPES OF PHYSICAL INJURIES SUFFERED FROM EXPLOSIVE WEAPON USE

The death and injury of civilians is one of the most direct forms of harm caused by explosive weapons. For survivors, however, the injuries they suffer can result in long-term debilitating physical conditions, including loss of limbs, blindness, loss of hearing and brain trauma (for example, a limb amputation as a result of an injury from the use of explosive weapons will require lifelong care, physical rehabilitation, and psychological support).<sup>22</sup>

Understanding the complex nature of the impact of explosive weapons on the body, beyond the figures of deaths and injuries, shows the long-term nature of harm to civilians from the use of explosive weapons. Increased understanding of this long-term impact can positively contribute to the development of good practice in documenting such harm and providing assistance to victims and survivors.

Examples of physical injuries from the use of explosive weapons, as categorised by Humanity & Inclusion, include:<sup>23</sup>

- **Neurological injuries** – Includes head injuries and traumatic brain injuries. In emergency conflict and disaster settings, the majority of patients with severe or extensive traumatic brain injuries die, as medical resources are often not timely nor sufficient for lifesaving measures. However, even those with mild head injuries have significant long-term clinical effects, including long-term behavioural issues, psychiatric symptoms, and sleep impairments.
- **Thoracic injuries** – Includes any injury to the chest, including ribs, heart, lungs or diaphragm. Treatment of thoracic injuries, including surgery, carries major risk and requires high specialisation, equipment, and follow-up care, all of which can be difficult to access in conflict settings. In these settings, it is highly likely that civilians with these injuries or those experiencing similar chest trauma die before reaching medical care.
- **Amputation** – Includes surgical removal of limbs when an injury has rendered the limb 'unsalvageable', in the case that a blast itself does not amputate a limb, or associated blood loss does not lead to death. An increase in the use of explosive weapons in conflict corresponds with an increase in amputations.
- **Eye injuries** – Includes any injury to the eye. These injuries are common – about 10% of people who survive explosive injuries will suffer trauma to the eyes. They are also debilitating, as the long-term impact of physical suffering, as well as the social and economic impact of decreased or absent sight, is significant, especially in the absence of specialist care.
- **Soft tissue injuries and wound infection** – Includes blast and fragmentation wounds to soft tissue and the contamination of wounds with debris, shrapnel, and dirt, often causing infection. Infections prolong and endanger both healing and recovery, putting patients at risk of antibiotic resistance.
- **Groin and genital injuries** – Include any injury to the groin, pelvis and genitals. Groin and pelvic explosive injuries frequently result in death, and the physical and psychosocial implications of surviving explosive injuries affecting the groin and genitals are complex and underreported. IED victims are twice as likely to sustain genital and/or buttocks injuries compared to persons injured by landmines.
- **Bone fractures** – Includes fractures to bones. Long bones are particularly vulnerable to fracture due to the energy of a blast. Fractures are very common and are often part of complex multi-trauma, as they may be accompanied by nerve damage which has limited repair options and can result in lifelong impairment and disability. Lack of specialist care in conflict settings makes complex fractures more likely to lead to amputation and increases the risk of infection.

Beyond the impact of these physical injuries, civilians exposed to explosive weapons often suffer severe mental trauma and patterns of psychological harm including post-traumatic stress disorder. In such cases, the scale of these area effects increases the number of people and civilian objects exposed to harm.<sup>24</sup>

22 ICRC (2021). 'Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas', p. 36.

23 Humanity & Inclusion (2019). 'Types of injuries caused by explosive weapons'.

24 Article 36 (2018). 'Explosive Weapons: Protecting civilians from the use of explosive weapons in populated areas'.

## BEYOND CASUALTIES: INDIRECT (REVERBERATING) EFFECTS OF EXPLOSIVE WEAPON USE

A significant proportion of civilian harm caused by the use of explosive weapons comes from damage to civilian infrastructure and the disruption of essential services, such as healthcare, education, and aid access. The impacts of explosive weapon use that cause these disruptions can be direct, when a blast causes immediate physical damage to a hospital or ambulance, for example, or indirect or reverberating, when a blast damages an electricity grid and triggers knock-on effects beyond the direct impact of explosive weapon use, such as increased infant mortality because prenatal or neonatal equipment could not effectively be used without stable electricity.

In the short term, explosive weapon use can damage or destroy civilian infrastructure and can deprive civilians of basic necessities and access to essential services. Longer-term effects on communities and infrastructure extend their impact, in different forms, to a wider population and over a longer period of time. Explosive weapons have significant capacity to damage social and economic infrastructure and, after intensive or extended use, can completely devastate cities.

### Damage to and destruction of civilian infrastructure

Given the concentration of civilians in towns and cities, as well as interconnected infrastructure systems, explosive weapons have an elevated likelihood of causing extended harm when they are used in populated areas. This is particularly the case when explosive weapons have wide area effects, due to a large blast and fragmentation radius, an inaccurate delivery system, or the capacity to deliver multiple munitions over a wide area.

When explosive weapons are used in built-up environments, the capability of seriously damaging or destroying buildings and infrastructure creates elevated humanitarian risks. The destruction of infrastructure such as housing, markets and commercial premises, roads and transport links, and cultural heritage sites, results in an additional pattern of harm for affected populations.

The effects on civilian infrastructure are not limited to the examples below, as health facilities, schools, and power, water and sanitation infrastructure, when damaged, may also lead to impacts that reach beyond those immediately and directly affected by a detonation. For example, the destruction of water and sanitation systems causes both direct and reverberating effects on civilian and community health, including an increase in infectious diseases, clogging of sewers by debris, and disruptions to wastewater systems or treatment plants that can pollute the natural environment and contaminate drinking water.<sup>25</sup>

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<sup>25</sup> Ibid., p. 16.



### Impact of explosive weapon use on housing

As a result of direct damage to homes and other critical civilian infrastructure, civilians lose access to safe and adequate housing in the short-term and may be displaced in the long-term.<sup>26</sup> When explosive weapons are used in residential neighborhoods, houses and apartment buildings may collapse. However, the loss of non-structural building systems, such as piping, ventilation, and lighting, can also make a building uninhabitable. Other debris or unexploded ordnance can make the building's use unsafe. Without shelter, civilians are more vulnerable to natural hazards and violence, including further attacks with explosive weapons, and is a cause of longer-term displacement.<sup>27</sup>

### Impact of explosive weapon use on markets and commercial premises

The destruction of commercial facilities as shared, communal spaces, can further fracture communities, erode social support networks and undermine financial stability. These have negative knock-on effects to the psychosocial well being of survivors, their family members, and communities, as financial losses and livelihood insecurity that are incurred when marketplaces, business centers or factories are impacted by explosive weapons also persist. This destruction of the built environment constitutes a large-scale loss of capital that many conflict-affected states struggle to recover from over an extended period.<sup>28</sup>

### Impact of explosive weapon use on transport-related infrastructure

As transport-related infrastructure and transport networks are vital to the functioning of towns, cities and other populated areas, a disruption in them may affect the provision of essential services in communities including supply of food and water. For example, damage to transport infrastructure, including roads, can impact food transport which drives up prices, hinders the delivery of humanitarian aid, and disrupts the maintenance, operation and repair of water, electricity, and health facilities.<sup>29</sup>

### Impact of explosive weapon use on cultural heritage

Damage to and destruction of cultural heritage sites, including monuments and other objects or sites of cultural significance, can also have indirect effects on communities. Losing cultural property can mean a lost source of revenue for local populations, or serve to disconnect people from the beliefs, values and collective memory and identity of whole communities. Damaged or destroyed cultural heritage sites and the subsequent loss of cultural heritage can impact community identity for generations.<sup>30</sup>

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26 ICRC (2021). 'Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas', p. 98.

27 Article 36 (2013). 'Damage to the built environment from the use of explosive weapons', p. 2.

28 Article 36 (2018). 'Explosive Weapons: Protecting civilians from the use of explosive weapons in populated areas', p. 16.

29 Wille, C. and Baldo, A. (2021). 'Menu of indicators to measure the reverberating effects on civilians from the use of explosive weapons in populated areas', p. 36.

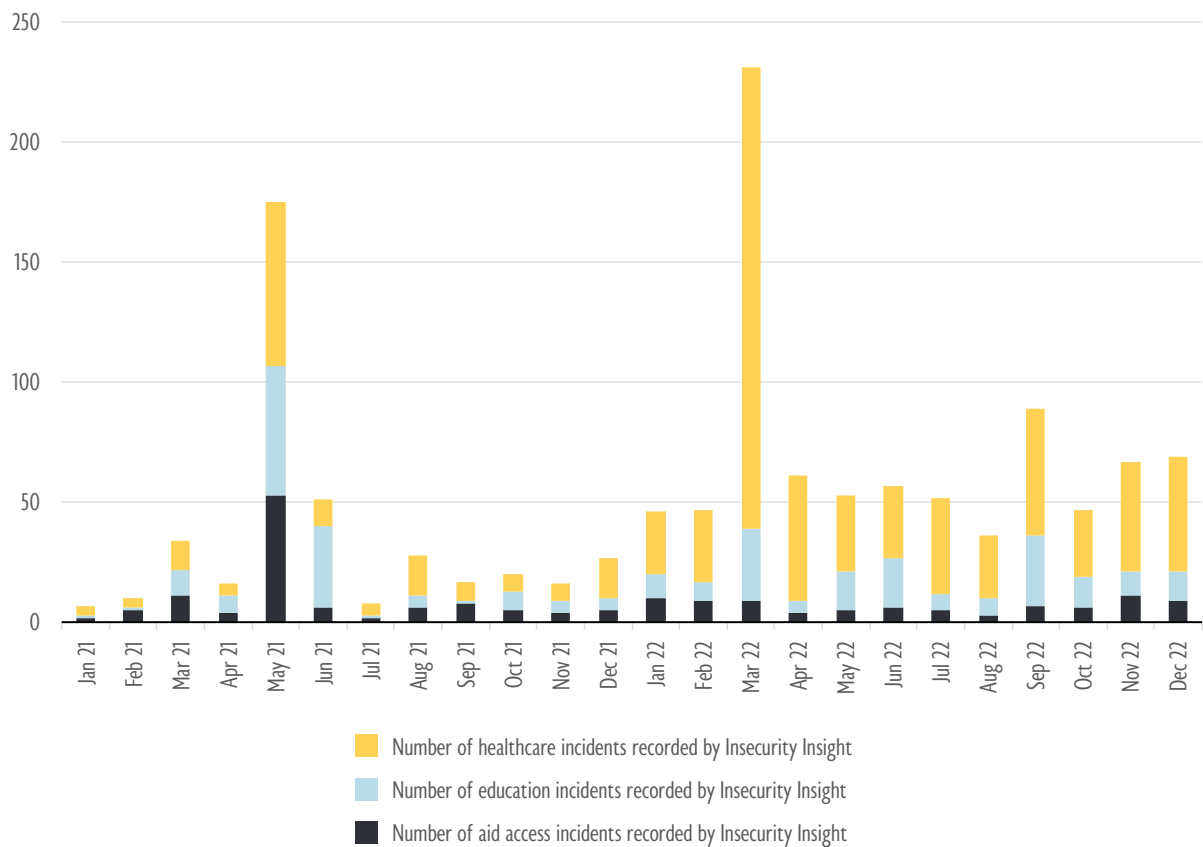
30 ICRC (2021). 'Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas', p. 49.

### Incidents of explosive weapon use affecting access to education, healthcare, and aid recorded by Insecurity Insight

When civilian infrastructure is destroyed by explosive weapon use, the provision of essential services may be disrupted beyond the impact area, resulting in a wider pattern of harm that often leads to long-term civilian suffering.

Insecurity Insight recorded at least 1,158 incidents of explosive weapon use affecting access to three key services in 2021 and 2022: healthcare, education, and humanitarian aid reported. These incidents were recorded across 40 countries and territories.<sup>31</sup>

**Numbers of incidents of explosive weapon use reportedly affecting access to healthcare, education, and aid access recorded by Insecurity Insight in 2021 and 2022 by month (see Annex Tables 2.1 and 2.2 for complete data)**



<sup>31</sup> See Tables 2.1 and 2.2 in Annex 2 for complete data on numbers of incidents of explosive weapon use affecting aid access.

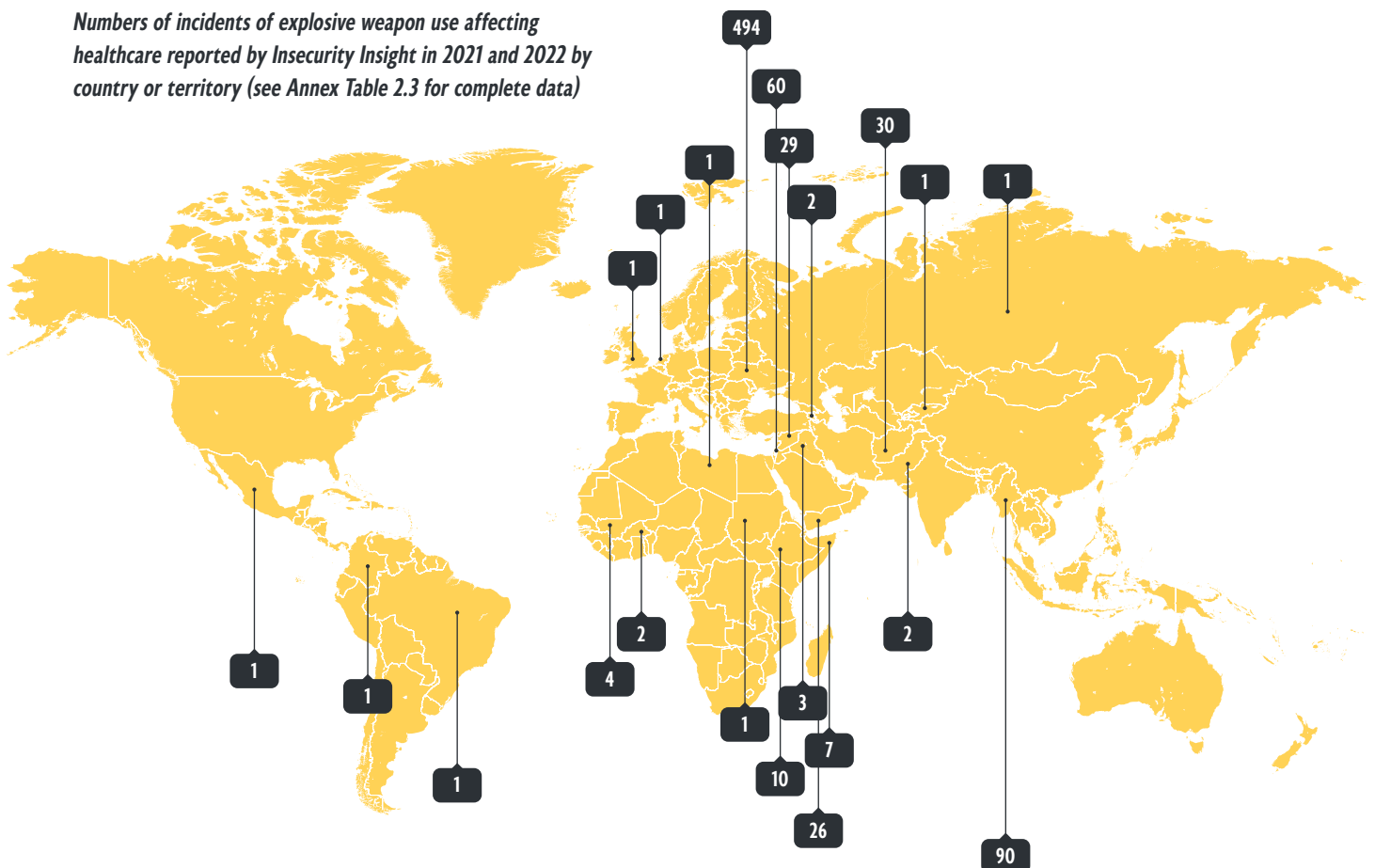
## HEALTHCARE

Insecurity Insight recorded at least 768 incidents of explosive weapon use affecting healthcare services in 22 countries and territories in 2021 and 2022, of which 165 occurred in 2021 and 603 in 2022.<sup>32</sup>

In these incidents, at least 78 health workers were reportedly killed by airstrikes, ground- and air-launched missiles, shelling and IEDs, in Afghanistan, Burkina Faso, Ethiopia, Iraq, Kyrgyzstan, Mali, Myanmar, Occupied Palestinian Territories, Syria, Ukraine and Yemen.

High numbers of recorded incidents of explosive weapon use affecting healthcare in 2022 were due in large part to the Russian full-scale invasion of Ukraine. An average of 10 hospitals in Ukraine per day were damaged by explosive weapon use in the first two weeks of the conflict in March 2022,<sup>33</sup> and an average of 47 incidents of explosive weapon use affecting health systems were recorded each month between April and December 2022.<sup>34</sup>

*Numbers of incidents of explosive weapon use affecting healthcare reported by Insecurity Insight in 2021 and 2022 by country or territory (see Annex Table 2.3 for complete data)*

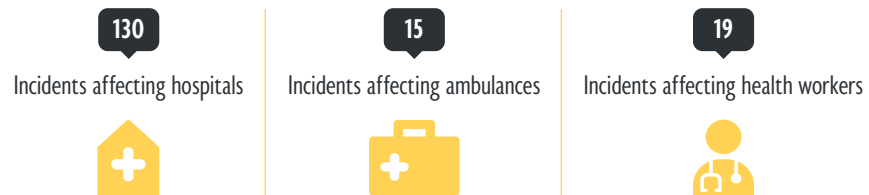


<sup>32</sup> See Table 2.3 in Annex 2 for complete data on numbers of incidents of explosive weapon use affecting healthcare reported by Insecurity Insight in 2021 and 2022 by country or territory.

<sup>33</sup> Insecurity Insight, et. al. (2023). 'Destruction and Devastation: One Year of Russia's Assault on Ukraine's Health Care System', p. 13.

<sup>34</sup> Ibid., p. 11.

### *Incidents of explosive weapon use affecting hospitals, ambulances and health workers recorded by Insecurity Insight in 2021*



### *Incidents of explosive weapon use affecting hospitals, ambulances and health workers recorded by Insecurity Insight in 2022*



### **The impact of explosive weapon use on hospitals**

Hospitals and clinics in 20 countries and territories were reportedly impacted by explosive weapons at least 650 times in 2021 and 2022, according to Insecurity Insight. In most cases, but not all, the facility was located in a populated area, and frequently healthcare services were suspended as a result. Damaged health facilities cannot always be repaired or can take a long time to do so. As such, access to healthcare can be disrupted for substantial periods of time, reducing patients' ability to access services and for health professionals to maintain care. Moreover, fear about potential further attacks on health facilities also stops patients from seeking healthcare, often with devastating consequences for health outcomes.

Since the beginning of the Russian invasion of Ukraine, ground-launched artillery shells and missiles fired by Russian forces have damaged and destroyed hundreds of health facilities, clinics, pharmacies, emergency response centers and pharmacies, and reportedly killed and injured health workers. At least 48 hospitals were reportedly hit multiple times,<sup>35</sup> and one out of 10 of Ukraine's hospitals have been directly damaged from attacks.<sup>36</sup> In some cities and towns, nearly all the health facilities were harmed in some way. The scale of the attacks has led to the severe disruption of health services and infrastructure in Ukraine.

<sup>35</sup> Ibid., p. 15.

<sup>36</sup> Ibid., p. 3.

<sup>37</sup> Insecurity Insight et. al. (2023). 'Violence Against or Obstruction of Health Care in Myanmar'.

ACCESS TO HEALTHCARE DEPENDS ON THE FUNCTIONING OF HEALTH SERVICES AS WELL AS PATIENTS' ABILITY TO SAFELY ACCESS THEM. WHEN EXPLOSIVE WEAPONS DESTROY ROADS, OR IF EXPLOSIVE WEAPONS ARE USED OUTSIDE OR NEAR HOSPITALS, PATIENTS WILL HAVE DIFFICULTIES ACCESSING HEALTHCARE. THIS CONTRIBUTES TO A RISE IN AVOIDABLE DEATHS AND LONG-TERM COMPLICATIONS FOR SURVIVORS OF VIOLENCE AND THOSE WHO ARE SICK.

Since the February 2021 military coup in Myanmar, aerial bombings by the Myanmar military and IED explosions detonated by armed groups have routinely damaged hospitals and ambulances and destroyed vital medicine facilities, impacting healthcare providers' ability to deliver medical services to people in need in Myanmar.<sup>37</sup>

For those health facilities providing specialist care, the damage can have lasting consequences. Infant mortality rates, for instance, may increase if a facility providing maternity services is damaged and forced to close, as was the case in Ethiopia, where a rocket struck a maternity room in Tigray, resulting in its closure. With high infant mortality rates generally, facility closures will increase infant deaths.

#### **Impact of explosive weapon use on access to hospitals**

Ambulances were reportedly targeted on at least 52 occasions in 2021 and 2022, according to Insecurity Insight. Directly-emplaced weapons were reportedly detonated at or near hospitals on at least 18 occasions in 2021 and 2022, and road damage was a contributing factor to hospital closures.

Access to healthcare depends on the functioning of health services as well as patients' ability to safely access them. When explosive weapons destroy roads, or if explosive weapons are used outside or near hospitals, patients will have difficulties accessing healthcare. This contributes to a rise in avoidable deaths and long-term complications for survivors of violence and those who are sick.

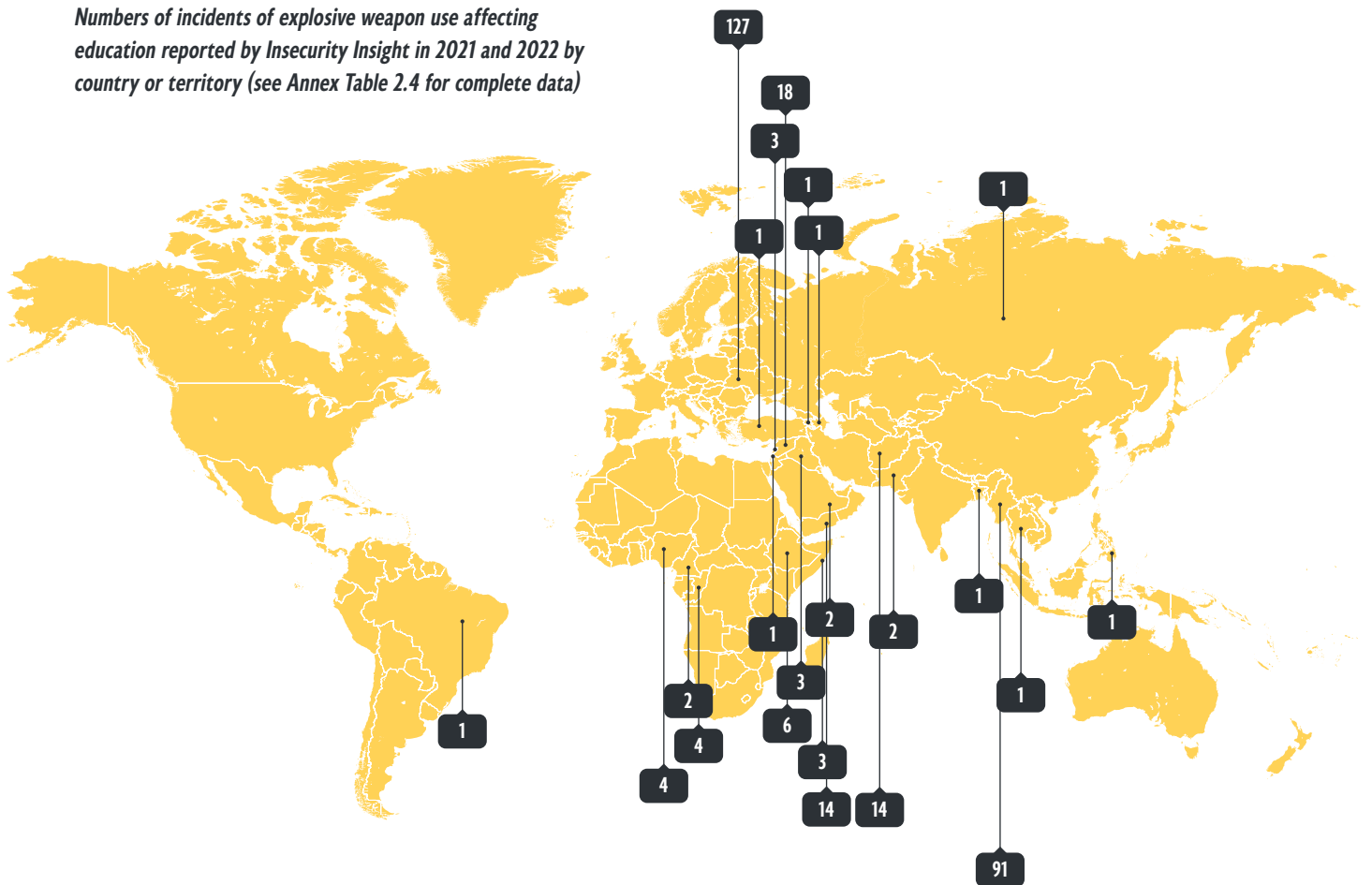
Attacks on ambulances and patients and their families waiting outside of hospitals cause severe and long-lasting psychological and mental harm as well as fear of accessing health care. Some health workers have left the profession leading to staff shortages, further impacting patients' services.

<sup>37</sup> Insecurity Insight et. al. (2023). 'Violence Against or Obstruction of Health Care in Myanmar'.

### EDUCATION

At least 301 incidents of explosive weapon use affecting education services in 23 countries and territories were recorded by Insecurity Insight in 2021 and 2022, of which 133 occurred in 2021 and 168 in 2022.<sup>38</sup>

*Numbers of incidents of explosive weapon use affecting education reported by Insecurity Insight in 2021 and 2022 by country or territory (see Annex Table 2.4 for complete data)*



High numbers of incidents were recorded by Insecurity Insight in Ukraine and Myanmar. Incidents were also common in Afghanistan, Syria and Yemen. Air-launched and ground-launched weapons damaged schools, neighborhoods became unsafe, and schools were closed due to missiles and mortar shelling being fired nearby. Homemade and roadside bombs and other IEDs were also placed in or near schools, forcing their closure.

<sup>38</sup> See Table 2.4 in Annex 2 for complete data on numbers of incidents of explosive weapon use affecting education reported by Insecurity Insight in 2021 and 2022 by country or territory.

***Incidents of explosive weapon use affecting schools and teachers recorded by Insecurity Insight in 2021***

126

Incidents affecting schools



16

Incidents affecting teachers



***Incidents of explosive weapon use affecting schools and teachers recorded by Insecurity Insight in 2022***

145

Incidents affecting schools



22

Incidents affecting teachers



### **Impact of explosive weapon use on education infrastructure**

Schools, universities and kindergartens were reportedly impacted by explosive weapons at least 271 times in 2021 and 2022, according to Insecurity Insight. Specifically, air- and ground-launched explosive weapons damaged schools at least 129 times in 2021 and 2022. Over three-quarters of these incidents took place in Ukraine.

If staff and pupils are in the school at the time of a strike, incidents of explosive weapon use often injure or kill children and their teachers. If the school was closed at the time of the strike, the damage can be unsettling and fear inducing to children, and may result in school closures.

Damaged schools are usually closed for teaching. In Yemen, for example, more than 40% of schools reportedly suspended classes for more than a year following an attack, according to Save the Children.<sup>39</sup> Schools were also closed when explosive weapons affected the immediate neighbourhood of the school. IEDs, for example, rarely damage schools, but they are a frequent cause of school closures as authorities want to make sure the environment is safe. The destruction and closure of schools reversed decades of educational gains for Yemeni children, and these events had wide ripple effects on access to education. More than 60% of children surveyed in Yemen did not return to the classroom after their school came under attack, according to Save the Children.<sup>40</sup> Even in areas where schools are undamaged, fear of attacks discourage parents from sending their children to classes.

39 Save the Children (2021). 'Will I see my children again? A brief on attacks on education in Yemen', p. 7.

40 Ibid., p. 9.

### **Impact of witnessing explosive weapon use in environments of learning**

A lack of safe and protective learning spaces affects children's access to education. Information from studies of school shootings has shown that witnessing violence in places of learning can have emotional, psychological, and physical effects such as nightmares, resistance to returning to school or engaging in joyful activities, and various physical symptoms including headaches and stomach pain. It can directly impact children's learning, as well as change relationships with friends and teachers.

Teachers who witnessed a school bombing can suffer from post-traumatic stress disorders. The quality of teaching often suffers. Even when teachers have not witnessed the violence, they will experience stress from unexpected school closures and will be unsure of how to maintain connections with students to support learning.

### **Impact of school closures on children**

Sudden and prolonged interrupted education can have a profound impact on children. Schooling provides essential learning, and when schools close, young people are deprived of opportunities for growth and development. In communities that experience the use of explosive weapons, parents are often unable to replace teachers through home-schooling.

Schools are hubs of social activity and human interaction. When schools close, many children and youth miss out on social contact that is essential to learning and development. Even when alternative learning opportunities are made available, anxiety about the situation they are experiencing often means that children cannot entirely focus on their studies.

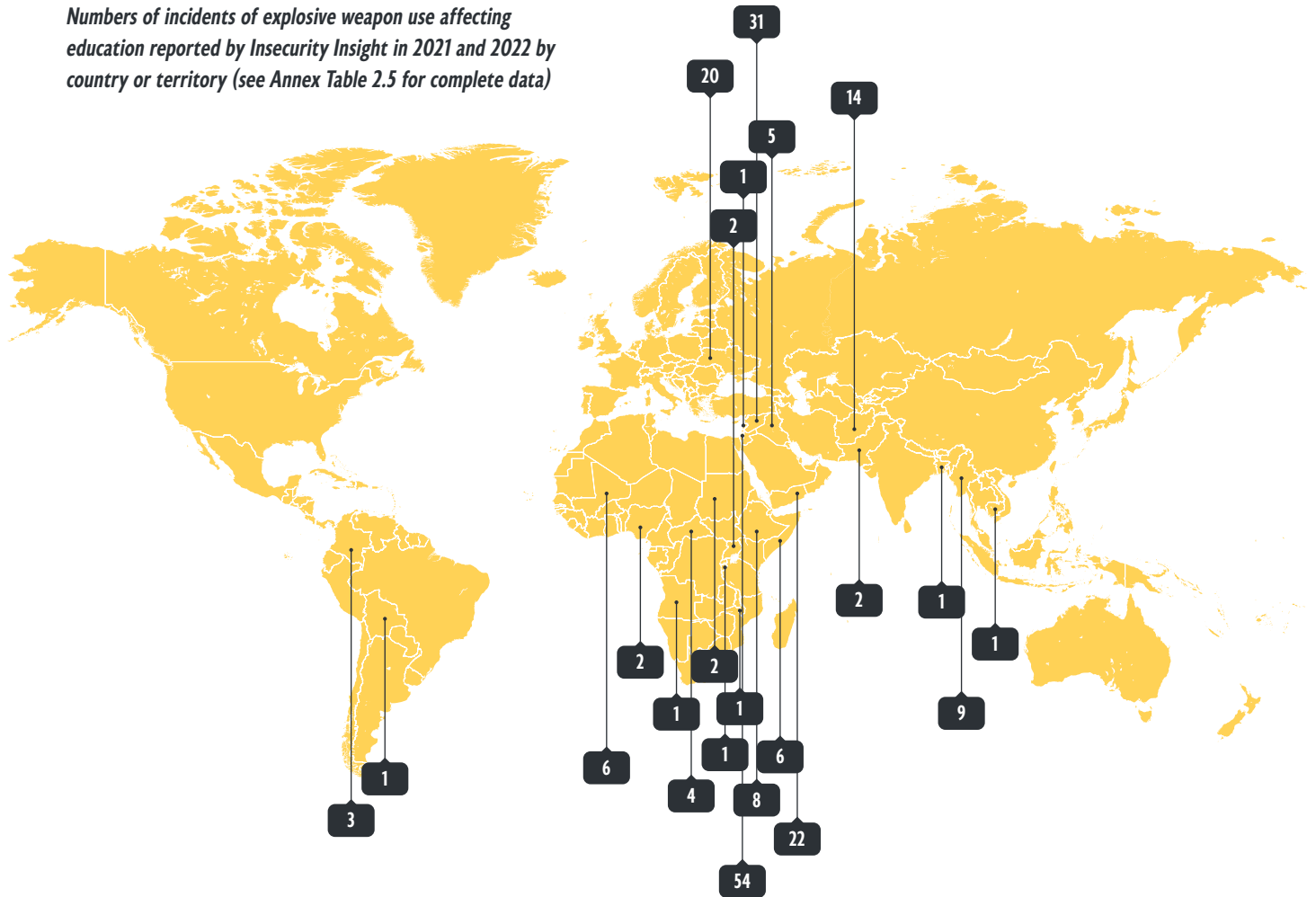
School closures reduce the hours of schooling provided which quickly leads to knowledge gaps among children. For example, studies following hurricane damage and school closures in the United States showed that it took students two full years to make up for the lost learnings. It has also been suggested that this is not only due to the interruption in class time but compounded by economic impacts and emotional trauma.



## AID ACCESS

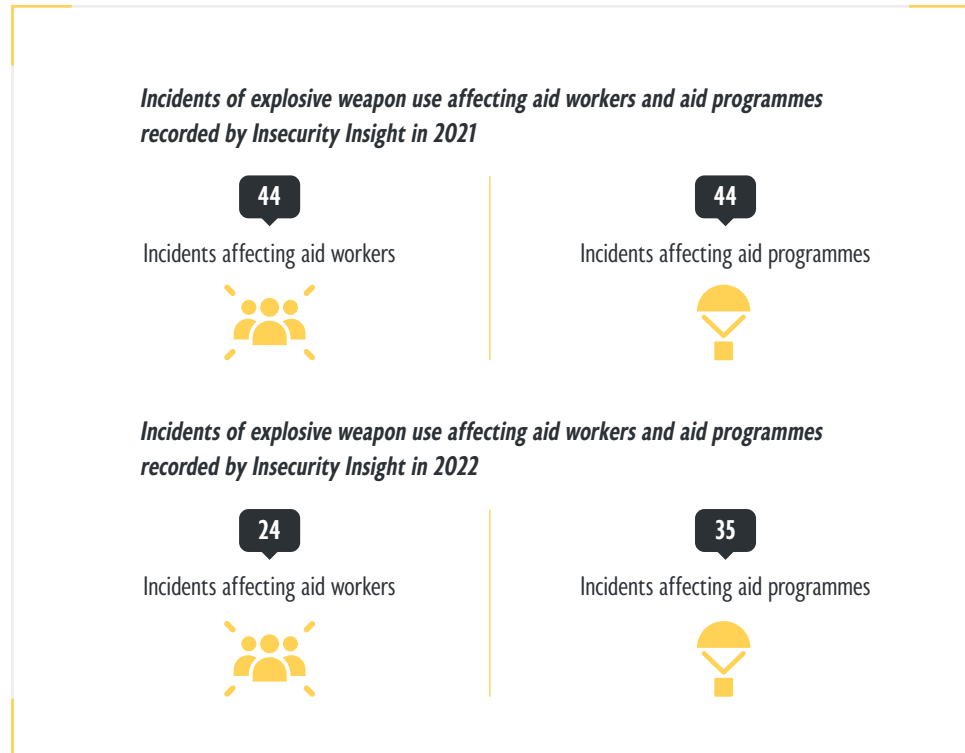
Insecurity Insight recorded at least 195 incidents of explosive weapon use affecting aid operations in 22 countries and territories in 2021 and 2022, of which 111 occurred in 2021 and 84 occurred in 2022.<sup>41</sup>

*Numbers of incidents of explosive weapon use affecting education reported by Insecurity Insight in 2021 and 2022 by country or territory (see Annex Table 2.5 for complete data)*



In some cases, aid workers were reportedly killed in incidents of explosive weapon use that took place while staff traveled to or from work or to provide aid to beneficiaries. Camps for internally displaced persons (IDPs) were reportedly damaged, and programmes related to IDPs were suspended by explosive weapons use in Afghanistan, Bolivia, Burundi, Central African Republic, Ethiopia, Iraq, Lebanon, Mali, Myanmar, OPT, Somalia, Syria, Uganda, and Yemen.

<sup>41</sup> See Table 2.5 in Annex 2 for complete data on numbers of incidents of explosive weapon use affecting aid access reported by Insecurity Insight in 2021 and 2022 by country or territory.



### **Impact of explosive weapon use on aid workers**

At least 34 aid workers were reportedly killed by shelling and IEDs in Afghanistan, Angola, Cambodia, Central African Republic, Ethiopia, Mali, Myanmar, Syria, Ukraine, and Yemen in 2021 and 2022, according to Insecurity Insight.

Targeted bombings at aid agencies and the risk of indiscriminate effects of explosive weapons use have led to significant shifts in aid policies and adjustments to security protocols that profoundly changed the way aid is delivered and affected relationships between international and local aid actors.

Many aid workers were deeply affected by the impacts of explosive weapon use, as they lost colleagues and saw their work undermined. As such, mental health support for aid workers who have witnessed tragedy is growing in the aid sector.

### **Impact of explosive weapon use on aid agency infrastructure**

The use of explosive weapons in urban areas also affects aid agency infrastructure, limiting its ability to work effectively. Concerning incidents include those that damage NGO-run hospitals or other sites where aid beneficiaries are present, as these attacks not only damage and destroy infrastructure but harm aid recipients directly and make people fearful of accessing aid services.

Damage to NGO offices is frightening for aid agency staff and hampers relief events. Damage and destruction to stored supplies and infrastructure such as vehicles or warehouses has financial implications and, importantly, slows down the response at a time when needs are great. Such damage has direct costs not only from the immediate destruction but for future operations in the area. For example, insurance companies adjust their requirements based on past experiences. This drives up operating costs and takes away money that could have been spent directly on humanitarian work.

### **Aid agency adjustment to programmes as a result of explosive weapon use**

The use of explosive weapons in populated areas reduces humanitarian space in dangerous ways. For example, the use of explosive weapons reduces the humanitarian space to negotiate access. The indiscriminate nature of explosive weapons makes aid agency risk assessments very challenging. Aid agencies want to negotiate humanitarian access based on acceptance by local actors. Such a strategy becomes high risk when explosive weapons are used. As a result, few aid agencies can justify exposing staff to such environments of indiscriminate violence.

In many conflicts with high use of explosive weapons in urban areas, such as Syria or Yemen, many aid agencies resort to a remote management strategy meaning that most operations are managed from a neighbouring country and local partners carry out the frontline work. Risk then transfers to the local population, as local people risk their lives daily while receiving support and supplies from outside the country. The increasing use of explosive weapons in urban centres over the past years has forced increasing numbers of aid agencies to support the relief effort through such remote structures as boards, trustees, donors and aid workers demand that aid agencies do what they can to keep aid worker casualties as low as possible.

IN MANY CONFLICTS WITH HIGH USE OF EXPLOSIVE WEAPONS IN URBAN AREAS, SUCH AS SYRIA OR YEMEN, MANY AID AGENCIES RESORT TO A REMOTE MANAGEMENT STRATEGY MEANING THAT MOST OPERATIONS ARE MANAGED FROM A NEIGHBOURING COUNTRY AND LOCAL PARTNERS CARRY OUT THE FRONTLINE WORK. RISK THEN TRANSFERS TO THE LOCAL POPULATION, AS LOCAL PEOPLE RISK THEIR LIVES DAILY WHILE RECEIVING SUPPORT AND SUPPLIES FROM OUTSIDE THE COUNTRY.

The use of explosive weapons also usually leads to changes in travel advice and instruction to aid agency staff, further interfering with the work of aid agencies.

### **Adaptation and learning among aid agencies**

Aid agencies who work in areas affected in urban areas are adapting their programmes and advice to local staff to support partners and programmes as best as they can. Security risk management advice for local staff and beneficiaries is adapted to programme needs and such planning needs to be prepared before a crisis occurs. For example, for NGOs working with survivors of conflict and other people with disabilities, security advice needs to be adapted and extended to cover the needs of people with disabilities.



Donetsk People Republic Emergency Situations Ministry employees clear rubble at the side of the damaged Mariupol theater building during heavy fighting in Mariupol, Ukraine, on 12 May 2022.

© AP Photo



# INCIDENT REPORTS

Beyond the aggregate data, individual incidents of explosive weapon use illustrate how direct and indirect effects overlap and intertwine, ultimately compounding and amplifying the harm to civilians. Below, five such incident reports from Ukraine, Myanmar, the Occupied Palestinian Territories, Syria, and Ethiopia, illustrate the complexity of identifying the full scope of harm to civilians from explosive weapon use, which makes data collection challenging.

## Ukraine – Donetsk Regional Academic Drama Theatre, Mariupol (16 March 2022)

On 16 March 2022, a Russian airstrike destroyed the Donetsk Regional Academic Drama Theatre in Mariupol, Ukraine. At the time, hundreds of civilians were in and around the theater taking shelter as conflict and explosive weapon use by Russian forces increased, and essential services such as electricity, water, and heat were disrupted.<sup>42</sup> Many were killed and injured, with casualty estimates ranging widely – the Mariupol City Council estimated that 300 people were killed, and an investigation by the Associated Press concluded that the number could be as high as 600.<sup>43</sup>

From the start of the war on 24 February 2022 until the attack, civilians trapped in Mariupol relied upon its relative safety as a central location of food and water distribution, as well as information about evacuation corridors. When news spread in early March of a humanitarian corridor that would allow people to escape the city in busses and cars, the theater was one of three designated gathering points for expected evacuations. Thousands of people arrived at the theater on 5 March 2022, and when the evacuations did not take place that day, several hundred people remained in the theater.<sup>44</sup>

By the time of the attack, civilians in Mariupol had not had access to water, electricity, or heat since 2 March 2022, when Russian armed forces surrounded and began a military offensive on the city, according to Human Rights Watch.<sup>45</sup> The New York Times reported that by the end of the first week in March, Russian forces had made their way closer to the city center, shelled the main railway station, police and fire stations, power stations, water and gas supplies, cellular towers and other civilian infrastructure, much of which is critical to the survival of civilians. Entire apartment blocks were destroyed, along with shopping districts, and soon after there was no access to water, electricity, gas, phone service or internet.<sup>46</sup>

Human Rights Watch estimated that the water shortage specifically put more than 200,000 civilians at risk as they were without humanitarian assistance or were unable to flee to safety. Investigators also confirmed with city officials that already hundreds of civilians were killed during the fighting in that first week of March.<sup>47</sup> Médecins sans Frontières (Doctors without Borders) told Human Rights Watch on 6 March that restoring water access was crucial: “People are drinking rainwater or collecting snow for water. People have literally broken into heating systems to take water from them to be able to wash their hands.”<sup>48</sup>

42 Human Rights Watch (2022). ‘Ukraine: Mariupol Residents Trapped by Russian Assault’.

43 Amnesty International (2022). ‘“Children”: The attack on the Donetsk Regional Academic Drama Theatre in Mariupol, Ukraine’, p. 3.

44 Amnesty International (2022). ‘<https://www.amnesty.org/en/documents/eur50/5713/2022/en/> “Children”: The attack on the Donetsk Regional Academic Drama Theatre in Mariupol, Ukraine’, p. 2.

45 Human Rights Watch (2022). ‘Ukraine: Mariupol Residents Trapped by Russian Assault’.

46 Verini, J. (2022). ‘Witness to the Massacre in Mariupol: Survivors describe the defining atrocity of the war in Ukraine’. New York Times.

47 Human Rights Watch (2022). ‘Ukraine: Mariupol Residents Trapped by Russian Assault’.

48 Ibid.

Human Rights Watch warned of the risk to civilians from lack of water supplies and electricity, including waterborne disease and severe dehydration which can lead to hypothermia, blood pressure loss, organ failure and death.<sup>49</sup> On 6 March, a Russian shell reportedly damaged or destroyed the last functioning cellphone tower in the city, which made emergency coordination nearly impossible.<sup>50</sup>

Though some civilians were able to flee Mariupol through unofficial evacuation routes, many remained trapped when Russian forces attacked the Drama Theater on 16 March 2022. Amnesty International determined that, almost certainly, a Russian combat aircraft dropped two 1,100-pound (500 kilogram) bombs onto the theater. The damage from the explosion indicated that two bombs were dropped simultaneously, detonated at the same time, and struck close to one another, likely sounding to survivors and witnesses like a single blast.<sup>51</sup>

Both bombs pierced the roof of the eastern side of the theater, detonating inside the performance space and causing a large portion of the roof decking to drop, the “superstructure” of the roof to fail, and the roof to fall, according to photos and satellite imagery collected and analyzed by Amnesty International.<sup>52</sup> One witness told investigators:

*“I was walking down the street leading to the drama theatre... I could see the drama theatre in front of me...It was about 200 metres away... I could hear the noise of a plane... but at that time I didn't really pay attention because [planes] were constantly flying around... Then I saw the roof of the building explode... It jumped 20 metres and then collapsed... and then I saw a lot of smoke and rubble... I couldn't believe my eyes because the theatre was a sanctuary. There were two big 'children' signs.”<sup>53</sup>*

The true scope of harm to civilians that occurred from the attack is difficult to estimate, as police and emergency services that would normally find and identify bodies in the rubble were unable to conduct this work after the attack. According to Amnesty International, those who remained at the bombing site to search for survivors did so at risk to their own safety and were only able to remove debris by hand in the absence of access to heavy machinery. When Russian soldiers took control of the area, they reportedly bulldozed the blast site and removed bodies without properly registering identities of victims. Further, disruption to telecommunication services in Mariupol made it difficult to locate and communicate with survivors.<sup>54</sup>

49 Ibid.

50 Ibid.

51 Amnesty International (2022). “‘Children’: The attack on the Donetsk Regional Academic Drama Theatre in Mariupol, Ukraine”, p. 4.

52 Ibid., p. 28.

53 Ibid., p. 32.

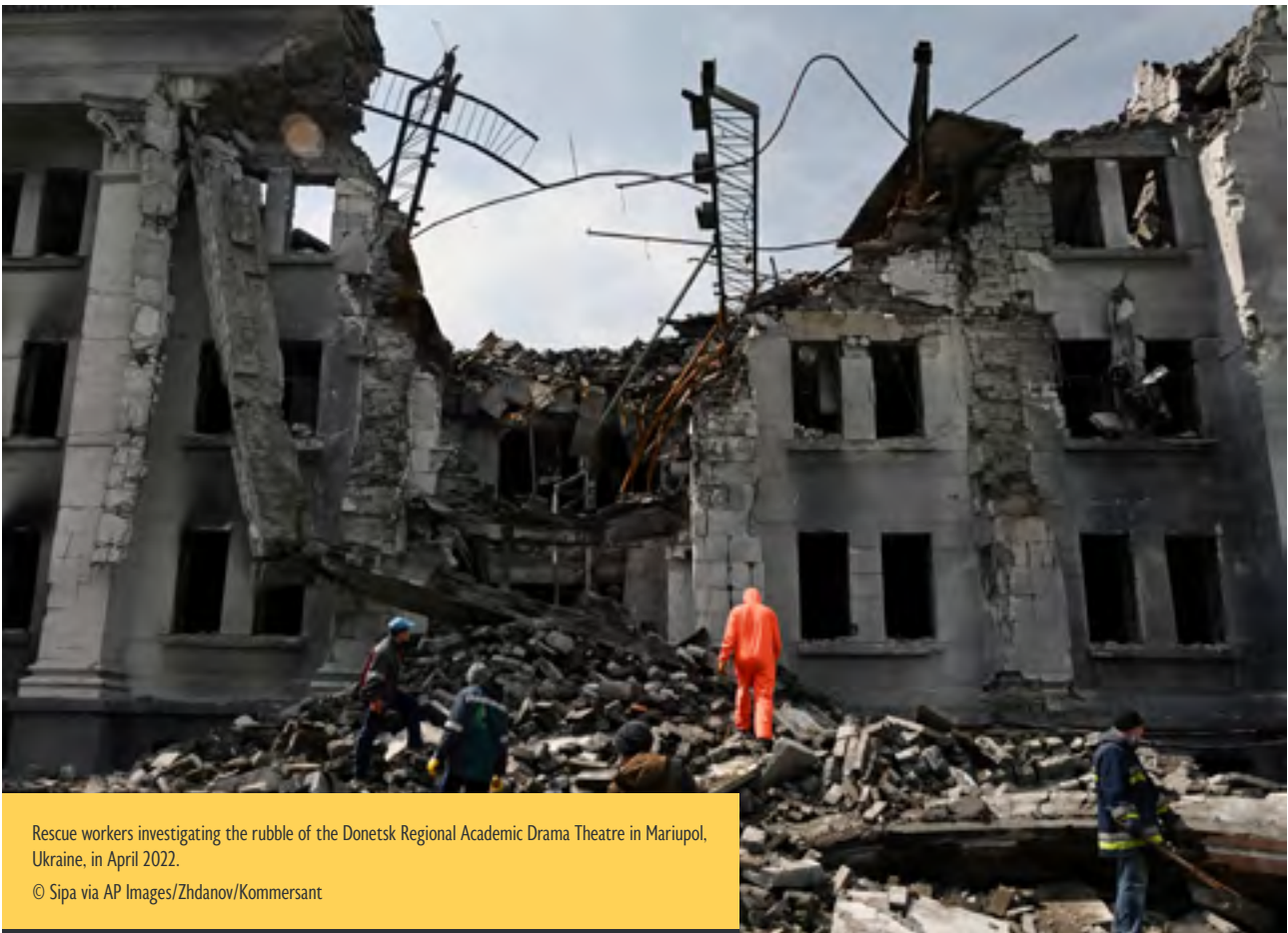
54 Ibid., p. 43.



At the time of the attack, hospitals in Mariupol had already been damaged by or destroyed. According to the Ukrainian Healthcare Center (UHC), in Mariupol and the southern part of Donetsk oblast, at one point in time almost 8 out of 10 sites where medical assistance is provided were either damaged or destroyed. This diminished access to care by civilians in need.<sup>55</sup>

Many survivors of the theater attack witnessed first-hand the death and injury caused by the two blasts. Yevhen Hrebenetskyi, who was in the concert hall at the time of the explosion with his mother, told Amnesty International about his experience finding his father's body covered in debris:

*"I went back to look for my dad... There were many injured people. I remember one woman who had metal sticking out of her leg. She called for help... There were police trying to pull people out of the rubble... At first, I saw his arm. First, I saw a familiar hand. You know the hand of your loved ones. His face was covered with blood. His body was covered with bricks... I didn't want my mom to see."*<sup>56</sup>



Rescue workers investigating the rubble of the Donetsk Regional Academic Drama Theatre in Mariupol, Ukraine, in April 2022.

© Sipa via AP Images/Zhdanov/Kommersant

55 Insecurity Insight, et. al. (2023). 'Destruction and Devastation: One Year of Russia's Assault on Ukraine's Health Care System', p. 18.

56 Amnesty International (2022). "Children": The attack on the Donetsk Regional Academic Drama Theatre in Mariupol, Ukraine, p. 52.

## Ethiopia – Camp for Internally Displaced Persons, Dedebit (7 January 2022)

On 7 January 2022, an Ethiopian National Defense Force (ENDF) armed drone dropped three bombs on a camp for internally displaced persons (IDPs) in Dedebit, a town in the Tigray region of Ethiopia. At least 56 people were killed and 30 more injured, a school was damaged, and humanitarian agencies were forced to suspend their operations.<sup>57</sup>

The strike occurred amidst an increase of airstrikes causing death and injury to civilians in the Tigray region, during conflict that began in November 2020 between Ethiopian forces and their allies, and Tigrayan forces affiliated with the region's ruling party, the Tigray People's Liberation Front (TPLF). Since the beginning of the conflict, airstrikes by Ethiopian and allied forces have increased periodically, including in mid-December 2021 after Tigrayan forces in nearby Amhara and Afar regions withdrew.<sup>58</sup>

Civilians that were killed and injured in the Dedebit strike were primarily Tigrayan women, children, and older people that were forcibly displaced from their homes in the town of Humera in Western Tigray by Amhara security forces. After being dropped on a roadside, they made their way on foot to Dedebit and established an informal IDP camp in a school compound in November 2021.<sup>59</sup>

On 7 January 2022, Ethiopian Orthodox Christmas Eve, an armed drone struck the Dedebit IDP camp around 11:00pm and was recognised by witnesses who described the humming sound as "buzzing like a bee."<sup>60</sup> The armed drone dropped three bombs, the first of which struck the main school building that, at the time, was full of displaced civilians sleeping on the floor. Most of those in the room were killed. Those who survived rushed to escape the compound through the main gate. As people tried to escape, the second bomb struck the running crowd near the gate, killing many more people, including children.<sup>61</sup> A third bomb also landed in the compound.

A woman described her experience to the International Commission of Human Rights Experts on Ethiopia, which investigated the incident:

***"When running out of the house we were attacked by a bomb on our way to the gate. Children ran towards the gate as well. Their mothers were carrying them; children died when trying to leave the compound."***<sup>62</sup>

57 Insecurity Insight et. al. (2022). 'Horn of Africa: Conflict, Hunger and Aid Security', p. 6.

58 Human Rights Watch (2022). 'Ethiopia: Airstrike on Camp for Displaced Likely War Crime'.

59 International Commission of Human Rights Experts on Ethiopia (2022). 'Report of the International Commission of Human Rights Experts on Ethiopia'.

60 Ibid.

61 Ibid.

62 Ibid.



After spending the night away from the camp, survivors returned. In its report to the UN Human Rights Council, the commission described what survivors found upon their return:

*“Upon returning, they witnessed the devastation from the night before, which included dismembered bodies and human flesh hanging from trees. The bodies were so disfigured that it was impossible to identify many of the remains. In the words of a woman survivor, ‘bodies were fragmented like leaves’. Survivors and others laid the remains of the dead on a canvas before transporting them to a nearby site for a mass burial. Around 60 civilians, including many young children, were killed in the attack. Scores more were wounded and taken to Shire Hospital.”<sup>63</sup>*

From weapons remnants collected by aid workers and survivors, it could be determined that the camp was likely struck by a MAM-L laser-guided bomb – a precision-guided munition – made by a Turkish arms manufacturer, which are compatible with Turkish Bayraktar TB-2 drones known to be used by Ethiopian armed forces.<sup>64</sup> The types of injuries found on victims were consistent with injuries caused by enhanced blast weapons, according to Human Rights Watch, including crushed limbs, profound blast injuries, and entire bodies torn apart.<sup>65</sup>

Doctors at Shire Hospital described to Human Rights Watch the treatment they gave to at least 46 people with abdominal injuries and destroyed limbs, among other injuries. One doctor noted the lack of medical supplies at the hospital, which Human Rights Watch noted in the context of the Ethiopian government’s siege on Tigray, which blocked medical supplies from entering the region until mid-January 2022.<sup>66</sup>

The UN High Commissioner for Human Rights estimated that between 22 November 2021 and 28 February 2022, 304 people died and 373 were injured from air-launched attacks in the Tigray region,<sup>67</sup> including another strike in January 2022 on the Mai Aini refugee camp which killed three Eritrean refugees, including two children.<sup>68</sup>

Aid organisations working in Tigray say Ethiopian airstrikes have also hit a flour mill, public transportation, farms, hotels, and busy markets.<sup>69</sup> By the end of the first week of March 2022, the UN High Commissioner for Human Rights reported that schools and health facilities in the Amhar and Afar regions were greatly impacted by the conflict, leaving almost two-million children affected by total or partial destruction of schools by Ethiopian armed forces, and at least 36 hospitals and over 2,100 other health facilities partially or completely destroyed by Tigrayan forces.<sup>70</sup>

63 Ibid.

64 Ibid.

65 Human Rights Watch (2022). ‘Ethiopia: Airstrike on Camp for Displaced Likely War Crime’.

66 Ibid.

67 UN Commissioner for Human Rights (2022). ‘Oral Update on the situation of human rights in the Tigray region of Ethiopia and on progress made in the context of the Joint Investigation’.

68 United Nations (2022). ‘Secretary-General Deeply Saddened by Deadly Air Strikes in Northern Ethiopia’.

69 Bearak, M., Kelly, M., Sohyun Lee, J. (2022). ‘How Ethiopia used a Turkish drone in a strike that killed nearly 60 civilians’.



A boy, 15, whose foot was injured when a grenade exploded in his town of Edaga Hamus, recovering at the Ayder Referral Hospital in Mekele, the Tigray region's flagship hospital, in Ethiopia, on 6 May 2021.

© AP Photo/Ben Curtis

Humanitarian aid has been especially affected by this conflict. The commission in its report estimated that by September 2022 about 20 million people were in need of humanitarian assistance or protection in Ethiopia, of which three-quarters were women and children. The destruction of civilian infrastructure and lack of essential services for people that were food insecure before the conflict began led to widespread displacement.<sup>71</sup> Humanitarian aid routes were blocked, leaving only two open to agencies looking to bring much needed supplies into the country.

At least 25 humanitarian workers have been killed in the Tigray region since the conflict started, most of whom are Tigrayan.<sup>72</sup> This includes a UNHCR employee that was killed in an armed-drone strike while he was travelling in a car with his daughter between Alamata town and Mekelle city in Tigray in December 2021. A World Food Programme driver was also injured and his vehicle damaged by debris from an armed -rone strike targeting TPLF forces in Tigray in September 2022, and an International Rescue Committee staff member was killed in a similar strike on 14 October 2022.<sup>73</sup>

70 UN Commissioner for Human Rights (2022). 'Oral Update on the situation of human rights in the igray region of Ethiopia and on progress made in the context of the Joint Investigation'.

71 International Commission of Human Rights Experts on Ethiopia (2022). 'Report of the International Commission of Human Rights Experts on Ethiopia', p. 10.

72 Insecurity Insight et. al. (2022). 'Horn of Africa: Conflict, Hunger and Aid Security', p. 1.

73 Insecurity Insight (2022). 'Explosive Weapons Use: The use of air-delivered munitions in the context of humanitarian action in Ethiopia, with a focus on drones', p. 1.

## Occupied Palestinian Territories – Rimal District, Gaza City (16 May 2021)

On 16 May 2021, an Israeli airstrike reportedly killed up to 49 civilians, including at least 18 children, on Wahda Street in central Gaza City. As many as 50 more civilians were injured.<sup>74</sup> Civilian infrastructure, notably high-rise residential buildings, were levelled by the attacks, causing high numbers of civilian deaths and injuries, including among children. At the time, hospitals struggled to treat high numbers of blast injuries, while access to medical care was further impeded by explosive weapon use in the city.

The strikes destroyed four high-rise buildings, damaged nearby structures, and effectively closed businesses. Three buildings – the Hanada, al-Sharoukm and al-Jalaa towers – were immediately destroyed and levelled by the attacks. The fourth building – the al-Jawhara tower – was badly damaged and later demolished.<sup>75</sup> In addition to many homes, the towers hosted businesses and offices of news agencies. The owner of the al-Jalaa tower, Jaward Madhi, told Human Rights Watch:

*“All these years of hard work, it was a place of living, safety, children and grandchildren, all our history and life, destroyed in front of your eyes ... It’s like someone ripping your heart out and throwing it.”<sup>76</sup>*

The strikes occurred during an 11-day escalation of violence and explosive weapon use in Gaza City from 10 May – 21 May 2021. During this time, Israeli military forces reported that they attacked about 1,500 targets with both air- and ground-launched explosive weapons, according to Human Rights Watch. These attacks reportedly killed 260 people in Gaza, of which at least 129 were civilians, including 66 children, according to the UN Office for the Coordination of Humanitarian Affairs (OCHA).<sup>77</sup> More than 50,000 homes were damaged, about 2,400 of which were made uninhabitable. More than 2,000 industrial, trade, and service facilities were either damaged or destroyed,<sup>78</sup> and health facilities were affected at least 53 times.<sup>79</sup> During this time, Palestinian armed groups also launched over 4,360 rockets, reportedly killing 12 civilians in Israel, including two children, according to Israeli authorities.<sup>80</sup>

In media reports, an emergency doctor at Gaza’s Al Shifa hospital said that most civilians who died as a result of the 16 May Wahda Street attacks showed no external signs of injuries when brought to the hospital, indicating they died as a result of rubble that collapsed on them when they were still alive.<sup>81</sup> ‘Crush syndrome’ occurs when collapse of infrastructure causes the body’s tissues to compress and immobilise while under hard surfaces for an extended period of time. Though the syndrome rarely shows external signs, it devastates the body internally, often causing blast lung, amputation, abdominal haemorrhage and concussion, and kidney failure. It is frequently fatal.<sup>82</sup>

74 Airwars (2022). ‘ISPT082 – Airwars assessment’.

75 Human Rights Watch (2021). ‘Gaza: Israel’s May Airstrikes on High Rises’.

76 Ibid.

77 UN Office of Coordination of Humanitarian Affairs (OCHA) (2021). ‘Gaza Strip: Escalation of hostilities 10-21 May 2021’.

78 Human Rights Watch (2021). ‘Gaza: Israel’s May Airstrikes on High Rises’.

79 Safeguarding Health in Conflict (2021). ‘Occupied Palestinian Territories: Violence Against Health Care in Conflict’, p. 3.

80 Human Rights Watch (2021). ‘Gaza: Israel’s May Airstrikes on High Rises’.

81 Airwars (2022). ‘ISPT082 – Airwars assessment’.

82 Britannica (2022). ‘Crush injury’.





Palestinians inspect the destroyed building housing the offices of The Associated Press and other media after it was struck by Israeli airstrikes, in Gaza City on 21 May 2021.

© AP Photo/Hatem Moussa





Survivors of primary blast injuries require immediate and prolonged medical attention. Patients with 'crush syndrome' need specialised care and to undergo complex procedures to save and stabilise damaged organs and bones, as well as early rehabilitation to help them regain the functionality of their limbs or prepare them for prosthetics and orthosis. To save the lives of survivors, medical personnel must have specialised knowledge in blast injuries and the medical equipment necessary to detect organ failure.

The Wahda Street attacks and other incidents of explosive weapon use throughout the 11-day escalation of violence in Gaza City led to an overwhelming surge of patients needing medical care. This forces hospitals and medical clinics to prioritise cases and often leads to early discharge from hospitals to free beds for incoming patients. This practice poses difficulties in assessing rehabilitation needs of patients, which may lead to unnecessary complications, such as patients with new amputations, patients on traction, and patients with brain or spinal injuries.<sup>83</sup> Rehabilitation medical teams working in Gaza City likely work in less than ideal settings.

When injured civilians in Gaza City needed care the most, access to healthcare was significantly impeded as a result of attacks by Israeli forces that impacted hospitals. The use of air-launched weapons by Israeli forces impacted hospitals, clinics, and health workers at least 53 times during the 11-day conflict. At least 30 health facilities in Gaza City were damaged or destroyed during the bombardment.<sup>84</sup>

Just one day before the Wahda Street attacks, Israeli forces damaged roads leading to Al Shifa Hospital, the largest hospital in Gaza, hindering the ability of ambulances to access the area. Three health workers, including one of the few neurologists in Gaza City, the director of Gaza's COVID-19 response, and a psychologist, were all killed in early morning airstrikes on their homes.<sup>85</sup>

Primary, emergency, oncology, and rehabilitation services were all impacted by Israeli airstrikes. Hotline consultation services for COVID-19 patients were also temporarily suspended, and the destruction of the Hala al Shwa Healthcare Center halted its COVID-19 testing services. Gaza's only laboratory for processing COVID-19 tests was also damaged in an Israeli airstrike, which injured one laboratory technician. Another Israeli airstrike destroyed the sterilisation room at a trauma and burns care clinic, which forced the clinic to close. This single incident had a lasting impact on Palestinians affected by escalating violence, as the clinic sees over 1,000 children every year and provided life-saving care from conflict-induced injuries.<sup>86</sup>

Post-trauma rehabilitation in the Occupied Palestinian Territories is rarely available, according to Humanity & Inclusion. According to a Rapid Need Assessment (RNA) implemented by Humanity & Inclusion in December 2022, only 14% of respondents reported that they are accessing post-trauma or rehabilitation services, while 86% do not.<sup>87</sup> Psychosocial support to those injured in conflict helps them to cope with rapidly changing circumstances and overcome the psychological trauma of conflict. Patient and caregiver education and counselling are essential to equip survivors with the knowledge and skills to continue care at home, the provision of which following an injury can significantly improve outcomes for patients and support overall healthcare delivery by decongesting crowded health facilities, preventing readmission, and improving discharge planning.

83 Handicap International (2020). 'Early Rehabilitation in Conflicts and Disasters', p. 31; and World Health Organization (2020). 'Minimum technical standards and recommendations for rehabilitation'.

84 Safeguarding Health in Conflict (2021). 'Occupied Palestinian Territories: Violence Against Health Care in Conflict'.

85 Ibid.

86 Ibid.

87 Humanity & Inclusion (2022). 'Rehabilitation Need Assessment Report'.

## Syria – Al Shifaa Hospital, Afrin (12 June 2021)

On 12 June 2021, the Al Shifaa Hospital in Aleppo, Syria, was struck by artillery shells in the evening killing at least 13 people, including one physician and other health workers, as well as two children. Twenty-three people were also injured, including 11 hospital staff members. Many departments of the hospital were badly damaged in the attack, including labor and delivery rooms, and all hospital services were suspended.<sup>88</sup>

The Al Shifaa hospital, supported by the Syrian American Medical Society (SAMS) is one of the largest medical facilities in northern Syria. On average, it provides 15,000 medical services per month, which includes 250 deliveries of newborns and 250 specialised surgeries.<sup>89</sup> The hospital was targeted by strikes at least three times since 2019, according to two UN aid officials.<sup>90</sup>

The first strike hit the alleyway of the emergency department, damaging buildings on both sides of the alleyway and reportedly causing casualties, including a woman giving birth. The second strike, which occurred only a few seconds later, struck the main building and damaged the physiotherapy, pediatrics, and surgical clinics. Photographs analyzed by Airwars shows a metal rafter bent in half by the munition as it struck the wall of the building.<sup>91</sup> According to SAMS, the hospital was immediately taken out of service.

Though only two strikes hit the medical facility, Airwars identified a third strike that hit a neighboring building, killing Dr. Amin Qosho in his apartment located only a few hundred meters from the hospital, when a munition hit the building's elevator shaft and sent shrapnel through Dr. Qosho's door, killing him instantly.<sup>92</sup>

The type of weapons used in the attack, as well as those responsible for it, were not immediately known, as all remnants of munitions were removed from the hospital by government authorities in the area. Airwars was able to determine, however, from weapon remnants located at Dr. Qosho's apartment, that the weapon likely responsible for all three strikes was a 122mm rocket fired from a BM21 GRAD rocket launcher. Such launchers fire up to 40 projectiles in a single volley and are inherently inaccurate.<sup>93</sup>

While it was impossible to say with absolute certainty that the hospital and Qosho's home were also hit by 122mm rockets, it is likely they were from the same volley of rockets.

Mohammed al-Aghawani, a medic, told Airwars:

***“It was terrifying. It felt like an earthquake. At first I didn't understand what had happened – whether I was alive or dead.”<sup>94</sup>***

Attacks on medical facilities occur frequently in the Syrian conflict. Between the beginning of the conflict in 2011 and September 2021, SAMS recorded at least 674 attacks, including 222 that impacted health center, destroyed 29 mobile medical facilities, and damaged 159 ambulance vehicles.<sup>95</sup>

88 World Health Organization (2021). 'WHO condemns attacks on hospital in Afrin, northwest Syria'.

89 Syrian American Medical Society (2021). 'Two staff killed, eleven injured in an attack on Al-Shifaa Hospital in Afrin'.

90 UN News (2021). 'UN strongly condemns 'appalling' attack on Syria hospital'.

91 Airwars (2022). 'A year on, Airwars investigation into Afrin hospital attack reveals crucial details'.

92 Ibid.

93 Ibid.

94 Ibid.

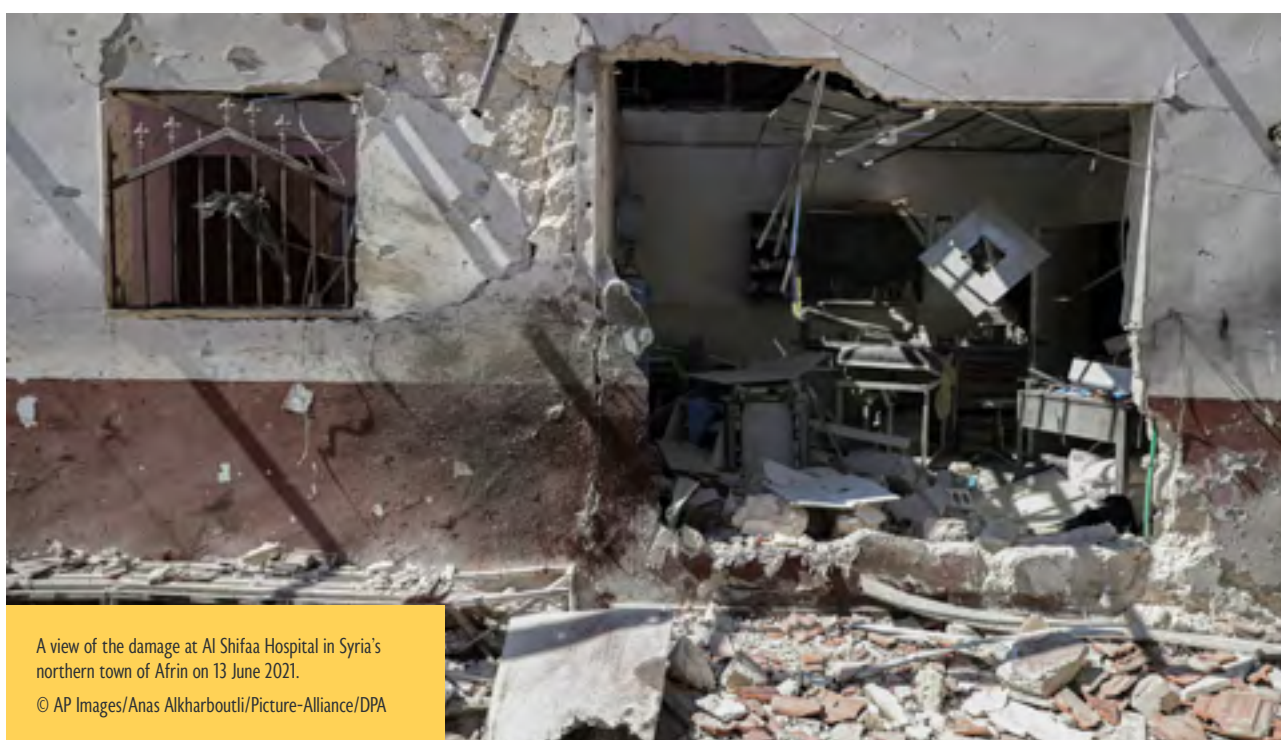
95 Syrian American Medical Society (2021). 'Attacks on Health Care Systems in Syria 2015-2021', p. 7.

From these incidents, 480 people were killed, including 123 medical staff and 357 patients, 56 of whom were children.<sup>96</sup>

In another incident on 1 July 2021, the Al Atareb Hospital in western Aleppo governorate was hit by three artillery strikes. The shelling destroyed the orthopedic clinic, which was in operation during the attack, and killed seven patients and injured 15 more people including five medical staff.<sup>97</sup> Like the Al Shifaa Hospital in Afrin, the Al Atareb Hospital was subjected to multiple attacks, including at least six airstrikes between June 2015 and 2016.<sup>98</sup>

Physicians for Human Rights attributes 90% of attacks on medical facilities in the first decade of the Syrian conflict to Syrian government forces and their allies. The attacks “effectively transformed medical facilities into deadly spaces, for both health care workers and their patients, and decimated the health sector throughout the country.”<sup>99</sup>

Attacks on medical facilities and staff in Syria deprive patients of essential medical care and contribute to a ‘climate of fear’ that makes people reluctant to seek treatment. For example, after the Al Atareb Hospital attack, the International Rescue Committee found a 78% decrease in the number of reproductive and neonatal care consultations and, though communities continued to rank healthcare as a primary need, more than 65% of households surveyed in northeast Syria in 2021 reported difficulties in accessing healthcare.<sup>100</sup>



A view of the damage at Al Shifaa Hospital in Syria's northern town of Afrin on 13 June 2021.

© AP Images/Anas Alkharboutli/Picture-Alliance/DPA

<sup>96</sup> Ibid., p. 7.

<sup>97</sup> Physicians for Human Rights and Syrian American Medical Society (2021). ‘No Place is Safe for Health Care: The Attack on Syria’s al-Atareb Hospital’, p. 1.

<sup>98</sup> Ibid., p. 3.

<sup>99</sup> Ibid., p. 1.

<sup>100</sup> Ibid., p. 3. See also Safeguarding Health in Conflict (2021). ‘Syria: Violence Against Health Care in Conflict’, p. 6.



## Myanmar – Kaw Law Day Village, Kayin State (5 March 2022)

On 5 March 2022, Myanmar military forces fired two artillery shells into a residential area of Kaw Law Day village, in Hpapun Township, Kayin State, Myanmar, as families were sitting down to dinner around 6:30 or 7:00pm. The shelling killed seven people and wounded at least three more.<sup>101</sup> In Kayin State and other areas across eastern Myanmar, Myanmar military forces have used explosive weapons, most of which have wide area effects, causing death and injury to civilians, damage to civilian infrastructure – including the health system, schools, and cultural heritage – and displacement. Since the military coup in February 2021, the Myanmar military has attacked villages with both ground- and air-launched explosive weapons, damaging homes, schools, hospitals, and religious buildings.<sup>102</sup>

Between December 2021 and March 2022, Amnesty International documented 24 artillery and mortar attacks in eastern Myanmar that killed at least 20 civilians and injured 38 more, including injuries that required amputations and surgical intervention. Amnesty International documented the use of 60mm and 120mm mortars, as well as artillery, in these attacks that caused harm to civilians and, in some cases, could determine the military base from which strikes were fired. A retired field commander told Amnesty, “Some of the battalions, without any reason, they fired mortars into villages... The number one reason is they want to put fear into the civilians...”<sup>103</sup>

When the Myanmar military fired two shells in Kaw Law Day village on 5 March 2022, the first shell landed near two homes, killing four people, including a pregnant woman and her 14- and two-year-old daughters. Three other people were injured in a nearby home, including a three-year old boy and his father. The father, Nyut Htun, told Amnesty International:

*“We were in our house having dinner... It landed and exploded a little bit beside our house... It was so dusty. We could not see anything... When [the first shell] landed, the pregnant woman’s sister was going to collect leaves for the roof. The girl was playing. The pregnant woman... she was cut in the stomach [by the fragmentation] – the fetus came out. You could even hear the baby crying.”<sup>104</sup>*

Amnesty International also documented incidents when the Myanmar military fired on displaced civilians returning to their homes. In one incident, Myanmar forces reportedly fired on a woman who returned to Ka Maing Kone village in Kayin State on 18 February 2022 to check on her family’s livestock. A shell exploded near her while she was feeding her pigs, sending fragmentation under her armpit, ultimately killing her.<sup>105</sup>

Damage and destruction of civilian infrastructure from these attacks occurred in at least 19 different villages. Homes, schools, hospitals and other health facilities, and churches and monasteries were all hit by shelling by Myanmar military forces. According to Amnesty International, homes were the most common civilian infrastructure to be damaged by Myanmar forces’ use of ground-launched explosive weapons. However, artillery and mortar fire also damaged at least 36 religious buildings across eastern Myanmar, beginning in March 2021.<sup>106</sup>

<sup>101</sup> Amnesty International (2022). ‘Bullets Rained from the Sky: War Crimes and Displacement in Eastern Myanmar’, p. 17.

<sup>102</sup> *Ibid.*, p. 21.

<sup>103</sup> *Ibid.*, p. 17.

<sup>104</sup> *Ibid.*, p. 18.

<sup>105</sup> *Ibid.*, p. 19.

<sup>106</sup> *Ibid.*, p. 19.

Between December 2021 and January 2022, Insecurity Insight recorded nine incidents of ground-launched explosive weapons impacting the provision of healthcare in Myanmar, as well as an additional 17 incidents in which air-launched explosive weapons were used.<sup>107</sup> Such attacks have posed severe challenges to Myanmar's healthcare system.

Both ground- and air-launched explosive weapons damaged schools as well. Between February 2021 and March 2022, Save the Children documented 190 attacks on schools in Myanmar that involved explosions in and around school buildings. By June 2022, enrollment in schools had dropped by 80% in the last two years, with at least 7.8 million children out of school.<sup>108</sup>



Burmese refugees who fled fighting between Myanmar armed forces and armed groups in temporary camps in front of the Thailand border, allowing for quick crossing in case of raids or airstrikes in April 2022.

© Anadolu Agency via Getty Images/Guillaume Payen

The shelling by Myanmar forces across eastern Myanmar was so frequent yet unpredictable that it forced thousands of people to leave their homes and had a significant impact on civilian mental health, according to interviews Amnesty International conducted with survivors, who reported entire villages emptying due to shelling. People often remained in their homes as long as possible, until a death of a community member made people afraid, causing them to flee to camps, the jungle, or caves in the mountains.<sup>109</sup>

Survivors of shelling reported suffering from sleeplessness, depression, fear, and anxiety, according to Amnesty International. One woman in An Hpa Lay village, in Kayin State, said:

■ *“Whenever we hear the heavy artillery, I’ve been shaking.”<sup>110</sup>*

107 Insecurity Insight et. al. (2022). ‘Violence Against or Obstruction of Health Care in Myanmar: January 2023 Update’, p. 7.

108 Save the Children (2022). ‘Myanmar: Number of children out of school more than doubles in two years’.

109 Amnesty International (2022). ‘Bullets Rained from the Sky: War Crimes and Displacement in Eastern Myanmar’, p. 20.

110 Ibid., p. 21.

## CONCLUSION

THE USE OF EXPLOSIVE WEAPONS CONTINUES TO BE WIDESPREAD AND HAVE SEVERE AND DEVASTATING CONSEQUENCES ON CIVILIANS. AS DOCUMENTED IN PREVIOUS YEARS, THE PATTERNS OF HARM TO CIVILIANS REMAIN MUCH THE SAME IN 2021 AND 2022 – WHEN EXPLOSIVE WEAPONS ARE USED IN CITIES, TOWNS AND OTHER POPULATED AREAS, IT IS CIVILIANS DISPROPORTIONATELY.

The use of explosive weapons continues to be widespread and have severe and devastating consequences on civilians. As documented in previous years, the patterns of harm to civilians remain much the same in 2021 and 2022 – when explosive weapons are used in cities, towns and other populated areas, it is civilians disproportionately.

Direct deaths and injuries of civilians are caused by explosive blast, fragmentation, and collapsing structures, while a wider pattern of civilian harm stems from indirect effects, often resulting from damage and destruction of civilian infrastructure and the disruption of essential civilian services.

The emergence and escalation of armed conflict presented increased challenges to the protection of civilians in 2021 and 2022 as well. In 2022, AOA recorded a significant rise in civilian casualties reportedly caused by explosive weapon use compared to 2021, due in large part to the emergence and extensive media coverage of armed conflict in Ukraine, escalations of conflicts in Ethiopia, Myanmar, and Somalia, and increased use of explosive weapons by state and non-state actors across these contexts.

While the direct impacts of explosive weapon use on civilians in recent years has been widely reported, many indirect effects of explosive weapon use are more challenging to document. These effects are diverse, include both physical harm and psychological trauma, and must account also for loss of loved ones and other social and economic consequences – many of which remain undocumented. Ongoing data collection on the full scope of harm to civilians by explosive weapon use is important in understanding these impacts across a wide range of global contexts.

The recently adopted *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the Use of Explosive Weapons in Populated Areas* recognises the humanitarian consequences of such use and provides a framework for civil society, international organisations, and other stakeholders to work together to improve policies and practices to strengthen the protection of civilians and move away from bombing and shelling in urban and other populated areas

over time. Its data collection provisions can likewise serve to set norms and establish good practice for all stakeholders to record not only deaths and injuries from explosive weapon use, but also broader economic and social impacts.

The Explosive Weapons Monitor aims to continue efforts to document harm to civilians from the use of explosive weapons through data collection, research and analysis. In doing so, it looks forward to working with all stakeholders to strengthen the protection of civilians and support implementation of the declaration's commitments.

# RECOMMENDATIONS

The patterns of harm to civilians from the use of explosive weapons in populated areas identified in this report demonstrates a clear need to mitigate risk to civilians, take steps to prevent the harm to civilians caused by the use of explosive weapons, and to provide necessary and lifesaving assistance to victims and survivors.

The Explosive Weapons Monitor and the International Network on Explosive Weapons recommends that, to this end:

- All states should endorse the Political Declaration on *Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the Use of Explosive Weapons in Populated Areas*.<sup>111</sup> Endorsement is a recognition of the harms experienced by individuals and communities and a commitment to work to implement it without delay to prevent and address future harms.
- States should assess the steps required at the national level to implement the commitments in the political declaration, including in the areas of military policy and practice, victim assistance, and data collection, in order to reduce civilian harm and address the humanitarian consequences of explosive weapon use.
- States should develop and express interpretations, as appropriate, of the declaration's commitments, in consultation with the UN, ICRC, and civil society, to advance the declaration's humanitarian objectives and strengthen the protection of civilians during and after armed conflict.
- All stakeholders should continue to publicly acknowledge and call for action to address the severe direct and indirect harm to individuals and communities resulting from the use of explosive weapons in populated areas.

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<sup>111</sup> For the full text of the declaration, see Ireland Department of Foreign Affairs (2022), [Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas](#).

## METHODOLOGY

The Explosive Weapons Monitor is a civil society initiative that conducts research and analysis on harms from and practices of explosive weapon use in populated areas for the International Network on Explosive Weapons (INEW). It works with partner organisations to collect and publish data on incidents of explosive weapon use around the world as reported in open sources, including data from Action on Armed Violence (incidents of explosive weapon use and casualties, including deaths and injuries), and Insecurity Insight (incidents of explosive weapon use affecting aid access, education, and healthcare).

### Action on Armed Violence

Action on Armed Violence (AOAV) has been recording data on incidents of explosive weapon use that cause casualties since October 2010. Data on casualties caused by the use of explosive weapons is gathered by Action on Armed Violence (AOAV) from English-language media reports and a specific selection of organisations that report on incidents of explosive weapon use in key conflict areas. Additional sources are included in an effort to identify incident-specific data of explosive weapon use in conflicts that are underreported in English-language media. These include incident reports from the Iraq Security and Humanitarian Monitor (ISHM) for Iraq, and the Syrian Observatory of Human Rights (SOHR) for Syria. Additionally, AOAV supplements its data with incident reports on airstrikes from Airwars.

AOAV does not attempt to comprehensively capture all incidents of explosive weapon use around the world but to serve as an indicator of the scale and pattern of deaths and injuries. As such, no claims are made that this data captures every incident or casualty of explosive weapon use. This methodology is subject to a number of limitations and biases, many relating to the nature of the source material on which it is dependent and the lack of a mechanism to follow up reports with in-depth investigation. It is recognised that there are different levels of reporting across regions and countries and under-reporting is likely in some contexts. In addition, only English-language media reports are used, which does not provide a comprehensive picture of explosive weapon use around the world. For more information on the methodology used to gather this data, please visit AOAV's [website](#).

## Insecurity Insight

Insecurity Insight has been documenting a wide range of violence affecting the aid sector since 2008. Datasets on violence against healthcare and education go back to 2016 and 2017, respectively. For the Explosive Weapons Monitor, Insecurity Insight contributes information on global incidents of explosive weapon use affecting aid access, education or healthcare services. Information is compiled from Arabic, Burmese, English, French and Spanish media reports. The following elements are recorded: the date and location of the reported incident, weapon type, reported user and target, detonation method and whether the incident affected aid, education or health by specifying whether health facilities, schools or project sites were damaged or destroyed and/or whether medical, teaching or aid staff were injured or killed.

Data also includes some incidents where the explosive weapon device did not detonate and when there were no civilian casualties, but when the presence of explosive weapons affected access to health, education or food aid, usually because areas are cordoned off and access to services are interrupted. This includes incidents where historical items such as unexploded ordnance were found, and which affected the provision of these services.

Reported incidents are neither complete nor a representative list of all incidents, and are subject to the limitations inherent in the data sources. In some countries, the media frequently reports a wide range of incidents, while in others, hardly any incidents are reported by media outlets. In some countries, there are active networks of organisations who report information, while in others, no such networks exist. In some areas, important and trusted interest groups have an active social media presence, while in other contexts social media is deliberately used to promote false information. The content of other data collection processes that is made available via databases is also influenced by the nature of public discourse and the networks the data collector maintains. In some cases, incidents can overlap and impact more than one sector (for example, both 'aid access' and 'education'). This occurs when the health or education service is delivered by a humanitarian or development aid agency. Most incidents have not been independently verified and have not undergone verification by Insecurity Insight.

# ANNEXES

## ANNEX 1 – Action on Armed Violence Data

### Civilian and armed-actor casualties reportedly caused by explosive weapon use

*Table 1.1 – Numbers of civilian casualties reportedly caused by explosive weapon use recorded by AOA in 2021 and 2022 in the 71 countries and territories in which civilian casualties occurred*

| Country                          | Number of civilian casualties recorded by AOA in 2021 | Number of civilian casualties recorded by AOA in 2022 | Total civilian casualties recorded by AOA in 2021 and 2022 |
|----------------------------------|---|---|--|
| Afghanistan                      | 3051  | 1314  | <b>4365</b>  |
| Algeria                          | 8   | 0   | <b>8</b>   |
| Armenia                          | 1   | 3   | <b>4</b>   |
| Australia                        | 0   | 1   | <b>1</b>   |
| Azerbaijan                       | 33  | 18  | <b>51</b>  |
| Bangladesh                       | 11  | 33  | <b>44</b>  |
| Benin                            | 0   | 7   | <b>7</b>   |
| Brazil                           | 0   | 3   | <b>3</b>   |
| Burkina Faso                     | 8   | 173   | <b>181</b>   |
| Burundi                          | 82  | 0   | <b>82</b>  |
| Cameroon                         | 37  | 20  | <b>57</b>  |
| Canada                           | 0   | 1   | <b>1</b>   |
| Central African Republic         | 3   | 13  | <b>16</b>  |
| China                            | 9   | 0   | <b>9</b>   |
| Colombia                         | 79  | 51  | <b>130</b>   |
| Congo                            | 0   | 9   | <b>9</b>   |
| Cyprus                           | 0   | 1   | <b>1</b>   |
| Democratic Republic of the Congo | 25  | 26  | <b>51</b>  |
| Ecuador                          | 197   | 22  | <b>219</b>   |
| Egypt                            | 3   | 8   | <b>11</b>  |
| Ethiopia                         | 531   | 1138  | <b>1669</b>  |
| Georgia                          | 0   | 3   | <b>3</b>   |
| Germany                          | 4   | 0   | <b>4</b>   |
| Honduras                         | 2   | 0   | <b>2</b>   |



| Country                          | Number of civilian casualties recorded by AOVAV in 2021 | Number of civilian casualties recorded by AOVAV in 2022 | Total civilian casualties recorded by AOVAV in 2021 and 2022 |
|----------------------------------|---|---|--|
| India                            | 223   | 266   | <b>489</b>   |
| Indonesia                        | 20  | 1   | <b>21</b>  |
| Iran                             | 13  | 14  | <b>27</b>  |
| Iraq                             | 620   | 885   | <b>1505</b>  |
| Israel                           | 102   | 32  | <b>134</b>   |
| Kenya                            | 28  | 34  | <b>62</b>  |
| Kuwait                           | 0   | 1   | <b>1</b>   |
| Kyrgyzstan                       | 25  | 112   | <b>137</b>   |
| Libya                            | 60  | 42  | <b>102</b>   |
| Malawi                           | 0   | 5   | <b>5</b>   |
| Malaysia                         | 0   | 1   | <b>1</b>   |
| Maldives                         | 5   | 0   | <b>5</b>   |
| Mali                             | 36  | 98  | <b>134</b>   |
| Mexico                           | 6   | 11  | <b>17</b>  |
| Myanmar                          | 353   | 980   | <b>1333</b>  |
| Nepal                            | 8   | 7   | <b>15</b>  |
| Netherlands                      | 0   | 3   | <b>3</b>   |
| Niger                            | 10  | 31  | <b>41</b>  |
| Nigeria                          | 160   | 300   | <b>460</b>   |
| Occupied Palestinian Territories | 1478  | 169   | <b>1647</b>  |
| Oman                             | 1   | 0   | <b>1</b>   |
| Pakistan                         | 445   | 721   | <b>1166</b>  |
| Papua New Guinea                 | 7   | 0   | <b>7</b>   |
| Philippines                      | 50  | 49  | <b>99</b>  |
| Poland                           | 0   | 2   | <b>2</b>   |
| Russia                           | 15  | 78  | <b>93</b>  |
| Saudi Arabia                     | 20  | 16  | <b>36</b>  |
| Somalia                          | 537   | 1224  | <b>1761</b>  |
| South Africa                     | 0   | 2   | <b>2</b>   |
| South Korea                      | 0   | 1   | <b>1</b>   |

| Country              | Number of civilian casualties recorded by AOV in 2021 | Number of civilian casualties recorded by AOV in 2022 | Total civilian casualties recorded by AOV in 2021 and 2022 |
|----------------------|---|---|--|
| South Sudan          | 4   | 52  | <b>56</b>  |
| Spain                | 0   | 1   | <b>1</b>   |
| Sudan                | 32  | 30  | <b>62</b>  |
| Sweden               | 20  | 0   | <b>20</b>  |
| Syria                | 2016  | 1304  | <b>3320</b>  |
| Tajikistan           | 0   | 67  | <b>67</b>  |
| Thailand             | 8   | 61  | <b>69</b>  |
| Togo                 | 0   | 9   | <b>9</b>   |
| Tunisia              | 10  | 0   | <b>10</b>  |
| Turkey               | 0   | 107   | <b>107</b>   |
| Uganda               | 47  | 0   | <b>47</b>  |
| Ukraine              | 28  | 10351   | <b>10379</b>   |
| United Arab Emirates | 0   | 3   | <b>3</b>   |
| United Kingdom       | 1   | 0   | <b>1</b>   |
| United States        | 1   | 7   | <b>8</b>   |
| Western Sahara       | 3   | 0   | <b>3</b>   |
| Yemen                | 867   | 872   | <b>1739</b>  |

**Table 1.2 – Numbers of incidents in which casualties (civilian and armed-actor) reportedly occurred from explosive weapon use recorded by AOVAV in 2021 and 2022 in the 71 countries and territories in which civilian casualties occurred**

| Country                          | Number of incidents recorded by AOVAV in 2021 | Number of incidents recorded by AOVAV in 2022 | Total number of incidents recorded by AOVAV in 2021 and 2022 |
|----------------------------------|---|---|--|
| Afghanistan                      | 458   | 90  | <b>548</b>   |
| Algeria                          | 1   | 0   | <b>1</b>   |
| Armenia                          | 4   | 5   | <b>9</b>   |
| Australia                        | 0   | 2   | <b>2</b>   |
| Azerbaijan                       | 29  | 17  | <b>46</b>  |
| Bangladesh                       | 3   | 7   | <b>10</b>  |
| Benin                            | 0   | 4   | <b>4</b>   |
| Brazil                           | 0   | 2   | <b>2</b>   |
| Burkina Faso                     | 7   | 15  | <b>22</b>  |
| Burundi                          | 4   | 0   | <b>4</b>   |
| Cameroon                         | 6   | 7   | <b>13</b>  |
| Canada                           | 0   | 1   | <b>1</b>   |
| Central African Republic         | 4   | 3   | <b>7</b>   |
| China                            | 1   | 0   | <b>1</b>   |
| Colombia                         | 12  | 8   | <b>20</b>  |
| Congo                            | 0   | 1   | <b>1</b>   |
| Cyprus                           | 0   | 1   | <b>1</b>   |
| Democratic Republic of the Congo | 3   | 8   | <b>11</b>  |
| Ecuador                          | 1   | 2   | <b>3</b>   |
| Egypt                            | 3   | 5   | <b>8</b>   |
| Ethiopia                         | 15  | 33  | <b>48</b>  |
| Georgia                          | 0   | 1   | <b>1</b>   |
| Germany                          | 2   | 0   | <b>2</b>   |
| Honduras                         | 1   | 0   | <b>1</b>   |
| India                            | 123   | 113   | <b>236</b>   |
| Indonesia                        | 1   | 1   | <b>2</b>   |
| Iran                             | 8   | 12  | <b>20</b>  |
| Iraq                             | 268   | 253   | <b>521</b>   |

| Country                          | Number of incidents recorded by AOVAV in 2021 | Number of incidents recorded by AOVAV in 2022 | Total number of incidents recorded by AOVAV in 2021 and 2022 |
|----------------------------------|---|---|--|
| Israel                           | 12  | 8   | 20   |
| Kenya                            | 11  | 11  | 22   |
| Kuwait                           | 0   | 1   | 1  |
| Kyrgyzstan                       | 1   | 2   | 3  |
| Libya                            | 8   | 12  | 20   |
| Malawi                           | 0   | 1   | 1  |
| Malaysia                         | 0   | 1   | 1  |
| Maldives                         | 1   | 0   | 1  |
| Mali                             | 20  | 25  | 45   |
| Mexico                           | 2   | 6   | 8  |
| Myanmar                          | 104   | 550   | 654  |
| Nepal                            | 1   | 2   | 3  |
| Netherlands                      | 0   | 2   | 2  |
| Niger                            | 4   | 8   | 12   |
| Nigeria                          | 23  | 66  | 89   |
| Occupied Palestinian Territories | 142   | 34  | 176  |
| Oman                             | 1   | 0   | 1  |
| Pakistan                         | 100   | 126   | 226  |
| Papua New Guinea                 | 1   | 0   | 1  |
| Philippines                      | 23  | 19  | 42   |
| Poland                           | 0   | 1   | 1  |
| Russia                           | 2   | 26  | 28   |
| Saudi Arabia                     | 6   | 4   | 10   |
| Somalia                          | 89  | 95  | 184  |
| South Africa                     | 0   | 1   | 1  |
| South Korea                      | 0   | 1   | 1  |
| South Sudan                      | 1   | 4   | 5  |
| Spain                            | 0   | 1   | 1  |
| Sudan                            | 2   | 3   | 5  |
| Sweden                           | 1   | 0   | 1  |
| Syria                            | 709   | 652   | 1361   |

| Country              | Number of incidents recorded by AOV in 2021 | Number of incidents recorded by AOV in 2022 | Total number of incidents recorded by AOV in 2021 and 2022 |
|----------------------|---|---|--|
| Tajikistan           | 0   | 9   | 9  |
| Thailand             | 18  | 30  | 48   |
| Togo                 | 0   | 1   | 1  |
| Tunisia              | 7   | 0   | 7  |
| Turkey               | 0   | 10  | 10   |
| Uganda               | 4   | 0   | 4  |
| Ukraine              | 110   | 1854  | 1964   |
| United Arab Emirates | 0   | 1   | 1  |
| United Kingdom       | 1   | 0   | 1  |
| United States        | 1   | 6   | 7  |
| Western Sahara       | 1   | 0   | 1  |
| Yemen                | 133   | 157   | 290  |

**Table 1.3 – Global civilian and armed-actor casualties reportedly caused by explosive weapon use recorded by AOV by month in 2021**

| Month (2021) | Number of armed-actors casualties recorded by AOV | Number of civilians casualties recorded by AOV |
|--------------|---|--|
| January      | 716   | 852  |
| February     | 621   | 564  |
| March        | 376   | 780  |
| April        | 570   | 770  |
| May          | 501   | 2570   |
| June         | 601   | 1081   |
| July         | 563   | 886  |
| August       | 1624  | 942  |
| September    | 481   | 818  |
| October      | 856   | 875  |
| November     | 583   | 435  |
| December     | 887   | 770  |
| <b>TOTAL</b> | <b>8,379</b>                                      | <b>11,343</b>                                  |

*Table 1.4 – Global civilian and armed-actor casualties reportedly caused by explosive weapon use recorded by AOV by month in 2022*

| Month (2022) | Total armed-actors casualties recorded by AOV | Total civilians casualties recorded by AOV |
|--------------|---|--|
| January      | 888   | 1230                                       |
| February     | 721   | 783  |
| March        | 779   | 2374                                       |
| April        | 436   | 1722                                       |
| May          | 518   | 1588                                       |
| June         | 683   | 1616                                       |
| July         | 554   | 1799                                       |
| August       | 1129  | 2067                                       |
| September    | 660   | 2221                                       |
| October      | 1167  | 2571                                       |
| November     | 1721  | 1459                                       |
| December     | 1224  | 1363                                       |
| <b>TOTAL</b> | <b>10,480</b>                                 | <b>20,793</b>                              |

## ANNEX 2 – Insecurity Insight Data

### Incidents of explosive weapon use affecting healthcare, education and aid access

*Table 2.1 – Global numbers of incidents of explosive weapon use affecting aid access, education and healthcare recorded by Insecurity Insight in 2021 by month*

| Month (2021) | Number of aid access incidents recorded by Insecurity Insight | Number of education incidents recorded by Insecurity Insight | Number of healthcare incidents recorded by Insecurity Insight |
|--------------|---|--|---|
| January      | 2   | 1  | 4   |
| February     | 5   | 1  | 4   |
| March        | 11  | 11   | 12  |
| April        | 4   | 7  | 5   |
| May          | 53  | 54   | 68  |
| June         | 6   | 34   | 11  |
| July         | 2   | 1  | 5   |
| August       | 6   | 5  | 17  |
| September    | 8   | 1  | 8   |
| October      | 5   | 8  | 7   |
| November     | 4   | 5  | 7   |
| December     | 5   | 5  | 17  |
| <b>TOTAL</b> | <b>111</b>  | <b>133</b>   | <b>165</b>  |



**Table 2.2 – Global numbers of incidents of explosive weapon use affecting aid access, education and healthcare recorded by Insecurity Insight in 2022 by month**

| Month (2021) | Number of aid access incidents recorded by Insecurity Insight | Number of education incidents recorded by Insecurity Insight | Number of healthcare incidents recorded by Insecurity Insight |
|--------------|---|--|---|
| January      | 10  | 10   | 26  |
| February     | 9   | 8  | 30  |
| March        | 9   | 30   | 192   |
| April        | 4   | 5  | 52  |
| May          | 5   | 16   | 32  |
| June         | 6   | 21   | 30  |
| July         | 5   | 7  | 40  |
| August       | 3   | 7  | 26  |
| September    | 7   | 29   | 53  |
| October      | 6   | 13   | 28  |
| November     | 11  | 10   | 46  |
| December     | 9   | 12   | 48  |
| <b>TOTAL</b> | <b>84</b>   | <b>168</b>   | <b>603</b>  |

**Table 2.3 – Numbers of incidents of explosive weapon use affecting healthcare recorded by Insecurity Insight in 2021 and 2022 by country or territory**

| Country                          | Number of healthcare incidents in 2021 | Number of healthcare incidents in 2022 | Total number of healthcare incidents in 2021 and 2022 |
|----------------------------------|--|--|---|
| Afghanistan                      | 20                                     | 10                                     | <b>30</b>   |
| Armenia                          | 0                                      | 2                                      | <b>2</b>  |
| Brazil                           | 0                                      | 1                                      | <b>1</b>  |
| Burkina Faso                     | 1                                      | 1                                      | <b>2</b>  |
| Colombia                         | 0                                      | 1                                      | <b>1</b>  |
| Ethiopia                         | 7                                      | 3                                      | <b>10</b>   |
| Iraq                             | 2                                      | 1                                      | <b>3</b>  |
| Kyrgyzstan                       | 0                                      | 1                                      | <b>1</b>  |
| Libya                            | 0                                      | 1                                      | <b>1</b>  |
| Mali                             | 0                                      | 4                                      | <b>4</b>  |
| Mexico                           | 0                                      | 1                                      | <b>1</b>  |
| Myanmar                          | 38                                     | 52                                     | <b>90</b>   |
| Netherlands                      | 1                                      | 0                                      | <b>1</b>  |
| Occupied Palestinian Territories | 60                                     | 0                                      | <b>60</b>   |
| Pakistan                         | 0                                      | 2                                      | <b>2</b>  |
| Russia                           | 0                                      | 1                                      | <b>1</b>  |
| Somalia                          | 3                                      | 4                                      | <b>7</b>  |
| Sudan                            | 1                                      | 0                                      | <b>1</b>  |
| Syria                            | 17                                     | 12                                     | <b>29</b>   |
| Ukraine                          | 2                                      | 492                                    | <b>494</b>  |
| United Kingdom                   | 1                                      | 0                                      | <b>1</b>  |
| Yemen                            | 12                                     | 14                                     | <b>26</b>   |

**Table 2.4 – Numbers of incidents of explosive weapon use affecting education recorded by Insecurity Insight in 2021 and 2022 by country or territory**

| Country                          | Number of education incidents in 2021 | Number of education incidents in 2022 | Total number of education incidents in 2021 and 2022 |
|----------------------------------|---------------------------------------|---------------------------------------|--|
| Afghanistan                      | 10                                    | 4                                     | 14   |
| Armenia                          | 0                                     | 1                                     | 1  |
| Azerbaijan                       | 1                                     | 0                                     | 1  |
| Bangladesh                       | 1                                     | 0                                     | 1  |
| Brazil                           | 1                                     | 0                                     | 1  |
| Cameroon                         | 2                                     | 0                                     | 2  |
| Democratic Republic of the Congo | 2                                     | 2                                     | 4  |
| Ethiopia                         | 1                                     | 5                                     | 6  |
| Iraq                             | 0                                     | 3                                     | 3  |
| Israel                           | 1                                     | 0                                     | 1  |
| Myanmar                          | 80                                    | 11                                    | 91   |
| Nigeria                          | 3                                     | 1                                     | 4  |
| Occupied Palestinian Territories | 3                                     | 0                                     | 3  |
| Pakistan                         | 1                                     | 1                                     | 2  |
| Philippines                      | 1                                     | 0                                     | 1  |
| Russia                           | 1                                     | 0                                     | 1  |
| Saudi Arabia                     | 2                                     | 0                                     | 2  |
| Somalia                          | 0                                     | 3                                     | 3  |
| Syria                            | 11                                    | 7                                     | 18   |
| Thailand                         | 0                                     | 1                                     | 1  |
| Turkey                           | 0                                     | 1                                     | 1  |
| Ukraine                          | 0                                     | 127                                   | 127  |
| Yemen                            | 12                                    | 1                                     | 13   |

**Table 2.5 – Numbers of incidents of explosive weapon use affecting aid access recorded by Insecurity Insight in 2021 and 2022 by country or territory**

| Country                          | Number of aid access incidents in 2021 | Number of aid access incidents in 2022 | Total number of aid access incidents in 2021 and 2022 |
|----------------------------------|--|--|---|
| Afghanistan                      | 10                                     | 4                                      | 14  |
| Angola                           | 0                                      | 1                                      | 1   |
| Bangladesh                       | 0                                      | 1                                      | 1   |
| Bolivia                          | 1                                      | 0                                      | 1   |
| Burundi                          | 1                                      | 0                                      | 1   |
| Cambodia                         | 0                                      | 1                                      | 1   |
| Central African Republic         | 3                                      | 1                                      | 4   |
| Colombia                         | 0                                      | 3                                      | 3   |
| Ethiopia                         | 2                                      | 6                                      | 8   |
| Iraq                             | 2                                      | 3                                      | 5   |
| Lebanon                          | 1                                      | 0                                      | 1   |
| Malawi                           | 0                                      | 1                                      | 1   |
| Mali                             | 1                                      | 5                                      | 6   |
| Myanmar                          | 1                                      | 8                                      | 9   |
| Nigeria                          | 0                                      | 2                                      | 2   |
| Occupied Palestinian Territories | 54                                     | 0                                      | 54  |
| Somalia                          | 2                                      | 4                                      | 6   |
| Sudan                            | 1                                      | 1                                      | 2   |
| Syria                            | 14                                     | 17                                     | 31  |
| Uganda                           | 2                                      | 0                                      | 2   |
| Ukraine                          | 1                                      | 19                                     | 20  |
| Yemen                            | 15                                     | 7                                      | 22  |



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