EXPLOSIVE TRUTHS
Monitoring explosive violence in 2016
Introduction

The 2016 report presents the findings of the sixth consecutive year of Action on Armed Violence’s Explosive Violence Monitoring Project (EVMP). The EVMP tracks the impact of explosive weapon use world-wide as reported in the English-language media.

In 2016, AOAV recorded 45,624 deaths and injuries as a result of the use of explosive weapons around the world. And, as with previous years, civilians continue to bear the burden of explosive violence. Of those harmed, 70% were reported to be civilians – 32,088.

Whilst the total number of those impacted by explosive weapons continues to rise, for the first year since AOAV began the recording, there was a decrease in the number of civilian deaths and injuries compared to the previous year. Despite this, the number of civilian deaths and injuries recorded in 2016 remained 48% higher than that recorded in 2011, the year our EVMP began.

Iraq and Syria remained amongst the worst five impacted countries for the fifth year in a row. These two countries have consistently seen the highest numbers of civilian casualties from explosive violence. The civilian impact of explosive violence in these two countries has had a significant impact upon what has been termed the ‘migrant crisis’ – but should be more accurately called the ‘refugee crisis’ – in Europe. AOAV’s report ‘The Refugee Explosion’ has looked into this reality in more detail.

Yemen, too, continues to suffer painfully high levels of civilian harm from explosive weapons. 2016 saw increased calls for cooperation in Yemen, where almost 19 million need humanitarian assistance. Without a doubt the Saudi-led coalition’s bombing campaigns on Yemen have had a major impact on this crisis – a causal factor that those nations arming Saudi Arabia (Britain included) need to acknowledge.

When explosive weapons are used in populated areas, they massively elevate the threat to civilians. In 2016, 92% of those reported harmed by explosive weapons in populated areas were civilians. Last year AOAV recorded an average of 32 civilian deaths from explosive weapons per day.

Such findings reflect a consistent pattern of harm that has endured throughout the years AOAV has been tracking explosive violence. AOAV’s report, ‘Patterns of Harm’, which examined the trends seen across five years of explosive violence casualty recording, found that when explosive weapons had been used in populated areas on average 91% of the deaths and injuries caused were civilians. 2

Even when explosive weapons were targeted at a military objective in 2016, their wide-area effect often meant that bystanders were all too often caught by the blast or hit by projected fragments – something that AOAV catalogued in our separate report in 2015: ‘Wide Area Effects’ (found on our website).

This data only shows the immediate impact of explosive violence but it should be remembered that the impacts of such weapons stretch far beyond these, including the destruction of homes, hidden psychological suffering, economic deprivation and reverberating impacts that are often poorly understood or addressed.

Explosive weapons impact far more people than can possibly be hinted at by our casualty figures. There are those whose lives are uprooted by the blast of an earthbound shell, a silent multitude whose numbers run into the millions. Countless flee across international borders, whilst even greater numbers are displaced internally.

AOAV’s data is not an attempt to capture every casualty of every incident around the world. No claims are made that this sample of data, taken from English-language media reporting, can represent the total impact of explosive weapons on civilians in 2016.

Since the monitor began in 2010, AOAV has recorded the appalling suffering caused across the globe by both manufactured and improvised weapons. This continued harm that has now manifested in the refugee crisis that impacts Europe and far beyond shows the urgent need for action to combat and reduce the harm these weapons continue to cause.

States and other users must politically commit to stop using explosive weapons with wide area effects in populated areas. The harm recorded in 2016 and reflected in this report illustrates the stark urgency needed to reach this commitment.
Key findings

OVERVIEW

**AOAV recorded 45,624 deaths and injuries by explosive weapons in 2,300 incidents in 2016. Of these, 32,088 were civilians – 70%.**

When explosive weapons were used in populated areas, 92% of those killed and injured were civilians. This compares to 25% in other areas.

Civilian deaths and injuries in populated areas, represented 89% of all reported civilian deaths and injuries.

AOAV recorded the highest number of civilian deaths since it began its monitor in 2011 – a 7% increase compared to the previous year, and a 92% increase compared to 2011.

An 8% increase in civilian harm from air-launched attacks compared to 2015 – with a reported 9,934 civilians worldwide killed and injured, accounting for 31% of all civilian deaths and injuries.

**Syria, Iraq, Yemen, Afghanistan, and Turkey** saw the highest number of civilian deaths and injuries in 2016.

A further rise in death and injuries in Syria from explosive violence; over 15,000 deaths and injuries in 2016, 51% more than in 2015.

**Turkey** saw a 113% rise in civilian deaths and injuries in 2016 from explosive violence, compared to 2015. **Somalia** saw an increase of 83% of the same.

**Six countries and territories** saw over 1,000 civilian deaths and injuries in 2016.

Incidents were recorded in 70 countries and territories around the world – seven more countries than in 2015.

AOAV recorded 256 suicide bombings in 2016, causing 12,673 deaths and injuries – of which 76% were civilians.

On average 38 civilians were killed and injured by each suicide bombing – an increase of two since 2015.

Civilian deaths and injuries from explosive violence saw a decrease of 2% in 2016 from 2015 – this is owing to the drop in numbers of injuries reported. This is the first year since AOAV began its monitor in which recorded civilian casualties of explosive violence have decreased but could reflect the fact that, with the rising numbers of people killed, less wounded have been reported.
EXPLOSIVE VIOLENCE IN 2016

**TOTAL REPORTED DEATHS & INJURIES:** 45,624
**TOTAL CIVILIAN DEATHS & INJURIES:** 32,088

- **70% CIVILIAN CASUALTIES**
- **-2% DECREASE IN TOTAL CIVILIAN DEATHS & INJURIES**
- **32 AVERAGE NUMBER OF CIVILIAN DEATHS PER DAY**

**TARGETED AREAS**

**POPULATED AREAS**
- 92% CIVILIAN DEATHS & INJURIES IN POPULATED AREAS
- 1,241 ATTACKS IN POPULATED AREAS

**NON-POPULATED AREAS**
- 25% CIVILIAN DEATHS & INJURIES IN NON-POPULATED AREAS
- 1,059 ATTACKS IN NON-POPULATED AREAS

**DEADLY WEAPONS**

**AVERAGE CIVILIAN DEATHS & INJURIES PER INCIDENT BY EXPLOSIVE WEAPON TYPE**

- **CAR BOMBS:** 27
- **AIR-DROPPED BOMBS:** 27
- **ROCKET ARTILLERY:** 13

**CIVILIAN DEATHS & INJURIES BY WEAPON LAUNCH METHOD**

- **45% IEDs (IMPROVISED EXPLOSIVE DEVICES)**
- **22% GROUND-LAUNCHED**
- **31% AIR-LAUNCHED**
- **2% COMBINATIONS OR UNCLEAR**

**DATA:** AOAV, BASED ON ENGLISH-LANGUAGE MEDIA REPORTS
Key terms

CIVILIAN/ARMED ACTOR OR SECURITY PERSONNEL:
Casualties were recorded as ‘armed actors’ only if they were reported as being part of the state military, members of non-state armed groups, or security personnel who AOAV considered likely to be armed. This includes police, security guards, intelligence officers, and paramilitary forces. All casualties not reported as belonging to these armed groups were recorded as civilians.

EXPLOSIVE VIOLENCE INCIDENT:
Refers to the use of explosive weapons that caused at least one casualty and took place in a 24-hour period.

POPULATED AREA:
Refers to areas likely to contain concentrations of civilians.

EXPLOSIVE WEAPONS TYPES:
Weapons were classified by AOAV based on consistently-used language in media reporting. The categories used are deliberately broad in order to capture a range of different weapon types in light of considerable variance in the level of detail provided by news sources.

- **Multiple types**: Used to refer to incidents where a combination of different explosive weapon types were used and it was not possible to attribute casualties to each munition. These can involve any combination of air, ground-launched, or improvised explosive devices. The category most commonly includes attacks where ground-launched weapons such as rockets and artillery shells were fired together.

- **Mine**: Refers to incidents where the explosive weapon was described as a mine or landmine. These include both antipersonnel and antivehicle mines.

Air-launched:

- **Air strike**: The broadest recording category in this grouping. It refers to incidents where explosive weapons were reported as delivered by drones, planes, helicopters, or other aircraft, and the type of munition fired was not specified in the news source. Where the munition used is specified in news sources it is recorded as one of the following more specific weapon categories below.

- **Air-dropped bomb**: References to areas being ‘bombed’ by military aircraft were recorded as air-dropped bomb incidents. This can include makeshift manually-deployed bombs, as well as cluster bombs.

- **Missile**: Recorded where explosive missiles delivered by air were reported in a news source, most commonly in drone attacks.

- **Rocket**: Typically used to refer to unguided missiles, rockets were recorded wherever they are specified in a news source.

Ground-launched:

- **Shelling (unspecified)**: The broadest recording category in this grouping. It refers to reports of the use of explosive shells that do not specify how they were delivered (e.g. mortars, rockets, artillery, or tanks).

- **Artillery shell**: An explosive projectile fired from a gun, cannon, howitzer or recoilless gun/rifle. This refers to medium and large-calibre munitions primarily designed to fire indirectly. Artillery shells were recorded wherever specified in news sources.

- **Missile**: Recorded where reported in news sources, or where a ground-launched missile type was reported in the incident (e.g. SCUD, MANPAD). Ground-launched missiles can range from shoulder-mounted to ballistic missiles.

- **Rocket**: Recorded where reported in news sources, or where a known ground-launched rocket type was reported in the incident (e.g. Grad, Katyusha).

- **Mortar**: Recorded where reports specified that a mortar bomb was the munition used.

- **Tank shell**: Explosive shells fired by tanks.

- **Grenade**: Recorded where reports indicate grenades deployed an explosive blast and/or fragmentation. Grenades specified as ‘homemade’ were recorded as IEDs.

- **RPG**: Rocket-propelled grenades. Grenades which are rifle-launched were recorded as grenades rather than RPGs.

Improvised explosive devices (IEDs):

- **Non-specific IED**: The broadest recording category in this grouping. It refers to all IEDs which could not be categorised as either ‘roadside bombs’ or ‘car bombs.’

- **Car bomb**: Incidents where the IED was clearly described as a ‘car bomb,’ or other vehicles like trucks were used. IEDs which were reported as being attached to vehicles, such as a sticky bomb attached to a politician’s car or a remote control IED attached to a bicycle, were recorded as ‘Non-specific IEDs.’

- **Roadside bomb**: IEDs which were either specifically reported as ‘roadside bombs’ or where an IED was reported to be used alongside a road and no further information was provided.
AOAV recorded 45,624 people killed or injured by explosive weapons in 2,300 incidents in 2016. Of the casualties recorded in 2016, 70% were civilians (32,088 civilians killed and injured). This meant there was a 2% decrease in civilian casualties from explosive violence in 2016 (down from 33,307 in 2015).

In 2016, for the first time, AOAV recorded a decrease in civilians killed and injured by explosive violence. In that year, AOAV saw 32,088 civilian deaths and injuries from explosive weapons reported around the world. This is a decrease of 2% from 2015.

Despite this AOAV recorded the highest number of civilian deaths seen across the six years. Whilst this is usually accompanied by a rise in injuries, this was not the case – reflecting the nature of the war reporting, where injuries often fail to make the headlines.

The decrease overall may also be accounted for by the decrease in IED attacks targeting civilians. Civilian deaths and injuries from IEDs fell by 12% in 2016 compared to the previous year. At the same time, armed actor and security personnel deaths and injuries from IEDs rose by 75%.

Over the last six years, AOAV has recorded 233,949 deaths and injuries, of which 76% (177,653) were civilians.

As in previous years, the majority of casualties from explosive weapon use were civilians. Civilians accounted for 70% of all recorded deaths and injuries in 2016.

Following a well-established pattern of harm, civilians were seen to be most at risk when explosive weapons were used in populated areas. In those attacks, 90% of those killed or injured were reported as civilians. This compares to 25% of victims being reported as civilians when explosive weapons were used in lesser populated areas.

In 2016, 54% of all recorded explosive incidents took place in populated areas.

As shown in Figure 1, the reported civilian casualties of explosive weapon use consistently and substantially outnumbered armed actors in 2016.11

Worst incidents of 2016

<table>
<thead>
<tr>
<th>Incident</th>
<th>Location</th>
<th>Civilians killed and injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air strike hits community hall in Sana’a where wake is being held</td>
<td>Sana’a, Yemen</td>
<td>735</td>
</tr>
<tr>
<td>Car bomb attack on commercial area in Baghdad</td>
<td>Baghdad, Iraq</td>
<td>524</td>
</tr>
<tr>
<td>Suicide bomb attack targets Christians at a park</td>
<td>Lahore, Pakistan</td>
<td>413</td>
</tr>
<tr>
<td>Suicide car bomb attack at rush hour near National Security Directorate</td>
<td>Kabul, Afghanistan</td>
<td>393</td>
</tr>
<tr>
<td>Air strikes target rebel-held eastern Aleppo destroying residential areas</td>
<td>Aleppo, Syria</td>
<td>385</td>
</tr>
<tr>
<td>Suicide bomber detonates explosives at peaceful demonstration</td>
<td>Kabul, Afghanistan</td>
<td>311</td>
</tr>
<tr>
<td>Dawn airstrikes on ISIS-held villages using barrel bombs</td>
<td>Oqsyarabat, Syria</td>
<td>303</td>
</tr>
<tr>
<td>Air strikes hit a busy market in ISIS-held area</td>
<td>Qaim, Iraq</td>
<td>300</td>
</tr>
<tr>
<td>Multiple suicide bombers detonate across Istanbul airport</td>
<td>Istanbul, Turkey</td>
<td>280</td>
</tr>
<tr>
<td>A car bomb and suicide attackers detonate near Shia shrine</td>
<td>Sayyidah Zaynab</td>
<td>261</td>
</tr>
</tbody>
</table>

On average, AOAV recorded 2,674 civilian casualties reported every month, compared to an average of 1,128 armed actors. This means that, every day, there were on average 88 civilians reported killed or injured by explosive weapons (compared to 37 armed actors).

32 civilians were reported killed on average every day from explosive weapon use in 2016.

A GLOBAL PROBLEM

AOAV recorded at least one death or injury from an explosive weapon attack in 70 different countries and territories (see map on page 6),7 seven more than in 2015.13

Casualties from explosive weapons were reported in 20 countries and territories in 2016 that had not been impacted in 2015.15

As shown in Figure 1 (overleaf) shows, Syria was the country with the most civilian deaths and injuries in 2016, followed by Iraq, Yemen, Afghanistan, Turkey.

Yemen

Yemen saw a decrease of 57% in recorded civilian casualties from explosive violence in Yemen in 2016, compared to 2015. This is because, despite numerous violations, the ceasefire between April and August led to a significant decrease in violence. The breakdown during peace talks in August led to a resurgence of violence, though such violence did not reach the levels seen in 2015.

Despite the decrease in harm, Yemen remained amongst the top three countries worst impacted by explosive violence in the world. 82% of the civilian deaths and injuries in Yemen were caused by the Saudi-led coalition, a situation exacerbated by the continued sales of weapons to the Saudis.

The conflict has caused a wide-spread humanitarian crisis in Yemen, where all parties to the conflict are arbitrarily denying sustained humanitarian access,
THE HARDEST-HIT PROVINCES IN SYRIA IN 2016

Despite two-thirds of the population – 18.8 million people – in need of aid, 26 Nigeria in 2015, Nigeria was in the top five worst impacted countries worldwide from explosive weapons, with 2,920 civilian deaths and injuries.

Last year, AOAV recorded an 83% decrease in civilian casualties from explosive violence in Nigeria. This is partly because Nigeria and its surrounding countries (Chad, Cameroon, Benin, and Niger), have formed the Multinational Joint Task Force to combat Boko Haram. This force has made concerted efforts to rid the region of Boko Haram, a group that has historically been responsible for the majority of explosive harm – often suicide attacks – in Nigeria and other countries around the Lake Chad region.

HOTSPOTS: 2016’s BIGGEST ESCALATIONS

Syria

Syria is entering its seventh year of civil war. The intensity of the explosive violence in conflict scenarios like Syria means that AOAV’s incident-based methodology is likely to be capturing just a fraction of the real harm unfolding there, particularly harm caused during the sieges of Aleppo during the end months of 2016.

In spite of this, AOAV’s records still show 13,313 civilian deaths and injuries as a result of explosive weapons use recorded in Syria in 2016. This constitutes a 52% increase from the previous year.

Over the last six years, AOAV has recorded 51,875 deaths and injuries from 2,160 incidents of explosive violence in Syria. 86% of the deaths and injuries have been reported by reliable media sources as being those of civilians.

Figure 2  Most affected countries and territories in 2016

MONTHLY CASUALTIES OF EXPLOSIVE VIOLENCE IN 2016

MONTHLY CIVILIAN CASUALTIES
MONTHLY ARMED ACTOR CASUALTIES

Position | Country/Territory | Civilian casualties | All casualties | Number of recorded incidents | Average civilian casualties per incident | Percentage of casualties who were civilians | Global ranking in 2016
--- | --- | --- | --- | --- | --- | --- | ---
1 | Syria | 13,313 | 15,640 | 553 | 24 | 85% | 1
2 | Iraq | 6,359 | 9,785 | 401 | 16 | 65% | 3
3 | Yemen | 2,713 | 4,095 | 151 | 18 | 60% | 2
4 | Afghanistan | 2,199 | 4,095 | 198 | 11 | 54% | 5
5 | Turkey | 1,825 | 2,675 | 110 | 17 | 68% | 8
6 | Pakistan | 1,498 | 2,136 | 158 | 9 | 70% | 6
7 | Somalia | 826 | 1,414 | 87 | 9 | 58% | 13
8 | Nigeria | 491 | 900 | 29 | 17 | 55% | 4
9 | Cameroon | 319 | 337 | 10 | 32 | 95% | 11
10 | Libya | 309 | 782 | 38 | 8 | 40% | 10
11 | Belgium | 261 | 264 | 2 | 131 | 99% | N/A
12 | Philippines | 261 | 358 | 48 | 5 | 73% | 17
13 | India | 234 | 458 | 124 | 2 | 51% | 16
14 | Thailand | 176 | 279 | 52 | 3 | 63% | 19
15 | Egypt | 158 | 705 | 65 | 2 | 22% | 9
The violence in Syria has been characterised by the destruction of civilian areas – with 73% of recorded incidents perpetrated in populated areas, responsible for 89% of civilian deaths and injuries.

Last year, when explosive violence was used in populated areas in Syria, an average of 97% of the deaths and injuries were civilians. There were at least 22 incidents of explosive violence that directly killed and injured targeting hospitals; 15 on schools, and at least 173 on residential areas.

Whilst the types of explosive violence are diverse, what is also notable is that the majority of this violence has been perpetrated by state actors. At least 56% of the civilian deaths and injuries were caused by explosive violence perpetrated by states. The states perpetrating most of this violence, Syria and Russia, have been regularly accused of targeting civilian areas.

Explosive violence in Syria has been found to be the most significant factor driving Syrians to seek refuge across international borders.27

Turkey
For the first year since AOAV began the Explosive Violence Monitor, Turkey was recorded in the worst five impacted countries by explosive violence. Since the breakdown of the two-year ceasefire between the PKK and the Turkish government in 2015, Turkey has experienced significant rises in the levels of explosive violence, and the resulting civilian harm. Explosive violence had been largely absent from Turkey in previous years of recording, minus the rare large-scale IED attack.

Between 2014 and 2015, Turkey saw a 7,682% rise in civilian casualties from explosive violence. In 2016 the increase continued, with civilian casualty levels more than doubling. Almost all civilian deaths and injuries have been caused by IEDs. In 2016, 94% of civilian casualties from explosive weapons in Turkey were caused by IEDs.

Whilst there were 110 explosive violence incidents in Turkey in 2016, just six caused 54% of the total civilian deaths and injuries. All six attacks were car bombs, suicide bombs or both. All took place in populated areas. The worst incident was a triple suicide bomb attack at Ataturk Airport, Istanbul, in June, leaving more than 40 dead and over 230 injured.28 Whilst no one claimed responsibility for the attack, Turkish officials claimed the attackers were working on behalf of ISIS. These IED attacks have also taken their toll on Turkish police and security forces, with 757 armed actors and security personnel killed and injured by IEDs in Turkey last year.

Somalia
Somalia saw civilian deaths and injuries from explosive violence increase by 83% in 2016, compared to the levels recorded in the previous year – 451 civilian deaths and injuries were recorded in 2015 and 826 were recorded last year. This increase should concern, though, the levels of harm fortunately failed to reach those recorded in 2011, the first year recorded by AOAV, when 3,326 civilian deaths and injuries from explosive violence were recorded. In 2011, AMISOM re-established control over Mogadishu and other important areas, inhibiting al-Shabaab’s political ascendancy in Somalia.

Last year, al Shabaab was responsible for at least 71% of the civilian deaths and injuries recorded from explosive violence. Of the explosive violence claimed by al Shabaab in Somalia, 74% of their attacks used IEDs.

Al Shabaab primarily operate in the south and central regions of Somalia. Last year, just over 50% of the group’s attacks took place in the Somali capital, Mogadishu. It is possible that many of al Shabaab’s attacks go unreported.

Whilst suicide attacks account for 25% of the total incidents recorded, such strikes have caused a disproportionate impact. 52% of the total civilian deaths and injuries from explosive violence in Somalia were from suicide bombers in 2016.

WHO IS BEHIND THE EXPLOSIVE VIOLENCE?
As in previous years, many of the explosive violence incidents recorded by AOAV in 2016 went unclaimed and could not be attributed to a specific actor. In 11% of incidents it was unclear from reporting whether a state or non-state actor was responsible. This is a far lower percentage than in 2015, when 40% of incidents were coded as unclear. The rise in state or non-state attribution is likely to be due to the increase of aerial campaigns and as the majority of incidents occurred in Syria and Iraq.

Figure 4 Civilian casualties by reported user

State Actors
Incidents which could unambiguously be attributed to a state rather than a non-state group caused 18,838 deaths and injuries in 2016, of whom 60% (11,313) were reported to be civilians. This means over a third of the 32,088 total civilians killed or injured in 2016 were by states.

The most prolific state users of explosive weapons are listed in Figure 5.

This list, however, may be deceiving. It is likely that far more incidents should be attributed to Syria and Russia, but in many of the state perpetrated incidents in Syria the perpetrator name was unknown, so it was unclear whether they were perpetrated by Syria or Russia.

Of the 170 global incidents where the state perpetrator was unknown, 124 were in Syria, and 119 of these were from air-launched explosives.

The number of reported civilian deaths and injuries from explosive violence caused by state actors represents a 9% rise from the previous year. This is probably due at least in part to a greater percentage of attacks being attributed to states and a smaller percentage being coded as unclear.

State forces were recorded as being responsible for 35% of civilian deaths and injuries. This is a slight rise from 2015, when they were responsible for 31% of all civilian deaths and injuries.
Twenty-six different state forces used explosive weapons in 2016.\(^2\) This is a slight decrease from in 2015, where twenty-nine states were recorded. However, many states operate under coalitions with many attacks recorded under the coalition name.

Three distinct state coalitions used explosive violence last year (AMISOM in Somalia, the Saudi-led coalition in Yemen and the US-led coalition against al-Qaeda and ISIS-linked elements in Iraq and Syria), and one incident attributed to the NATO taskforce in Afghanistan (previously NATO-ISAF, now known as Resolute Support).

Collectively, non-state actors caused 24,726 casualties in 2016, of whom 77% were civilians (18,999). This is a considerable rise from previous years.\(^3\) This means almost two thirds of all civilians harmed by explosive weapons are the victims of non-state actor violence.

The higher figure does not necessarily represent a greater proportion of violence being carried out by non-state actors directly. Compared to previous years, a much lower number of incidents were not attributed to either a state or non-state actor. It is likely that a large percentage of those incidents for which an attribution was not clear in previous years were in fact the work of non-state actors but were not recorded as such.

AOAV recorded 60 different named non-state actors using explosive weapons.\(^4\) The most prolific non-state actors in 2016 are listed in Figure 6. This year, ISIS was the largest non-state user of explosive weapons in the world, followed by Syrian rebel groups.

Due to AOAV’s methodology, groups which do not routinely claim responsibility for their attacks, or which operate in areas where attribution to a specific actor is difficult, may be responsible for more attacks than are recorded. 558 incidents committed by non-state actors were not claimed by any group. Of these incidents, 19% took place in Iraq, 14% in Pakistan, and 10% in Afghanistan. Many attacks also went unclaimed in Egypt, Thailand, India, Turkey and Somalia.

Non-State Actors
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Explosive weapons in populated areas

In 2016, 92% of casualties in populated areas were reported as civilians. This is compared to 25% in other areas.

On average 23 civilians were killed or injured in every incident of explosive weapon use in populated areas. In other areas the average number was three.

5,741 civilians were killed or injured in homes or in residential areas in 2016 – a rise of 14% from 2015.

In 2016, AOAV recorded 1,490 child deaths and injuries in 338 incidents.

As Figure 7 shows, in 2016 when explosive weapons were used in populated areas, 92% of the deaths and injuries were reported to be civilians. This compares to 25% in other areas.

These percentages are consistent with the pattern of harm previously recorded by AOAV. In every year of AOAV’s Explosive Weapons Monitoring Project, the use of explosive weapons in populated areas has proven particularly lethal to civilians. In 2011, 84% of deaths and injuries in populated areas were reported as civilians; in 2012, 2013, 2014, and 2015 the proportions were 91%, 93%, 92% and 92% respectively.

This is clearly a predictable pattern of harm. It is, therefore, preventable; and yet state and non-state actors alike repeatedly deployed explosive weapons in populated areas during 2016.

54% of the total incidents that AOAV recorded in 2016 were in areas reported to be populated (1,241 incidents). Civilian deaths and injuries in populated areas, represented 89% of all reported civilian deaths and injuries, demonstrating the disproportionate effect of explosives deployed in populated areas.

AOAV recorded an average of 23 civilian casualties per incident of explosive weapon use in populated areas, compared to just 3 in other areas.

Figure 7  Total casualties by populated area / non-populated area

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Casualties</th>
<th>Populated Areas</th>
<th>Non-Populated Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>28,493</td>
<td>23,113</td>
<td>5,380</td>
</tr>
<tr>
<td>2015</td>
<td>29,612</td>
<td>25,000</td>
<td>4,612</td>
</tr>
</tbody>
</table>

CIVILIANS KILLED & INJURED: 2015 v 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Civilian Deaths &amp; Injuries</th>
<th>Civilian Casualties in Populated Areas</th>
<th>Civilian Casualties in Non-Populated Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>32,088</td>
<td>28,493</td>
<td>3,595</td>
</tr>
<tr>
<td>2015</td>
<td>33,307</td>
<td>29,612</td>
<td>3,695</td>
</tr>
</tbody>
</table>

THE MOST DANGEROUS PLACES TO BE A CIVILIAN

2016

1. SYRIA 13,313 CIVILIAN DEATHS & INJURIES
2. IRAQ 6,359 CIVILIAN DEATHS & INJURIES
3. YEMEN 2,713 CIVILIAN DEATHS & INJURIES
4. AFGHANISTAN 2,193 CIVILIAN DEATHS & INJURIES
5. TURKEY 1,825 CIVILIAN DEATHS & INJURIES

2015

1. SYRIA 8,732 CIVILIAN DEATHS & INJURIES
2. IRAQ 6,286 CIVILIAN DEATHS & INJURIES
3. YEMEN 5,049 CIVILIAN DEATHS & INJURIES
4. NIGERIA 2,920 CIVILIAN DEATHS & INJURIES
5. AFGHANISTAN 2,029 CIVILIAN DEATHS & INJURIES

Reported as populated Not reported as populated
explosive weapons occurred in that beleaguered city.

ian deaths and injuries in residential areas of Syria from Aleppo was by far the most impacted by the use of ex-

plosive weapons on residential areas – 83% of all civil-

The highest number of civilians killed and injured was from incidents in residential areas or civilian houses. AOAV recorded 368 such incidents in 2016, a rise of 27% from the previous year.30

These incidents resulted in 5,741 civilian deaths and injuries – a rise of 14% from 2015.31

In 2015, the majority of incidents recorded in residential areas were high-casualty attacks in Syria and Yemen. 47% of all incidents recorded in residential areas took place in Syria last year (173 incidents).

Syria saw attacks on residential areas with multiple different kinds of weapons. In Syria, air-launched incidents accounted for 41% of the recorded civilian deaths and injuries in residential areas, with ground-launched explosives accounting for the remaining 58%.

Aleppo was by far the most impacted by the use of explosive weapons occurred in that beleaguered city.

MARKET BOMBINGS
As was the case in 2015, attacks on markets were, perhaps predictably, among the most dangerous for civilians in 2016.

Last year, AOAV recorded 78 incidents in markets, about 3% of all incidents recorded. This was a similar number to previous years. These incidents resulted in 2,733 civilian deaths and injuries – about 9% of all recorded deaths and injuries worldwide, an average of 35 per strike.

Whilst all areas that showed particularly high rates of civilian harm from explosive weapons also saw a relatively small number of armed actors killed or injured, attacks on markets are notable for the sheer numbers of civilians harmed.

AOAV only recorded 60 armed actors killed or injured as a result of market incidents, meaning that for every armed actor recorded as killed or injured there were around 46 civilians. At least 29 of the armed actor deaths recorded were suicide bombers carrying out attacks.

98% of those killed or injured in market incidents were civilians.

81% of all civilian deaths and injuries from market bombings were recorded in three countries: Iraq, Syria and Yemen.

The majority occurred in Iraq where 1,340 civilians were killed and injured in market bombings. In Syria, all incidents recorded in marketplaces were air-launched.

In Yemen, 454 civilians were killed and injured in just 7 incidents targeting markets. Whilst all the attacks had a high casualty rate, one in particular, a Saudi-led coalition airstrike on March 15th 2016, caused 166 civilian deaths and injuries at a market in Haja – at least 22 children were reported among those killed.32

In 2016, market bombings caused an average of approximately 35 civilian deaths and injuries per incident.

TARGETING
As in previous years, simply targeting armed actors with explosive weapons did not prevent civilians from being killed or injured. In 2016, 22% of those killed or injured by attacks which were explicitly coded as targeting armed actors were civilians. In populated areas this rose to 65%, whilst in non-populated areas it fell to 7%.

It is worth stressing that the use of explosive weapons that impact a wide area particularly endangers civil-

HOMES
The highest number of civilians killed and injured was to be amongst the victims. Of the incidents which were reported as killing or injuring children, 85% took place in populated areas.

WOMEN AND CHILDREN
The majority of media sources did not include reporting of the age or gender of any victims in 2016.

Women were reported among those killed and injured in 251 incidents, including 50 incidents where no figure was given. Overall, 502 women were reported killed or injured. This figure does not include armed actors. Likewise, it does not include, for example, female suicide bombers in Nigeria.

The majority of women who were killed or injured were the victims of attacks in populated areas. When women were specifically reported as killed or injured, it was found that 87% were in incidents in areas recorded as populated.

In 2016, AOAV recorded 1,490 child deaths and injuries in 338 incidents. Of these, a gender was given for 159 individuals, of whom 78 were girls and 81 were boys.

The rest were reported without specifying gender. In 61 incidents, no figures were given for numbers of children killed or injured but children were reported to be amongst the victims. Of the incidents which were recorded as containing children, 85% took place in populated areas.
AOAV records information on the explosive weapon used in any incident. The full list of the recording types used can be found on pages 7-8. These are kept deliberately broad in order to reflect the language commonly used in source reporting (i.e. ‘shelling’, which can cover several types of ground-launched weapons). More specific weapon types are used where such information is available in the source material.

The total number of civilian casualties recorded by AOAV from each explosive weapon type is shown in Figure 9. There are different ways of evaluating the threat that various explosive weapons have had for civilians in 2016. These are explored over the following sections.

In order to better understand how these different explosive weapons have endangered civilians in 2016, AOAV has split them into three different groups based on their launch method.

**IEDs** are improvised explosive devices. These cover any explosive weapon not manufactured through a commercial process, although they can include conventional ordnance. IEDs vary greatly in purpose, size and power, and in their mode of detonation. The broadest recording type is ‘Non-specific IED’, which encompasses anything from a magnetic bomb attached to a car to a vest of explosives detonated in a market square.

**Air-launched weapons** include any explosive munition dropped from an aircraft. If a bomb, missile or rocket is specified in the reporting of an incident (e.g. ‘Hellfire’ missile, FAB aircraft bomb) it is recorded under these more narrow categories. Other explosive attacks from the air are coded more generally as ‘Air strike’.

**Ground-launched weapons** are manufactured conventional ordnance that range from small hand grenades to heavy artillery and multiple rocket launchers. They can be fired from a variety of platforms, but all are launched from surface level.

In addition to these three categories, AOAV records casualties from attacks where multiple launch methods are used to deploy explosive weapons. AOAV also records reported casualties of landmines. These are excluded from analysis in the following sections.

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**Figure 9 Civilian casualties by weapon type in 2016**

<table>
<thead>
<tr>
<th>Weapon type</th>
<th>Civilian casualties</th>
<th>Average civilian casualties per incident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-launched</td>
<td>9,934</td>
<td>15</td>
</tr>
<tr>
<td>Air Strike</td>
<td>8,504</td>
<td>14</td>
</tr>
<tr>
<td>Air-dropped bomb</td>
<td>1,022</td>
<td>21</td>
</tr>
<tr>
<td>Missile</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Multiple explosive weapons</td>
<td>332</td>
<td>83</td>
</tr>
<tr>
<td>Rocket</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Shelling</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Ground-launched</td>
<td>6,997</td>
<td>10</td>
</tr>
<tr>
<td>Artillery shell</td>
<td>69</td>
<td>3</td>
</tr>
<tr>
<td>Grenade</td>
<td>830</td>
<td>6</td>
</tr>
<tr>
<td>Missile</td>
<td>107</td>
<td>6</td>
</tr>
<tr>
<td>Mortar</td>
<td>888</td>
<td>8</td>
</tr>
<tr>
<td>Multiple explosive weapons</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Rocket</td>
<td>1,072</td>
<td>13</td>
</tr>
<tr>
<td>RPG</td>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>Shelling</td>
<td>3,955</td>
<td>15</td>
</tr>
<tr>
<td>IED</td>
<td>14,301</td>
<td>16</td>
</tr>
<tr>
<td>Car bomb</td>
<td>5,815</td>
<td>27</td>
</tr>
<tr>
<td>Landmine</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Multiple explosive weapons</td>
<td>809</td>
<td>74</td>
</tr>
<tr>
<td>Non-specific IED</td>
<td>7,158</td>
<td>16</td>
</tr>
<tr>
<td>Roadside bomb</td>
<td>511</td>
<td>2</td>
</tr>
<tr>
<td>Mine</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>Anti-personnel mine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Anti-vehicle mine</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Landmine</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Multiple explosive weapons</td>
<td>733</td>
<td>31</td>
</tr>
<tr>
<td>Unclear</td>
<td>95</td>
<td>16</td>
</tr>
<tr>
<td>Missile</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Rocket</td>
<td>91</td>
<td>3</td>
</tr>
</tbody>
</table>
IEDs were responsible for 14,301 civilian deaths and injuries (46% of the total recorded in 2016).

74% of those killed and injured by IEDs were civilians.

There was a 12% decrease in the number of civilian deaths and injuries caused by IEDs compared to 2015 (14,301 down from 16,199).

Compared to 2011, the first year of recording, 2016 saw a 96% increase in deaths and injuries from suicide bombings.

DEATHS AND INJURIES

In 2016, AOAV recorded 19,246 deaths and injuries as a result of improvised explosive devices, of which 14,301 were civilians (74%). This is a slight decrease compared to previous years, where a higher percentage of deaths and injuries were civilians.

There was an increase of 1% in recorded deaths and injuries from IEDs compared to 2015. Though this is only slight, it breaks the trend of decreasing overall deaths and injuries that had been occurring over previous years. However, despite this drop in harm to people, there was a continued decrease in the number of reported IED incidents recorded compared to previous years. 18

The rise in total deaths and injuries from IEDs was a consequence of the rise in armed actor deaths and injuries from IED attacks. There was an increase of 75% since 2015 – with more police and soldiers being targeted in such incidents. This was particularly the case in Yemen, where 86% of deaths and injuries from IED attacks were those of armed actors. Similarly, in Libya, 80% were armed actors.

For the second year running, IED deaths and injuries did not constitute a majority of all deaths and injuries from explosive violence recorded worldwide.

Nonetheless, they still accounted for the largest number of civilian deaths and injuries of any weapon type (14,301 compared with 6,997 caused by ground-launched weaponry and 9,934 caused by air-launched weaponry).

As with other kinds of weapon, IEDs caused particularly high levels of civilian harm when used in populated areas, which was the case in 54% of all recorded attacks – totalling some 492 incidents. In these incidents, 88% of reported deaths and injuries were civilians, contrasting with 29% in other areas. On average, an IED incident in a populated area killed or injured 26 civilians.

COUNTRIES

In 2016, IEDs resulted in at least one casualty in 48 different countries and territories, one more than the previous year. This is the highest number ever recorded by AOAV. Figure 10 shows the seven countries which saw the most civilian casualties from IEDs in 2016.

In 2016, five countries saw more than 1,000 civilian deaths and injuries from IED attacks.

Iraq continued to be the country most badly affected by IED incidents, including both suicide and non-suicide IED attacks. Whilst the number of recorded deaths and injuries from IEDs fell significantly in 2015, 2016 saw this number begin to increase again. 68% of those civilian deaths and injuries recorded were in Baghdad Province and the south-western region of neighbouring Diyala Province (immediately adjacent to Baghdad). There was also a greater amount of IED incidents recorded elsewhere across the country including in the provinces of Anbar, Salahuddin and Nineveh. Though civilian deaths and injuries in Diyala halved.

Civilians, contrasting with 29% in other areas. On average, an IED incident in a populated area killed or injured 26 civilians.

Iraq, Syria, Afghanistan, Turkey, Pakistan, Somalia and Nigeria.

IEDs were almost exclusively used by non-state actors in 2016. AOAV recorded IED usage by 34 non-state entities. In the one incident that a state actor was assigned, 50% were attributed to ISIS groups. 40 The largest numbers of civilian deaths and injuries were caused by ISIS (45%), the Taliban (6%) and Jamaatul Ahrar (5%).

Afghanistan and Pakistan continued to experience high levels of deaths and injuries as a result of IED attacks.

Syria, Somalia and Turkey all saw precipitous rises in IED-inflicted deaths and injuries. Whilst Boko Haram impacted countries such as Nigeria, Cameroon and Chad have seen significant decreases in IED incidents, as well as Yemen. In the case of Yemen, this has been accompanied by a significant increase in armed actor deaths and injuries from IED attacks. IEDs killed and injured 867 armed actors in Yemen in 2016 – accounting for 86% of all IED deaths and injuries in Yemen last year.

It was hell with many bodies torn and mangled with metal parts from smashed and charred cars.

Abdullah al-Sheikh, a young mechanic who witnessed the car bomb explosion on October 13th 2016 at a checkpoint on the Turkish-Syrian border.
to be expected given their greater payload capacity, for a further 24% and roadside bombs for 26%. As is not clear after a bomb has exploded, and even if for the majority of IED incidents no detonation mechanisms for 47% of reported incidents. Suicidal bombings, including car bombs operated by suicide bombers, are a form of command-operated IEDs. In total AOAV recorded 256 suicide bombings in 2016, killing and injuring a reported 12,673 people. This means that, once again, suicide bombs constitute the most injurious specific type of explosive weapon being used today. The amount killed and injured by suicide bombings has seen a consistent increase in the last six years, since AOAV began its explosive violence monitor. Compared to 2011, the first year of recording, 2016 saw a 96% increase in deaths and injuries from suicide bombings. In 2016, 9,680 of those killed and injured were civilians (76%), representing a slight rise of 5% from 2015, or a 90% rise since 2011. On average, 38 civilians were killed and injured by each suicide bombing – two more than in 2015, when the average was 36.

This was accompanied by a doubling of the numbers of armed actors killed and injured from suicide bomb- ings, reflecting the overall increase of such casualties from IED incidents. Suicide bombings represented only 28% of all IED incidents recorded, but they accounted for 66% of all deaths and injuries from IED attacks.

54% (138 incidents) of the suicide bombings reported were recorded as non-specific IEDs, which in the case of suicide bombings largely refers to suicide vests. 43% (111 incidents) were recorded as car bombs. Both car bombs and non-specific IED attacks caused an average of 36 civilian deaths and injuries per incident.

Suicide attacks in populated areas caused an average of 51 civilian deaths and injuries per incident. This means suicide bombings are the most injurious of all explosive weapon types. Frustratingly, they are one weapon type that is significantly lacking from debate held within the disarmament community at large.

As with elsewhere, when suicide bombings were used in populated areas they inflicted much higher levels of civilian harm. 70% of all recorded suicide incidents took place in populated areas. In these at- tacks around 90% of those killed and injured were civilians. This compares to 23% in other areas.

Victim-activated IEDs

Victim-activated devices are most commonly deto- nated when a person or animal stands on them, or when they are driven over. IEDs detonated in this fashion are considered as de facto antipersonnel mines under the Mine Ban Treaty and are therefore prohibited under international humanitarian law. Their random trigger mechanism means that they cannot distinguish between armed actors and civil- lians, and as such are inherently indiscriminate.
Air-launched explosive weapons

Air-launched explosive weapons killed and injured 9,934 civilians in 2016 (31% of all recorded).

Civilian deaths and injuries from aerial explosive weapons in 2016 rose by 7% from 2015 levels.

15 countries and territories saw deaths and injuries in 2016.

Over half, 64% (6,382 civilians) were in Syria, and another 23% (2,249 civilians) were in Yemen.

DEATHS AND INJURIES

Air-launched explosive weapons include a wide variety of ordnance, from bombs dropped out of planes or helicopters to missiles fired by unmanned drones.

Consistent with broader trends, AOAV recorded 679 incidents of air-launched weapon use in 2016 – a 36% rise from the year before. This increase can probably be attributed to the increased campaigns across Syria, where air-launched incidents increased by 77%.

There was a correlated, though lesser, increase in civilian deaths and injuries: 7% compared to 2015. A total of 9,934 civilian deaths and injuries were recorded in incidents involving air-launched weapons. Air-launched weaponry accounted for 31% of all civilian deaths and injuries recorded worldwide.

In total, AOAV recorded 16,490 total deaths and injuries from aerial explosive weapons in 2016. Civilians accounted for 60% of these casualties, a similar share to previous years.45

Command-operated IEDs

Command operated IEDs (or CIEDs) are detonated generally by radio signals or command wire. AOAV divides these IEDs between those detonated by remote-control or command, and those that involved the suicide of the perpetrator.

Command-operated IEDs should technically provide the greatest level of control for a user. However, this is not necessarily an assurance of higher protection standards for civilians from incidental harm.

AOAV recorded an 821 deaths and injuries from 88 events using such IEDs – 60% of the casualties were civilians. This means average of 6 civilian deaths and injuries per remote-detoned IED attack in 2016. Even where they are used to target armed actors, civilians were often killed or injured by these IEDs in 2016, either because of their large inherent blast effects, deliberate attempts to target civilians, or the deployment of these weapons in populated areas without sufficient control.

In 2016, 57% of remote-detonation incidents recorded took place on roads. Remotely-detonaed IEDs are particularly harmful to civilians when used in populated areas. In those attacks, 86% of those harmed were civilians, compared to 29% in non-populated areas.

Syrian refugee camp on the border at Suruc, Turkey.
Credit: Voice of America News (http://www.youtube.com/watch?v=V-QFVCnd7Po) [Public domain], via Wikimedia Commons
When aerial explosive weapons were used in areas reported as being ‘populated’, 95% of those killed and injured were civilians – a rise from 2015, when the figure was 91%.

In areas which were not recorded as populated, that figure dropped to 13%. In 2016, 46% of incidents involving air-launched weaponry were recorded in populated areas. This is similar to the figures in 2012 (45%), 2013 (47%) and 2015 (43%).

In 2014, the figure was considerably higher (63%), which can probably be accounted for by the intensity of Operation Protective Edge in Gaza.

The majority of civilian casualties from air-launched explosive weapons in 2016 were recorded in Syria (see Figure 13). Yemen and Iraq also saw significant casualty numbers, although in Iraq – similarly to Afghanistan – most deaths and injuries recorded were of armed actors. This is in part due to a continuation of the US-led coalition campaign against ISIS and al-Qaeda affiliates in Iraq and Syria. Since September 2015, Russian jets have also been launching missions within Syria and appear to have contributed significantly to the civilian casualty toll. The civilians killed and injured by air-launched weapons in Syria account for 64% of all civilians killed or injured worldwide by such weapons.

Yemen, the second most badly affected country, had low numbers of incidents involving air-launched weaponry prior to 2015. Since the Saudi-led coalition of largely Arab states began Operation Decisive Storm in March 2015, however, casualty figures from air-launched weaponry in Yemen remain very high. This intervention has been widely criticised for its indiscriminate targeting of civilian areas and the use of internationally-banned cluster bombs. Whilst there was a decrease in the number of civilian deaths and injuries in 2016, compared to the previous year, this may have partially been due to reporting fatigue, and the huge numbers of people fleeing the conflict.

Users

Despite the increase in air-launched weapons across Syria, the state perpetrator of such explosive violence in Syria is not always clear. Russian and Syrian planes launch raids against similar targets, and Russian involvement is often denied. It is frequently cited in the media that the attack was perpetrated by Syria or Russia; this sees the attack recorded by us as from an unknown perpetrator. It is clear that both, however, have caused significant levels of civilian harm.

AOAV recorded a decrease of 54% in civilian casualties caused by Syrian air-launched explosives but poor reporting does not mean the harm from Syrian airstrikes has decreased. Furthermore, where air-launched incidents were attributed to Syria, over 99% of the deaths and injuries have been those of civilians. On the other hand, Russia is quicker to claim their attacks on armed actors, with 720 armed actor deaths and injuries attributed to Russian air-strikes. Despite this, 50% of all recorded deaths and injuries from Russian air-launched explosives 50% have been civilians.

Due to the lack of attribution in Syria the US-led coalition was the most prolific user of air-launched weaponry in 2016, accounting for 21% (145 incidents) of all incidents recorded. Individual member states of the coalition are not typically specified in reporting.

The Saudi-led coalition, despite a decrease in the reported number of incidents came second, accounting for 12% (83 incidents) of all incidents recorded. The Syrian government came third, accounting for 8% (55 incidents) of all recorded incidents.

AOAV recorded incidents of non-state actors using air-launched weaponry in 2016 in Libya, and as part of the failed government coup in Turkey.

Ground-launched explosive weapons were responsible for 6,997 civilian deaths and injuries in 2016 (22% of the total recorded).

79% of those killed and injured were civilians. In populated areas this figure rose to 96% – compared to 46% elsewhere.

Non-state actors were recorded as responsible for 55% of incidents and state actors for 22%.

In total, these weapons reportedly killed and injured 8,849 people in 2016. 6,997 of these were civilians (22% of all recorded civilian deaths and injuries). These figures are similar to that recorded the previous year.

In 2016, civilians made up 79% of all those killed or injured by ground-launched weapons. In populated areas the figure rose to 96%, consistent with trends seen with other weapon types.

As in previous years, ground-launched attacks had the highest percentage reported in populated areas compared to other weapon types: 63% of all ground-launched incidents recorded were reported as taking place in populated areas, compared to 45% of air-launched incidents and 54% of IED incidents.
Despite this, they still caused the least civilian deaths and injuries out of the three in populated areas—ground launched weapons caused 5,636 civilian casualties in populated areas, accounting for 20% of all civilian casualties in populated areas, compared to 32% from air-launched and 46% from IEDs.

**COUNTRIES**

AOAV recorded casualties from ground-launched explosive weapons in 42 countries and territories in 2016—three less than last year. More than half (56%) of these deaths and injuries were in Syria. Iraq and Yemen were also badly affected.

**USERS**

Similar to previous years, ground-launched explosive weapons were predominantly used by non-state actors in 2016. Non-state actors were recorded as responsible for 55% of incidents and state actors for 22%—the remainder being unattributed or caused by both non-state and state use of ground-launched explosives.

**SPECIFIC TYPES**

Figure 14 illustrates the range of ground-launched weapon types that AOAV tracks and their respective impact on civilians in 2016. Non-specific shelling accounted for almost half (50%) of all deaths and injuries caused by ground-launched weapons—a significant rise from the previous year.26 78% of all non-specific shelling caused deaths and injuries occurred in Syria. It is likely that the levels of violence and lack of journalistic access has impacted on the nature of reporting, meaning details such as the type of shelling are often missed.

Grenades, mortars and rockets also caused a significant amount of civilian harm, responsible for 12%, 13% and 15% of civilians death and injuries from ground-launched violence respectively.

Compared to 2015, mortars accounted for significantly less of the total reported deaths and injuries. In 2015, 2,198 deaths and injuries were caused by mortars, accounting for 25% of the total deaths and injuries from ground-launched explosives. In 2015, more than half (57%) of all mortar incidents reported took place in Syria and Iraq.

Due to the increase in violence in both countries in 2016, it is likely that deaths and injuries caused by mortar attacks have actually increased but were recorded as non-specific shelling.

More deaths and injuries from incidents of explosive violence were recorded in 2016 than in any of the five previous years that AOAV has been monitoring explosive weapon use. Whilst there was a reduction in civilian deaths and injuries for the first year since the monitor began, this was accounted for by a decrease in the amount injuries recorded in high-casualty conflicts and a greater amount of IED attacks focused on non-civilian targets.

The civilian deaths and injuries from explosive violence recorded in 2016 remain 48% higher than that the amount recorded in 2011, when AOAV first began recording—civilian deaths are 92% higher.

Over six years, AOAV has now recorded 233,949 deaths and injuries as a result of explosive violence. Over three-quarters of all of these were civilians (177,653 deaths and injuries or 76% of the total). Year on year, civilians have consistently borne the burden of reported explosive violence.

Civilians are at the most risk from explosive weapons when these weapons are used in populated areas. This was true again in 2016, when civilians made up 92% of casualties in populated areas, compared to 25% in other areas.

Suicide bombings are the most lethal explosive weapon type and their use is on the rise. It is clear from this body of data that while the threat to civilians from explosive weapons remains so high, the most effective measure that could be taken to dramatically improve civilian protection is to change how they are used.

This distinct and predictable pattern of harm is now recognised by more than 77 states around the world who have spoken out against the use of explosive weapons in populated areas.25 Last May, the United Nations released a report by the Secretary-General on the protection of civilians in armed conflict, stressing the need for a greater effort globally to protect civilians from the use of explosive weapons in populated areas.24

In October 2016, the First Committee of the United Nations General Assembly met to discuss disarmament, global challenges and threats to peace. During the conventional weapons debate many countries’ delegations expressed concerns over the use of weapons in populated areas. Many statements critiqued the use of explosive weapons in populated areas, and the civilian and humanitarian harm they cause.55

Austria highlighted the need for an international political declaration to prevent civilian harm from the use of explosive weapons in populated areas, and reminded the delegation on the UN’s Secretary-General’s encouragement for all states to engage in the development of such a declaration.56

In addition, there was the UN resolution ‘Countering the threat posed by improvised explosive devices’ (A/RES/71/72) passed in December 2016, that encouraged States and non-governmental organizations to continue to build upon existing awareness and risk education campaigns regarding the urgent threat of IEDs. In addition, it urged States in a position to do so, to contribute funding to the diverse areas of work needed to effectively address the issue of such weapons, including research, clearance, ammunition stockpile management, preventing violent extremism as and when conducive to terrorism, awareness raising, capacity-building, information management and victim assistance, through existing trust funds and arrangements. These recommendations need to be acted upon.

AOAV is a member of the International Network on Explosive Weapons (INEW). We urge states and all users of explosive weapons to:

- Acknowledge that use of explosive weapons in populated areas tends to cause severe harm to individuals and communities and furthers suffering by damaging vital infrastructure;
- Strive to avoid such harm and suffering in any situation, respect and strengthen national policies and practices on use of explosive weapons and gather and make available relevant data;
- Work for full realisation of the rights of victims and survivors;
- Develop stronger international standards, including certain prohibitions and restrictions on the use of explosive weapons in populated areas.
Previous AOAV reports have shown the impact that such weapons bring, needs to be a matter of ammunition and munitions, coordinated efforts measures to address the security of stockpiled harm caused by these weapons. This includes discussions and civil society. urgent discussion by States, international organi- tations and the United Nations Secretary General.

States and international organisations should work together to further a process to develop an international political commitment to reduce the impact on civilians of the use of explosive weapons in populated areas, in line with the recommenda- tions of the United Nations Secretary General.

States and international organisations should publicly condemn any use of explosive weapons in populated areas...

Recognising the large number of civilian casualties caused by IEDs, all parties should work on meas- ures which address the high level of humanitarian harm caused by these weapons. This includes measures to address the security of stockpiled ammunition and munitions, coordinated efforts towards the control of source materials, and more systematic data collection.

The issue of suicide bombings, while contentious, is relatively absent from the wider disarmament debate. This needs to be addressed and urgently. How to stop the rising use of this form of explosive weapon, and addressing the reverberating harm such weapons bring, needs to be a matter of urgent discussion by States, international organi- sations and civil society.

States and users of explosive weapons should work towards the full realisation of the rights of victims, including those killed and injured, their families, and affected communities. They should strive to ensure the timely and adequate provision of needed services for the recovery, rehabilitation, and inclusion of victims of explosive violence, without discrimination.

States, international organisations, and non- governmental organisations should gather and make available data on the impacts of explosive weapons. Data on the casualties of explosive violence should be disaggregated so that stake- holders can accurately assess the impact of explosive weapons.

The recommendations in the December 2016 UNGA resolution on ‘Countering the threat posed by improvised explosive devices’ (A/RES/71/72) have to be put into action and soon. The global threat of IEDs needs to be addressed far more by States, international organisations and civil society, and in a way that does not impinge on human rights or humanitarian principles.

States should help track, collect, analyse, investi- gate and report systematically on violations of international humanitarian law to enhance compli- ance and accountability.

More research is needed to better understand the reverberating effects of explosive weapons, includ- ing the impact of these weapons on vital infrastruc- ture and services, public health, economic liveli- hoods, and environmental contamination.

AOAV has demonstrated over six years the impor- tance of systematic and continuous monitoring of explosive violence and its impacts in populated areas. This monitoring must continue in order to assess whether recommendations are put into effect.

AOAV uses a methodology adapted from an incident- based methodology used by Landmine Action and Medact in 2009 which in turn was based on the Robin Coupland and Nathan Taback model.59

Data on explosive violence incidents is gathered from English-language media reports on the following fac- tors: the date, time, and location of the incident; the number and circumstances of people killed and in- jured; the weapon type; the reported user and target; the detonation method and whether displacement or damage to the location was reported.

AOAV does not attempt to comprehensively capture all incidents of explosive violence around the world but to serve as a useful indicator of the scale and pattern of harm.

No claims are made that this data captures every incident or casualty of explosive violence in 2016.

SELECTING INCIDENTS

An RSS reader is used to scan Google News for key terms which relate to explosive weapon use: air strike* artillery* bomb* bombing* cluster bomb* cluster munitions* explosion* explosive* grenade* IED* mine* missile* mortar* rocket* shell.*

At least one casualty from an explosive weapon must be reported in order for an incident to be recorded. Incidents with no clear date or which merely give a location as a country are excluded, as are incidents which occur over a period of more than 24 hours (e.g. 150 people killed by shelling over the last week). Casualty numbers must be clearly stated; reports which only describe ‘several’ or ‘numerous’ cannot be recorded. When there are multiple sources for the same incident, those which provide the most detail or most recent casualty information are selected.

REFERENCES

AOAV uses a wide range of English-language news sources, many of which are translated by the pub- lisher. The most commonly-used sources are AP, AFP and Reuters.

RECORDING GUIDELINES

Civilian/armed actor or security personnel:

All casualties are assumed to be civilians unless otherwise stated.50 Casualties are recorded as ‘armed actors’ if they are reported as being mem- bers of the military, members of non-state armed groups, or security personnel who are likely to be armed, for example, police, security guards, intelli- gence officers, and paramilitary forces.

The house had collapsed. We spent three hours digging with our hands and using our own tools to pull out my father. There are no armed groups nearby. No soldiers. There’s a mosque, houses, shops, schools, clinics. This is a residential neighborhood.

Zakaria Arab, a local resident of the Marjeh neighbourhood, witnessed a bomb strike his father’s house on October 17th 2016.61

Refugees at Jadah Camp, Salah al-Din. Credit: IOM November 19, 2016 (https://creativecommons.org/licenses/by-nc-nd/2.0/)
**Intended target:**
The target for an attack is only recorded if one of the three conditions below are met:
- The target is declared by the user.
- It is clearly reported in the source.
- The specific contextual conditions of use clearly indicate a target (e.g. if an IED is attached to the car of a police officer or soldier, ‘State armed’ is recorded as the target).

**Populated area:**
Incidents are designated as occurring in populated areas likely to contain concentrations of civilians if:
- a) It is stated in the source (e.g. a busy street, a crowded market);
- b) If an incident occurs in or near a pre-defined location which is likely to contain concentrations of civilians e.g. commercial premises, entertainment venues, hospitals, hotels, encampments (containing IDPs, refugees, nomads), markets, places of worship, public gatherings, public buildings, public transport, schools, town centres, urban residential neighbourhoods, villages/compounds. This definition of a populated area is based on Protocol III of the 1980 Convention on Certain Conventional Weapons (CCW) which defines concentrations of civilians as: “any concentrations 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.”

**User status:**
Responsibility for the use of explosive weapons is assigned where any of the following conditions are met:
- The group or actor responsible has claimed responsibility.
- The user of the explosive weapon is clearly stated in the report.
- If the user of the explosive weapon has employed technology clearly associated only with that user in the context in question.

If none of these conditions are met then the user is recorded as unknown. Users are recorded as ‘state and non-state’ when both users are identified but it is not possible to establish which one was responsible for the particular incident.

**LIMITATIONS**
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 very different levels of reporting across regions and countries so that under-reporting is likely in some contexts. In addition, only English-language media reports are used, which does not provide a comprehensive picture of definitive explosive weapon use around the world.

The methodology is designed to capture distinct incidents of explosive violence with a clear date and location. In some contexts of explosive violence, particularly during intense armed conflict, casualties cannot be assigned to specific incidents but a total number is reported as the result of a period of days. These casualties cannot be included in the dataset. This limitation was discussed earlier with specific reference to the conflict in Ukraine.

As the methodology relies on reports which are filed shortly after an incident took place, there is no mechanism for assessing whether people reported as wounded in the immediate aftermath of an incident subsequently died from their injuries. This is another factor that should be assessed when considering the likelihood that the actual numbers of fatalities of explosive violence are higher than the numbers recorded by AOAV. There is no systematic base-line for determining what constitutes an injury, and AOAV is therefore subject to the assessment of the news source.

**There was a loud bang, we thought it was lightning but right at that second the windows of the shop came down. It was extremely scary.**
Cevher, a shopkeeper in Istanbul, whose shop windows were blown out by a car bomb, June 7th 2016.

On a number of occasions firearms were also reported as having been used alongside explosive weapons. While AOAV always tries to determine the casualties specifically caused by explosive weapons, in these incidents new sources are not always able to clarify which casualties were caused by which weapon type, particularly in incidents that involved large numbers of casualties. It is therefore possible that some casualties in these incidents may not have been caused by explosive weapons.

AOAV is focused on capturing the harm caused by explosive weapons at the time of use. Accidental detonations are recorded but not included in the overall figures. AOAV recorded 53 incidents of accidental detonation resulting in 360 deaths and injuries, 126 of whom were civilians.

Explosive weapons that fail to explode as intended can linger in the form of explosive remnants of war (ERW) for years, if not decades, to come. In 2016, AOAV recorded 14 incidents involving unexploded ordnance causing 44 civilian deaths and injuries.

The actual number of casualties from ERW is far higher. Poorly secured or stockpiled explosive weapons can also cause unintended harm to civilians. AOAV recorded two stockpile explosions in 2016.

Media reports used by AOAV are a valuable resource for better understanding the scale and pattern of explosive violence use. However, these reports are less helpful for capturing other types of harm known to be characteristic of explosive weapons in populated areas. Damage to infrastructure, the risk of ERW, long-term health effects, and displacement are all aspects of the pattern of harm caused by explosive weapons which are not fully represented in the data set.

However, reporting on these effects is often limited, with news sources focusing on the immediate aftermath of an incident. For instance, only 193 incidents out of 2,300 reported damage to a location. Effects which are the result of cumulative levels of explosive violence, for instance communities displaced by heavy shelling or continued insecurity, cannot be fully represented by this research.

Aftermath of Baghdad bombings July 4th 2016. Credit: Tasnim News
http://www.tasnimnews.com/ar [CC BY-SA 4.0 (http://creativecommons.org/licenses/by-sa/4.0)], via Wikimedia Commons
Children from Kawar Gosk camp in Erbil, Iraq, where many have fled to escape the violence in Syria.

By Annamtaa, via Wikimedia Commons

Notes


4 The definition of a populated area used by AOAV is based on Protocol III of the 1980 Convention on Certain Conventional Weapons (CCW) which defines concentrations of civilians as: “any concentrations of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or in camps or columns of refugees or evacuees, or group of nomads.” The full definition is available at: “Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III),” ICRC, Geneva, October 10 1980, http://www.icrc.org/eng/assets/files/heart/prot_ccw_iii.pdf (accessed 03 Jan. 2017). AOAV’s guidelines for recording an area as populated are included in the Methodology.

5 The category of ‘mines’ includes both antipersonnel landmines and antivehicle mines. In many incidents, news sources often report what were likely actually victim-activated IEDs as ‘mines’ or in ambiguous language and it is not clear in many incidents whether these incidents involve manufactured or improvised explosive weapons.

6 Attacks described as air strikes can combine the firing of explosive missiles, the dropping of aerial bombs, and/or strafing using automatic weapons. There is often a lack of detail in media and official statements as to which specific weapons were used. On this basis incidents reported as air strikes were recorded as the use of an explosive weapon unless it is clear that only non-explosive weapons were used.


A populated area is one that is likely to contain concentrations of civilians. It is based on Protocol III of the 1980 Convention on Certain Conventional Weapons (CCW). The full definition and guidelines for recording an area as being populated is detailed on page 35.

11 In 2011 AOAV recorded an average of 16 civilian deaths per day; an average of 22 in 2012, 25 in 2013 and 29 in 2014, 30 in 2015.


In 2016, 932 IED incidents were recorded, whilst in 2014, 1,131 were recorded.

In 2015, 2016, and 2017, there were 15,864 casualties from incidents perpetrated by non-state actors. Of these casualties, 83% were civilians (13,192).

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Unlike AOV’s report on 2015, this year Boko Haram have continued their attacks with ISIS for over a year.

‘Car bomb’ is taken as shorthand for vehicle-borne IEDs or VBIEDs, including explosives concealed in or built into vehicles of all kinds. Thus some car bombs may in fact be bike bombs or truck bombs.

In 2015 AOV recorded 9,205 civilian deaths and injuries as a result of suicide bombings.

In 2011 AOV recorded 5,107 civilian deaths and injuries as a result of suicide bombings.

These countries were, in alphabetical order: Afghanistan, Bangladesh, Egypt, Egypt, Ethiopia, Ghana, India, Indonesia, Iraq, Israel, Japan, Jordan, Kenya, Kyrgyzstan, Laos, Lebanon, Libya, Madagascar, Malawi, Mali, Malta, Mexico, Nepal, Pakistan, Philippines, Pakistan, Philippines, Pakistan, Roxana, Sri Lanka, Sudan, Sweden, Syria, Taiwan, Thailand, Trinidad and Tobago, Turkey, Uganda, UK, Ukraine, USA, Venezuela, Vietnam, West Bank, Yemen.

In alphabetical order these were; Belgium, Bosnia and Herzegovina, Democratic Republic of the Congo, Ecuador, Georgia, Germany, Greece, Guinea, Hungary, Japan, Kyrgyzstan, Laos, Madagascar, Malawi, Malta, Nepal, Paraguay, Taiwan, Trinidad and Tobago, Uganda, Vietnam.

Iraq Body Count, which aims to keep comprehensive figures, recorded 5,878 civilian deaths alone from explosives in 2016. See https://www.iraqbodycount.org/database/ (accessed 15 Mar. 17).


In alphabetical order these states were: Afghanistan, Armenia, Azerbaijan, Burundi, the DRC, Egypt, India, Iran, Iraq, Israel, Kenya, Libya, Myanmar, Nigeria, Pakistan, the Philippines, Russia, Saudi Arabia, South Sudan, Sudan, Syria, Turkey, the UAE, Ukraine, the UK, the Ukraine, and Vietnam.

In 2015, there were 15,864 casualties from incidents perpetrated by non-state actors. Of these casualties, 83% were civilians (13,192).

Non-state actors named as causing casualties with explosive weapons, in alphabetical order, were: Abu Sayyaf Group (Philippines), al-Shabaab (Somalia and Kenya), the Bangsamoro Islamic Freedom Fighters (the Philippines), Barisan Revolusi Nasional (Thailand), Freedom Falcons of Kurdistan (Turkey), Garo National Liberation Army (India), Hamas (Israel), Hezbollah (Lebanon and Syria), Human Rights Watch, ‘Russia/Syria: War Crimes in Month of Bombing Aleppo’, December 01 2016, https://www.hrw.org/news/2016/12/01/russia-syria-war-crimes-month-bombing-aleppo (accessed 27 Mar. 17).

‘For more information see www.innocenti.org (accessed 27 Mar. 17).

In a minority of cases in reported incidents there is a possibility that armed actors were among those killed and injured by explosive weapons, but the exact details of the number of armed actors killed or injured was not recorded. Incidents which meet this profile are coded as ‘yes’ in a column titled ‘Could armed actors be included among the dead and injured?’ Incidents coded in this manner represented just 3% of all incidents recorded by AOV in 2016.


EAU also released a briefing paper on the key elements needed within this declaration which can be seen at: https://www.aeanet.org.uk/wp-content/uploads/2016/10/INEW-paper-on-a-declaration_269.16.pdf (accessed 27 Mar. 17).
