PATTERNS OF HARM
Five years of explosive violence
2011 – 2015
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Five years of explosive violence monitor reports.

The beginning of the EVMP coincided almost exactly with the outbreak of the Arab Spring protests across much of the Middle East. And as this report is written, the Syrian civil war is still ongoing, at the cost of hundreds of thousands of lives and millions displaced. In addition, 2014 saw the outbreak of hostilities in Ukraine, the rise of ISIS in Iraq and Syria and the devastating effects of Operation Protective Edge in Gaza. And in 2015, Boko Haram’s bloody campaign of suicide bombings and the Saudi-led ‘Decisive Storm’ intervention killed and injured thousands in Nigeria and Yemen.

Over these five years one hard truth has been constant: civilians have borne the brunt of the explosive weapons use around the world. 77% of the total number of deaths and injuries (145,565) recorded were ordinary people going about their daily business. In some years, the percentage of civilians harmed in this way rose as high as 82%.

Despite on-going efforts to reduce civilian harm in warzones, the stark message of our report is this: the majority of those reported harmed by explosive weapons worldwide are still civilians and will continue to be so unless dramatic international efforts take place. When explosive weapons were used in areas defined as ‘populated’ – i.e. having a likely high concentration of civilians – the percentage of those killed or injured who were civilians reaches an average of 91%.

And while the effects of this explosive violence may be most obvious in a warzone, the EVMP also shows that explosive violence is widespread. From 2011 to 2015, AOAV recorded at least one incident of explosive violence in 110 different countries and territories. There was also a concerning ‘creep’ of certain types of violence. 2015 saw 21 countries impacted by suicide bombings – the most countries ever recorded witnessing this type of violence. Such violence is reflective of the increasing use of improvised explosive devices (IEDs) around the world – in the last five years, such weapons have been responsible for 56% of recorded deaths and injuries from explosive violence.

The overall numbers reported here, can only ever be suggestive of the true scale of the damage caused by explosive weapons. We do not claim that these figures represent each and every person harmed by explosive violence. Nonetheless, they throw into stark relief the sheer size of the problem. These last five years have seen – alongside escalating levels of civilian harm – an awakening to the urgent need for policy changes to reduce this harm.

The UN Secretary-General has repeatedly noted the importance of achieving a political commitment to refrain from using explosive weapons in populated areas. As of June 2016, 53 states and territories and four state groupings have publicly acknowledged the harm caused by such usage.

Patterns of Harm shows more than ever the necessity of building on these successes to combat the suffering caused by explosive weapons worldwide. AOAV calls on states to condemn the use of explosive weapons with wide area effects in populated areas and to join ranks with the growing number of states who do the same. Only together can this avoidable horror be curtailed.
Key findings

**OVERVIEW**

Over five years of monitoring explosive violence around the world, AOAV recorded 188,325 deaths and injuries as a result of 12,566 incidents of explosive weapons use. Of these, 145,565 (77%) were reported as civilians.

The key findings in this report – *Patterns of Harm* – show that:

- Of the 188,325 deaths and injuries recorded from 2011-2015, 145,565 (77%) were **civilians**. The remainder (42,760) were armed actors.

- When explosive weapons were used in populated areas, 91% of deaths and injuries were reported as civilians. This compares to 33% in areas not reported as populated.

- Every year since the monitor began AOAV has seen an **increase in both total deaths and injuries and civilian deaths and injuries**.
  - In 2015, 43,795 deaths and injuries were recorded, 33,307 of whom were civilians; this was, respectively, 45% and 54% more than recorded in 2011.

- At least one death or injury was recorded in **110 countries and territories** over the five years.
  - Each year incidents were recorded in an **average of 61 different countries or territories**.

- Over the five years **Iraq, Syria, Pakistan, Afghanistan and Yemen** saw the highest levels of civilian harm.
  - Of these, four – Iraq, Syria, Pakistan and Afghanistan – saw more than 10,000 civilian deaths and injuries.

- **Improvised Explosive Devices (IEDs)** consistently caused the most civilian harm of any weapon category. Over the five-year period, AOAV recorded 105,071 deaths and injuries as a result of IED incidents, of which 86,395 (82%) were civilians. This is 59% of all civilian deaths and injuries recorded.

- Whilst representing only 19% of reported IED incidents, suicide bombings appear throughout the data as particular cause for concern. **Suicide bombings caused 39,717 deaths and injuries, of which 79% (31,447) were civilians.**
  - This represents a disproportionate 38% of all deaths and injuries from IED incidents.
  - Of the ten worst incidents over the five year period, **half were suicide bombings**.

- AOAV recorded **35,976 deaths and injuries caused by air-launched weaponry**, of which 21,280 (59%) were civilians.
  - When air-launched weapons were used in populated areas 86% of those killed and injured were civilians, compared to 19% in areas not reported as populated. **Both 2014 and 2015 saw a worrisome spike in casualties of air-launched weaponry**, with 9,200 civilian deaths and injuries recorded in 2015 – a rise of 4.5 times that recorded in 2013.

- **Ground-launched weaponry** caused **39,347 deaths and injuries, of which 32,903 (84%) were civilians.**
  - When used in populated areas, 92% of those killed and injured were civilians, compared to 38% in areas not reported as populated.

*If the weapons used are so inaccurate that they cannot be directed at military targets without imposing a substantial risk of civilian harm, then they should not be deployed.*

Human Rights Watch, August 2012

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iii Human Rights Watch, August 2012
EXPLOSIVE VIOLENCE FROM 2011 TO 2015

188,325
Total reported deaths and injuries

145,565
Total civilian deaths and injuries

77%
civilian casualties

54% increase in total civilian deaths and injuries

77%
civilian casualties

Total deaths and injuries per year

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total deaths and injuries</td>
<td>30,301</td>
<td>34,689</td>
<td>37,693</td>
<td>41,847</td>
<td>43,795</td>
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</tbody>
</table>

Civilian deaths and injuries per year

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<thead>
<tr>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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</thead>
<tbody>
<tr>
<td>Civilian deaths and injuries</td>
<td>21,689</td>
<td>27,014</td>
<td>30,893</td>
<td>32,662</td>
<td>33,307</td>
</tr>
</tbody>
</table>

Number of incidents of explosive violence recorded by AOAV from 2011 to 2015

Number of countries and territories where explosive violence was reported

110

Total civilian deaths and injuries by weapon launch method

- Ground-launched: 23%
- Air-launched: 15%
- IEDs: 59%
- Combination or unclear: 3%

Civilian deaths and injuries in populated areas

- 130,737
- 91% civilian deaths and injured

Number of attacks in populated areas per year

<table>
<thead>
<tr>
<th>Year</th>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
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<td>1,300</td>
<td>1,400</td>
<td>1,500</td>
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Civilian deaths and injuries in less populated areas

- 14,828
- 33% civilian deaths and injuries

Number of attacks in less populated areas per year

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>Number of attacks</td>
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<td>900</td>
<td>800</td>
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Total deaths and injuries per year

<table>
<thead>
<tr>
<th>Year</th>
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Number of attacks in less populated areas per year

<table>
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<tr>
<th>Year</th>
<th>2011</th>
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<td>1,000</td>
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<thead>
<tr>
<th>Year</th>
<th>2011</th>
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<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
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<td>900</td>
<td>800</td>
<td>950</td>
<td>1,000</td>
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</tbody>
</table>
The casualties

Over five years – from between the beginning of January 2011 through to the end of December 2015 – AOAV’s Explosive Violence Monitoring Programme (EVMP) has recorded 188,325 deaths and injuries from explosive weapons around the world.

These attacks, reported in English language media worldwide, were a result of the deliberate use of explosive weapons such as air-dropped bombs, ground-launched rockets and Improvised Explosive Devices. Of these, the majority of deaths and injuries – 145,565, or 77% of the total – were reported to have been civilians.

Over these 5 years, year in and year out, AOAV witnessed a consistent rise in both civilian and overall deaths and injuries from explosive weapons around the world (see figure 1). Between 2011 and 2015 there was a 54% increase in civilian deaths and injuries globally from explosive weapons, as recorded in English language media.

In 2011 there were 21,689 civilian deaths and injuries; in 2012 there were 27,014; in 2013 this rose to 30,893; in 2014 there were 32,662; and in 2015 there were 33,307.

One consistent trend identified by AOAV in every year of the 2011-2015 period is that when explosive weapons were used in a populated area – an area that contains a dense concentration of civilians1 – these weapons routinely caused extremely high levels of civilian harm. On average, 91% of deaths and injuries caused by incidents in populated areas were recorded as civilians. By comparison, civilians constituted on average of 33% of deaths and injuries caused by explosive attacks in lesser-populated areas.

Figure 1 Overall harm

Over 5 years a total of some 12,566 incidents of explosive violence were recorded by AOAV.

Unlike the steady rise in casualties, however, AOAV did not record a year on year rise in incidents. As Figure 3 shows, the recorded number of incidents fluctuated across the time period, even dipping in the most harmful year – 2015.

Accordingly, our data suggests that the number of incidents recorded does not automatically correlate with the numbers of deaths and injuries recorded. For instance, from 2012 to 2013 – when there was a drop of about 300 in recorded incident numbers – there was a marked rise of around 3,000 in the number of recorded civilian deaths and injuries.

Over the five year period, AOAV recorded 7,607 incidents that caused deaths or injuries occurring in populated areas, compared to 4,959 in lesser populated areas – or 61% and 39% respectively.

Figure 2 Worst incidents from 2011 to 2015

Gutted room at psychiatric hospital, Semenivka, Ukraine. © Dirk-Jan Visser for PAX and UNOCHA
ImprOvIsed explOsIve devIces (Ieds)

In recent years, Improvised Explosive Devices (IEDs) have consistently been recorded as causing the most civilian deaths and injuries of all weapon types. Over the five year period, 105,071 people (86,395 civilians and 18,676 armed actors) were recorded killed or wounded by IEDs.

This means that 56% of all deaths and injuries worldwide were caused by IEDs – 59% of all civilian deaths and injuries and 43% of all armed actors deaths and injuries.

Figure 4 Deaths and injuries from IEDs

Of major concern is that 92% of all IED deaths and injuries in populated areas were civilians. In lesser-populated areas, this figure fell to 43%. It is worth noting that the civilian impact of such weapons in lesser-populated areas is higher than the equivalent figures for ground-launched weapons (38%) and air-launched weapons (19%).

ACTIVATIOn methOds

Of all the IED incidents recorded by AOAV since our records began, 67% (4,216 incidents) were not reported as being activated by a particular method. Less than 1% of incidents were recorded as having been activated by timed detonation (52 incidents). 5% were recorded as victim-activated (for example by pressure pad) and 8% as remotely detonated.

Over the five-year period, AOAV recorded 1,171 suicide bombings, representing 19% of all IED incidents. Of these, 698 were ‘non-specific IEDs’ (60% incidents, largely representing suicide vests) and 446 (38%) were car bombs.

Car bombs consistently killed and injured more civilians per incident than other kinds of IED. This is to be expected given that much larger explosive payloads can be delivered by a car bomb than by, say, an explosive vest.

AOAV’s figures have consistently shown that suicide bombings cause greater civilian harm than non-suicide IED attacks. Non-specific IED suicide bombings (typically suicide vests) in particular caused on average 27 civilian deaths and injuries per incident; for non-suicide non-specific IEDs this figure falls to 13.

These averages – although high – do not reflect the potential that suicide bombings have to cause huge civilian harm. Of the ten worst incidents recorded by AOAV over the five year period, five were suicide bombings.

In line with this, over the five-year period AOAV has also recorded a worrisome overall trend of rising civilian deaths and injuries from suicide bombings, as well as ever-greater numbers of countries affected.
In 2015, for example, suicide bombings were recorded in 21 countries – the highest number ever recorded both by AOAV and other datasets. Indeed, 2015 saw a considerable uptick in the overall lethality of suicide bombings. This was in spite of similar incident numbers. Suicide strikes in 2015 resulted in an average of 36 civilian deaths and injuries per incident, markedly higher than the five-year average of 28. This rise can largely be attributed to an intensification of high-profile suicide bombings launched by Boko Haram and ISIS.

**Figure 5 Deaths and injuries from suicide bombings**

In 2015, suicide bombings launched by Boko Haram and ISIS. This rise can be seen in Figure 5, which shows an increase in civilian deaths and injuries from suicide bombings. Of these, 21,280 (59%) were civilians. This makes for an average of 9 civilian deaths and injuries per air-launched incident.

Of the 2,362 incidents, 1,169 (49%) were recorded to have taken place in populated areas, while 1,183 (51%) took place in areas not reported as populated. Incidents involving air-launched weaponry were deployed against civilians. This figure, however, does not reflect the true destructive potential of air-launched weaponry.

The most lethal incident AOAV recorded over the five-year period was the November 2015 airstrike on Douma market, Syria. It killed and injured at least 620 people.

It is clear that when air-strikes are ordered on populated areas, the chances of civilian deaths and injuries are almost inevitable.

The countries worst-affected by air-dropped weapons in the last five years were Syria (10,065 civilians killed or injured) Yemen (4,195) and Gaza (2,828).

Syria’s markedly higher numbers reflect five years of civil war in which air-launched weapons have repeatedly been deployed against civilians. The Gaza and Yemen figures largely occurred within narrow timeframes: almost all the deaths and injuries recorded in Gaza came as a result of 2014’s Operation Protective Edge. Those in Yemen are largely the result of Decisive Storm, the Saudi-led aerial intervention that began in early 2015.

Unlike ground-launched weapons and IEDs – which are readily available to sub-state groups and criminal organisations and are used in a broad range of contexts – air-launched weapons are almost exclusively used by states. Accordingly, AOAV’s data points to the fact that Russia and the Syrian state, the Saudi-led coalition and the State of Israel were the worst offenders for civilian harm from air-dropped weapons globally between 2011 and 2015.

**GROUNDED-LAUNCHED WEAPONS**

‘Ground-launched weapons’ is the broadest category used by AOAV, covering everything from grenades to single tank/artillery shells to artillery bombardments and ballistic missiles. Certain weapon types in particular caused consistently worrisome levels of harm. AOAV has previously highlighted the use of Grad rockets and mortars in our report Wide Area Impact.

Over the last five years, AOAV recorded 3,453 incidents of use of ground-launched weaponry resulting in 39,347 deaths and injuries. Of these, 32,903 – or 84% - were civilians. This makes for an average of 10 civilian deaths and injuries per incident. This average rose to 12 when ground-launched explosive weapons were used in populated areas.

**Figure 7 Incidents by ground-launched weapons from 2011 to 2015**

<table>
<thead>
<tr>
<th>Ground-launched weapon type</th>
<th>Incidents</th>
<th>Civilian deaths and injuries</th>
<th>Total deaths and injuries</th>
<th>Average civilian deaths + injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortar</td>
<td>923</td>
<td>9735</td>
<td>10479</td>
<td>11</td>
</tr>
<tr>
<td>Grenade</td>
<td>1002</td>
<td>5743</td>
<td>6727</td>
<td>6</td>
</tr>
<tr>
<td>Shelling</td>
<td>490</td>
<td>4745</td>
<td>5791</td>
<td>10</td>
</tr>
<tr>
<td>Rocket</td>
<td>349</td>
<td>3052</td>
<td>3752</td>
<td>9</td>
</tr>
<tr>
<td>Artillery shell</td>
<td>253</td>
<td>2422</td>
<td>3282</td>
<td>10</td>
</tr>
<tr>
<td>Missile</td>
<td>59</td>
<td>1085</td>
<td>1417</td>
<td>18</td>
</tr>
<tr>
<td>Tank shell</td>
<td>67</td>
<td>770</td>
<td>818</td>
<td>11</td>
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<tr>
<td>RPG</td>
<td>93</td>
<td>190</td>
<td>532</td>
<td>2</td>
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</table>
From 2011 to 2015, AOAV recorded at least one incident in 110 different countries and territories worldwide. Incidents were recorded in an average of 61 different countries every year.

Despite this global spread, however, the majority of global harm occurred in a much smaller set of countries. The twenty worst-affected countries accounted for 95% of all recorded civilian deaths and injuries in the five years.

Conversely, in 55 of the countries and territories in which AOAV recorded incidents – exactly half – there were five or fewer incidents reported.

Many of the worst-affected countries have stayed the same throughout the period, although their respective positions on the table have shifted.

<table>
<thead>
<tr>
<th>Countries</th>
</tr>
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</table>
| **TEN MOST DANGEROUS PLACES TO BE A CIVILIAN**

**SYRIA**
- Number of incidents: 1606
- Civilians killed or injured: 31,290
- Most dangerous place ranking: 2nd

**IRAQ**
- Number of incidents: 2660
- Civilians killed or injured: 41,018
- Most dangerous place ranking: 1st

**AFGHANISTAN**
- Number of incidents: 1701
- Civilians killed or injured: 10,712
- Most dangerous place ranking: 4th

**PAKISTAN**
- Number of incidents: 1714
- Civilians killed or injured: 14,360
- Most dangerous place ranking: 3rd

**YEMEN**
- Number of incidents: 590
- Civilians killed or injured: 8415
- Most dangerous place ranking: 5th

**SOMALIA**
- Number of incidents: 303
- Civilians killed or injured: 3077
- Most dangerous place ranking: 9th

**LIBYA**
- Number of incidents: 258
- Civilians killed or injured: 3586
- Most dangerous place ranking: 8th

**UKRAINE**
- Number of incidents: 295
- Civilians killed or injured: 23,119
- Most dangerous place ranking: 10th

**NIGERIA**
- Number of incidents: 248
- Civilians killed or injured: 7253
- Most dangerous place ranking: 6th

**GAZA**
- Number of incidents: 675
- Civilians killed or injured: 4780
- Most dangerous place ranking: 7th

**Gaza**
- Number of incidents: 675
- Civilians killed or injured: 4780
- Most dangerous place ranking: 7th

**SOOTTAN**
- Number of incidents: 83
- Civilians killed or injured: 519
- Most dangerous place ranking: 10th

Figure 8 Twenty worst-affected countries from 2011 to 2015

<table>
<thead>
<tr>
<th>Countries</th>
<th>Incidents</th>
<th>Civilians killed or injured</th>
<th>Armed actors killed or injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iraq</td>
<td>2660</td>
<td>41018</td>
<td>9032</td>
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<tr>
<td>Colombia</td>
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</tr>
<tr>
<td>Sudan</td>
<td>83</td>
<td>519</td>
<td>59</td>
</tr>
</tbody>
</table>
Iraq

For three of the five years (2011, 2013 and 2014), Iraq was the country worst affected by explosive violence. In 2013 and 2014, AOAV recorded almost twice as many deaths and injuries there than in the next most affected country, Syria. In 2012 and 2015, Iraq remained in the top three.

The precipitous rise in civilian deaths and injuries as a result of explosive violence in Iraq from 2013 onwards reflects a rapid decline in the security situation after December 2011, the date of the final withdrawal of American troops. Although Iraq’s presence at the head of the table even in 2011 attests to the difficulty of the situation even prior to the withdrawal, 2012 saw increased activity from an emboldened Iraqi insurgency – at its head al-Qaeda in Iraq. These activities included the 2012 ‘Breaking the Walls’ campaign which targeted prisons and resulted in the breakout of hundreds of AQI operatives who would then form the basis of the rebranded ISIS.

Whilst since 2014 ISIS have been engaged in active conventional warfare against the Iraqi state, seizing territory and making use of heavy weaponry, the vast majority of civilian deaths and injuries recorded in Iraq have resulted from IED incidents. Over the five-year period, 90% (36,772) of the civilian deaths and injuries recorded by AOAV were caused by IEDs. Even in 2014 and 2015, after the total collapse of the security situation and ISIS’ seizure of several major Iraqi cities, 77% and 81% of the civilian deaths and injuries recorded by AOAV respectively were caused by IEDs.

This probably partially reflects a paucity of reporting in areas like Fallujah, where military clashes and the use of other kinds of conventional weaponry are probably focused. But the other side of this coin is the sheer scale of the harm caused by IED incidents in and around Baghdad. In 2015, 94% of the civilians reported killed and injured by IED incidents – 81% of the total – were either in Baghdad or the south of Diyala province which borders it directly.

Iraq has consistently been the country worst affected by suicide bombing. Over the five year period AOAV has recorded 9,134 civilian deaths and injuries as a result of suicide bombings in Iraq – 29% of all the deaths and injuries recorded from suicide bombings worldwide.

In 2015 Iraq dropped for the first time to third on the table of countries worst affected by explosive violence, and AOAV noted a significant drop in the number of deaths and injuries recorded there. The reasons behind this drop in reported casualty levels are not entirely clear, although they correlate with a drop in deaths noted by Iraq Body Count, a casualty recorder.

It was something really extraordinary. The dust and the smoke. It looked like a nuclear bomb. We ran like hell.

Abu Hammed, Fallujah resident who witnessed a barrel bomb strike, May 2014

Figure 8 Explosive violence in Iraq from 2011 to 2015

Deaths and injuries from explosive violence by year

- 50,050 deaths and injuries caused by explosive violence
- 162 Air-launched attacks
- 2,265 IED attacks
- 205 Ground-launched attacks

Deaths and injuries in populated areas from explosive violence from 2011 to 2015

- 82% civilian deaths and injuries from 2011 to 2015
- 1,361 civilians killed or injured
- 36,772 civilians killed or injured
- 2,317 civilians killed or injured
Since 2012, the situation in Syria has deteriorated further and further, resulting in what has been described by the UN as the ‘biggest humanitarian emergency of our era.’ Lebanon found that explosive violence was perhaps the most significant factor driving Syrians to seek safety over the border. This is reflected in the data by consistently high reported rates of civilian deaths and injuries in spite of the difficulties in reporting from the Syrian interior.

The explosive violence recorded by AOAV in Syria has been quite diverse, reflecting ongoing long-term conventional warfare involving all kinds of state military equipment as well as IEDs and – although less often than Iraq – large-scale suicide bombings. Previous research by AOAV has discussed twelve of the most concerning explosive weapon types causing serious civilian harm within Syria. The five-year period has seen a steady rise in civilian deaths and injuries resulting from air-launched weaponry, whilst since the high point in 2012 recorded IED and ground-launched-weapon-related deaths have remained largely constant over the last three years.

The rising toll of air-launched weaponry reflects in the early period the attacks of the Syrian Arab Air Force (SAAF), particularly their notorious barrel bombs. The SAAF have been regularly accused of deliberately targeting civilians, with markets apparently a common target of choice. In the early period of the war, analysts did not expect that the SAAF – with an aging, Soviet-era fleet – would be able to maintain an effective strike force for very long without serious technical failures causing its total collapse. Russian maintenance and refitting, however, ensured that the SAAF have been able to continue launching missions. In September 2014, the US-led mission against ISIS in Iraq was extended into Syria. Almost exactly a year later, Russia announced its own aerial intervention. Syria’s increasingly crowded skies have resulted in a significant increase in the levels of civilian harm caused by air-launched weaponry. In particular, between the end of 2014 and the end of 2015 there was a 75% leap in the number of civilians killed or injured by air-launched incidents. Of particular concern is the Russian campaign, which has been frequently implicated in the deliberate targeting of civilians and humanitarian infrastructure such as hospitals.

Syria – and Iraq outside Baghdad – are very difficult for journalists to enter and work from. Moreover, many reports of high-casualty incidents describe ‘large numbers’ or ‘dozens’ of injuries which due to the methodology cannot be included in the EVMP. Although it is more difficult to prove, it is likely that English language reporting has also suffered from reporting fatigue and a decline in the newsworthiness of low-casualty attacks in places like Baghdad and Aleppo that have become synonymous with explosive violence.

Syrian children are seen in an informal refugee camp in Arsal, Lebanon, on Wednesday, 20 November 2013. Unlike Jordan or Turkey, Lebanon has not attempted to set up formal refugee camps. (Nicole Tung/AOAV)
Pakistan and Afghanistan

Over the five-year period Pakistan and Afghanistan have consistently been among the worst countries affected by explosive violence. Most of the explosive violence recorded in both Afghanistan and Pakistan is perpetrated by various groups which emerged from or are affiliated with the original Afghan Taliban. Pakistan also faces numerous other security threats including the Balochistan insurgency and the activity of well-armed criminal gangs who regularly make use of small explosives like grenades in attacking either state forces or civilian victims.

In Afghanistan the main cause of civilian harm has consistently been the use of improvised explosive devices (IEDs). 80% (8,608) of civilian deaths and injuries recorded by AOAV in Afghanistan from 2011-2015 were reported as the result of IED incidents. From 2011-2015, AOAV recorded a decline in the number of recorded civilian deaths and injuries from roadside bombs and ‘non-specific IEDs’. However, this was accompanied by a rise in the number of deaths and injuries from car bombings. This may reflect a change in tactics on the part of the Taliban.

Pakistan has seen a marked decrease in levels of explosive violence in the last two years. In 2015 – for the first time – Pakistan was not one of the five worst-affected countries in the world.

In spite of a concerted air campaign by both NATO and the Pakistani air force (the latter known as Zarb-e-Azb), the number of civilians reported killed and injured by air-launched weaponry has steadily fallen since 2011.

Given that almost all of the air-launched incidents recorded by AOAV in Afghanistan took place in the remote Federally Administered Tribal Areas (FATA) or parts of Khyber-Pakhtunkhwa province and are reported only in Pakistani military sources there may be cause for scepticism around claims of zero civilian fatalities there.

Pakistan – particularly FATA and Khyber-Pakhtunkhwa along the Afghan border – has also consistently suffered from IED-related violence and suicide bombings. Research by AOAV has investigated the after-effects of the 2009 Moon Market bombing in Lahore, which took place shortly before the Monitor project first began.13 Although recent events suggest a potential worrisome return to earlier tactics,14 as of the end of 2015 the number of civilian deaths and injuries from both IEDs and suicide bombings had been falling consistently since its peak in 2013.

Nicholas Haysom,
United Nations Assistance Mission to Afghanistan (UNAMA), after a suicide bombing killed 47 civilians at a volleyball game in Paktika, 23 November 2014

This indiscriminate attack in an area crowded with civilians demonstrates a complete disregard for civilian lives. Deliberately and indiscriminately causing death and injury to such a large number of civilians is an atrocity.

Nicholas Haysom,
United Nations Assistance Mission to Afghanistan (UNAMA), after a suicide bombing killed 47 civilians at a volleyball game in Paktika, 23 November 2014
Yemen

For the entire period of AOAV’s Monitor, Yemen has experienced significant levels of explosive violence. In 2011 it was 6th on the table of worst-affected countries; in 2012 11th; in 2013 8th and in 2014 9th. This violence was perpetrated by a broadly varied actors. Since long before the Arab Spring disrupted the established political order Yemen has suffered perennial political instability, including separatist insurgencies in both north and south and the ongoing activities of al-Qaeda in the Arabian Peninsula (AQAP).

In 2015, the security situation in Yemen collapsed into full-on civil war between the Houthis – who occupied much of the country – and the internationally recognised government under Abdrabbo Mansour Hadi.

Hadi’s rule, beginning a bloody air campaign that has been widely criticised by international organisations. In 2015 AOAV recorded 3,972 civilian deaths and injuries from air-launched weaponry in Yemen – 43% of all those recorded worldwide and more than ten times the number recorded over the last four years combined. The full-blown military conflict has also led to a significant rise in the numbers of civilians killed or injured by ground-launched weaponry. Whilst in previous years Yemen had seen occasional use of grenades, mortars and artillery, in 2015 hundreds of civilians were reported killed or injured by mortars, rockets, and non-specific shelling.

Over the five-year period Yemen has also seen a steady rise in the numbers of civilians killed and injured by IEDs. This is not a direct consequence of the civil war and as a trend predates it by years. However, the decline in the security situation has allowed both the well-established AQAP and newly-established ISIS affiliates to increase their activities. Whilst AOAV only recorded 9 suicide bombings in 2015 (compared to 11 the previous year), the civilian toll inflicted by these bombings was significantly higher, killing and injuring a reported 541 non-combatants compared to 359 in 2014.

AOAV has previously highlighted the drastic nature of explosive violence in Yemen in research carried out with UN-OCHA.15

Figure 12 Explosive violence in Yemen from 2011 to 2015

Nigeria, Chad and Cameroon

Nigeria has appeared regularly in the top ten countries worst affected by explosive violence because of numerous internal security threats. In 2011, for example, it was 8th on the table; in 2012 5th. After dropping off the table entirely in 2013 – largely because of military setbacks to the Boko Haram insurgency – in 2014 Nigeria saw a wave of suicide bombings which pushed it to 4th on the table of worst-affected countries. It remained in this spot in 2015.

In 2013 AOAV produced research in cooperation with the Nigerian National Working Group on Armed Violence (NWGAV) analysing violence in different parts of the country.16 This report makes it clear that the northern region is far from the only part of Nigeria seriously affected by armed violence. However, the majority of explosive violence recorded in Nigeria has been IED-based. Throughout the five-year period the majority of explosive violence recorded in Nigeria has been IED-based. However, the post-2013 period has seen the nature of the IED threat shift markedly towards increased use of suicide bombings. This represents a shift in strategy for Boko Haram, whose conventional military capabilities have been greatly degraded. In 2014 suicide bombings killed or injured 1,141 civilians in Nigeria; in 2015 the equivalent figure was 2,181.

It is important to note that whilst Nigeria is certainly the centre of the Boko Haram insurgency, the group operates across borders. Since the formation of a local coalition of Cameroon, Chad, Niger and Nigeria to confront the threat, it has extended its suicide bombing campaign into those states too. When the 2015 figures from Chad and Cameroon are included, it is likely that explosive violence perpetrated by Boko Haram is responsible for at least 5,255 civilian deaths and injuries.

Figure 13 Explosive violence in Nigeria from 2011 to 2015
Gaza

Gaza, has experienced consistent explosive violence throughout the five-year period, but the majority of civilian deaths and injuries occurred in a relatively narrow time period.

In 2011 it was 10th on the table of worst-affected countries and territories, in 2012 7th. In 2013 it fell off the table. In 2014, however, it was the third most badly affected country or territory worldwide.

Gaza is unusual, although not unique, in that a huge percentage of the deaths and injuries reported over the five-year period occurred within a very narrow timeframe. 62% (416) of all incidents recorded and the five-year period occurred within a very narrow percentage of the deaths and injuries reported over Gaza is unusual, although not unique, in that a huge or territory worldwide.

80% (3,813) of all of the civilian deaths and injuries from 2011 to 2015 timeframe. 62% (416) of all incidents recorded and the five-year period occurred within a very narrow percentage of the deaths and injuries reported over Gaza is unusual, although not unique, in that a huge or territory worldwide.

Since the toppling of long-time president Muammar Gaddafi during the wave of popular protests that swept the Arab World in 2011 Libya has suffered consistently high levels of explosive violence alongside other serious security threats. In 2011 Libya was the 4th-worst affected country in the world by explosive violence; in 2012, 12th, in 2013 9th, in 2014 11th and in 2015 10th.

Libya saw its worst levels of harm in 2011 during the popular uprisings against Gaddafi and the NATO intervention on the side of the rebels. In this year, AOAD recorded 2,108 civilian deaths and injuries. Of these, 696 were recorded as resulting from air-launched weaponry, largely attributed to NATO. Although there were 54 civilian deaths and injuries attributed to Libya, part of the NATO intervention involved the imposition of a no-fly zone, largely forcing the Gaddafi regime’s aircraft to stay grounded. The rest were largely record—ed as caused by ground-launched weaponry – largely deployed by the Libyan regime, but also by rebel groups.

After Gaddafi was toppled in late 2011, Libya entered a period of comparative calm. Without a single effective government the security situation remained fragile, but reported civilian harm gradually fell from 2012-2014.

No civilian deaths or injuries were reported from air-launched weaponry in 2012 or 2013, and even in 2014 – when General Haftar’s militia deployed military aircraft in an unusual case of non-state use of air-launched weapons – reported civilian deaths and injuries from such weaponry remained limited to 43. A full 66% of all recorded civilian deaths and injuries during the 2012-2014 period were attributed to ground-launched weapons. A number of IED incidents were also recorded but these largely affected armed actors.

The downward trend in recorded explosive violence came to an end in 2015, when conflict began to escalate for a second time. This is probably linked to concerted efforts by the internationally-recognised Libyan government – which in 2016 finally merged with the other major administration to form a unity government – to reassert its control over its territory. Libya has also recently proven fertile ground for ISIS sympathisers who have declared three distinct provincial administrations within its territory. This is reflected in a marked increase in the level of civilian harm resulting from IED incidents, with 247 civilians reported killed or injured by IED incidents attributed to ISIS affiliates.

**Figure 14** Explosive violence in Gaza from 2011 to 2015

<table>
<thead>
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<th>Year</th>
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<th>Total</th>
</tr>
</thead>
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<tr>
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<td>3,813</td>
</tr>
<tr>
<td>2012</td>
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<tr>
<td>2013</td>
<td>1,900</td>
<td>3,813</td>
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<tr>
<td>2014</td>
<td>1,900</td>
<td>3,813</td>
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<tr>
<td>2015</td>
<td>1,900</td>
<td>3,813</td>
</tr>
</tbody>
</table>

**Figure 15** Explosive violence in Libya from 2011 to 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Civilians</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<tr>
<td>2015</td>
<td>5,264</td>
<td>10,528</td>
</tr>
</tbody>
</table>
Al-Shabaab – which announced its allegiance to al-Qaeda in 2012 – operates primarily in the southern and central regions of Somalia. Over the five-year period 42% of recorded civilian deaths and injuries in Somalia were attributed to al-Shabaab, making them the worst single perpetrator of civilian harm in the country.

AOAV’s Explosive Violence Monitor has recorded a total of 3,077 civilian deaths and injuries in Somalia from explosive violence in the last five years. The vast majority of explosive violence recorded by AOAV was in Banaadir and Gedo, although much explosive violence may go unrecorded in hostile regions in the centre and south.

Somali civilians have been particularly badly hit by ground-launched weaponry and IEDs. Nearly half of the recorded civilian deaths and injuries in Somalia were attributed to various kinds of IEDs. Nearly half of these (801, or 26% of all recorded civilian deaths and injuries) were attributed to suicide bombings – a common tactic of al-Shabaab’s.

For thirty years Somalia has suffered extensively from from the effects of violence and explosive violence. Since 1991 the country has been locked in a series of overlapping conflicts. By the beginning of AOAV’s EVMP these conflicts had largely solidified into a struggle between the central government and the militant al-Shabaab group.

In 2011 Somalia was 5th on the table of countries worst affected by explosive violence, in 2012 eighth, in 2013 7th, in 2014 12th and 2015 13th. 2011 was by far the worst year, with 1,326 civilian deaths and injuries reported compared to an average of 438 over the other four years. 2011 was the year of a huge drought in Somalia as well as the year in which AMISOM re-established control over Mogadishu and other important areas, marking the tail end of al-Shabaab’s political ascendancy in Somalia.

Until 2014, Ukraine was almost untouched by explosive violence. In 2011 and 2013 no incidents were recorded within Ukrainian territory; in 2012 only four, three of which were IEDs detonated on the same day in Dnipropetrovsk in April of that year. For comparison, in the UK during the same period AOAV recorded 6 separate incidents.

In 2014 and 2015, however, there were over 290 incidents of explosive violence reported in Ukraine. Of the 2,319 civilian deaths and injuries from explosive violence in Ukraine recorded by AOAV in the last five years, 2,290 were recorded in 2014 (1,428 deaths and injuries) and 2015 (862 deaths and injuries).

These figures reflect the massive escalation in violence that began in February 2014 with mass protests against then-president Viktor Yanukovych, culminating in his ouster and his replacement by an interim government. This triggered waves of anti-government and secessionist protests in regions in the south and east of the country, which were backed by Russia. Russia subsequently occupied and annexed the Crimea, and the two eastern provinces of Luhansk and Donetsk declared their independence. Although a ceasefire has been in effect since February 2015, violations have continued to take a heavy toll on both sides.

The Ukrainian state, as of the end of 2015, had been reported as responsible for 656 civilian deaths and injuries – 28% of the total recorded. Ukrainian separatists were reported as responsible for 528 (23%). The remainder were attributed either to both sides (during clashes for example) or reported as unknown.

Ukraine has been particularly badly hit by ground-launched weaponry, with mortars (235 civilian deaths and injuries), missiles (302), artillery shells (317) and rockets (337) taking a particularly high toll. Previous EVMP reports and separate research by AOAV have highlighted the use of Grad multiple rocket launchers as particularly dangerous for civilians.16

Figure 16 Explosive violence in Somalia from 2011 to 2015

Figure 17 Explosive violence in Ukraine from 2011 to 2015
Perpetrators

A perpetrator group name was recorded for 43% of incidents recorded by AOAV in the five-year period. 46% were recorded with a perpetrator status (e.g. state, non-state, state and non-state). Some incidents – such as airstrikes – could be attributed to a state, for example, without the specific state in question being known.

Of the 5,766 incidents for which a perpetrator status was entered, 57% were attributed to a state and 41% to a non-state actor (see Figure 18).

Figure 17 Incidents attributed to different kinds of actors

Attribution of incidents is a contentious topic, and AOAV’s data excludes news reports that contain hedged statements such as ‘allegedly’. As a result, many incidents likely to have been perpetrated by groups such as Boko Haram – who generally do not claim their attacks – are recorded as unknown.

The same applies to airstrikes in Syria. It is often not claim their attacks – are recorded as unknown. Many incidents likely to have been perpetrated by groups such as Boko Haram – who generally do not claim their attacks – are recorded as unknown. The same applies to airstrikes in Syria. It is often not claim their attacks – are recorded as unknown. Some incidents – such as airstrikes – could be attributed to a state, for example, without the specific state in question being known.

The majority of armed actors recorded killed and injured were also in FATA, but this time as a result of airstrikes – particularly those carried out during Operation Zarb-e Azb. Since these incidents are typically reported only by the Pakistani military, who claim not to have killed a single civilian in spite of evidence to the contrary, the figures should probably not be taken at face value.

Figure 18 State actors who caused the highest number of civilian deaths and injuries from 2011 to 2015

Figure 18 (opposite) shows the ten state actors who caused the highest number of civilian deaths and injuries over the five-year period.

The Syrian armed forces caused more recorded deaths and injuries by far than any other state force. This is, perhaps, unsurprising given the well-documented huge civilian toll of the Syrian civil war, which has continued to rage throughout the entire period of the EVMP.

The next highest are the Israeli Defence Forces (largely but not exclusively due to actions taken in 2014’s Operation Protective Edge, which involved attacks on the Gaza strip with a broad range of air-launched and ground-launched explosive weaponry).

Following that are the Saudi-led coalition in Yemen. Whilst the figures for the IDF and the coalition seem small when compared to those attributed to Syria, it is worth noting that all of those deaths and injuries attributed to the coalition were recorded in one nine-month period from the beginning of the Decisive Storm intervention in Yemen. For the IDF, 79% of all of the civilian deaths and injuries recorded in the time period (3,703) were within the two-month period of July-August 2014.

According to news reporting, explosive weapon use by the government of Pakistan has been overwhelmingly implicated in the deaths and injuries of armed actors, not civilians, over the five-year period of the EVMP. This is unusual and unexpected – our data usually shows that far larger numbers of civilians are the casualties of explosive violence than are armed actors. Nonetheless, 60% (343 of a total 576) of all the civilian deaths and injuries ascribed to Pakistan during this time were reported as resulting from mortar fire and shelling, either in the restive Federally Administered Tribal Areas (FATA) and the Afghan border or along the Indian border during occasional flare-ups in tensions – leaving only a few deaths and injuries caused by airstrikes.

The majority of armed actors recorded killed and injured were also in FATA, but this time as a result of airstrikes – particularly those carried out during Operation Zarb-e Azb. Since these incidents are typically reported only by the Pakistani military, who claim not to have killed a single civilian in spite of evidence to the contrary, the figures should probably not be taken at face value.

Figure 19 (overleaf) shows the ten non-state actors that caused the largest numbers of civilian deaths and injuries.

The group that caused by far the most deaths and injuries was ISIS. ‘ISIS’ has gone through several name changes over the last few years – the category here includes incidents recorded as perpetrated by al-Qaeda in Iraq (AQI), Islamic State of Iraq (ISI) and the Islamic State of Iraq and Syria (ISIS). 71% of all civilian deaths and injuries attributed to ISIS and its predecessor (8,790 of 9,551 total) were recorded, perhaps predictably, in Syria and Iraq. Most of the day-to-day violence perpetrated by ISIS takes place in these countries.

In the last two years, however, ISIS have increasingly made use of high-profile, high-lethality suicide bombings and IED attacks outside their main area of operation – such as the Ankara, Paris and Brussels attacks.

ISIS are the most prolific users of suicide bombings in the world – 48% of the total civilian deaths and injuries recorded as perpetrated by ISIS were as a result of suicide bombings.

Excluded from ISIS’ category are various functionally independent (and often previously separate) local ISIS
affiliates, including Boko Haram (now officially calling themselves ‘West Africa Province’) and Ansar Bayt al-Maqdis (now ‘Sinai Province’), who appear independently in the top ten perpetrators for civilian harm. Since 2014 in particular, Boko Haram has caused huge amounts of civilian harm. This, however, is not fully reflected by the chart because of attribution problems. If all of the additional incidents recorded as ‘unknown’ by the EVMP that were likely perpetrated by Boko Haram are taken into account, they reach a total of 8,147 civilian deaths and injuries – placing them second on the table.

The group ‘Syrian rebels’ includes all non-Kurdish, non-ISIS opposition groups within Syria. Within the data they are - when possible – disaggregated further, but even for those on the ground it is often difficult to ascribe responsibility for incidents to a specific group, especially given the ephemeral nature of many of these groups. Incidents are thus often reported as simply the work of ‘Syrian rebels’, ‘Talifri rebels’ etc.

As with the Syrian state, the Syrian rebels’ presence at the top of the table is unsurprising given that the Syrian civil war has been raging for the entire period of the Monitor – often with little concern for civilian life. Syria is a particularly difficult area for media reporting, so this figure probably falls far short of the full scale of harm.

The injuring of innocent children who are studying for a better future is appalling. Attacks that affect Iraqi children’s education show disregard for fundamental principles of humanity. No cause justifies them and they have gone on for far too long. They must stop.

Dr. Marzio Babille, UNICEF Representative to Iraq, 13 March 2013

Figure 19 Deaths and injuries caused by non-state actors

Over the five-year period one consistently striking point that stands out in the data is the effect of location on likely civilian casualty figures. A ‘populated area’ by AOAV’s definition is an area likely to contain a high density of civilians. When explosive weapons – which by definition have area effects – are used in such areas, they predictably cause higher levels of civilian harm.

Over the five-year period, 91% of the deaths and injuries caused by incidents of explosive violence in populated areas were reported as civilians. In areas not recorded as populated, the equivalent figure was 33%. Of the 145,565 civilian deaths and injuries recorded, 90% (130,737 deaths and injuries) were reported in populated areas. The ten worst incidents in AOAV’s dataset (in terms of civilian harm) all occurred in populated areas.

LOCATION CATEGORIES

Of the different location categories specified in the methodology, several have consistently seen high levels of civilian harm. All of the top five locations for overall civilian harm are, unsurprisingly, places AOAV defines as “populated” – i.e. places likely to have a high density of civilians.

Incidents coded as ‘Multiple (urban)’ consistently caused particularly high levels of civilian harm. Over the five-year period, AOAV has recorded 20,378 civilian deaths and injuries coded as occurring in ‘Multiple (urban)’ locations – 92% of all those killed or injured in such incidents were civilians. This is perhaps not surprising, as by definition these incidents represent multiple different exploions occurring in different places in an urban (and thus densely populated) area.

Other areas that show particular cause for concern include markets (17,169 civilian deaths and injuries over the five years), urban residential areas (15,480), places of worship (10,735) and public gatherings (9,290). In all of these areas armed actors form a very small percentage of the deaths and injuries recorded. In markets, for example only 3% of the 17,736 reported deaths and injuries were armed actors. In some years, this fell even further – in 2015, less than 1% of those killed or injured in markets were armed actors, and a large number of those armed actors who were killed were suicide bombers carrying out the attack rather than security personnel being targeted.

So stark are these figures that they are worth repeating. As many as 99% of those killed or injured in market bombings were civilians.
Insecurity Insight has previously investigated the long-term effects and efforts towards victim support in the wake of the 2009 Moon Market Bombing in Lahore.23 By focusing on one specific event, it is possible to explore in detail some of the complexities of its aftermath. But these issues urgently require more study.

**EFFECT ON AID AND HUMANITARIAN ASSISTANCE**

One of the many secondary effects of explosive violence which is not immediately obvious from casualty figures is its ability to make the provision of aid and other humanitarian assistance difficult or untenable. During 2015, AOAV's monthly reports on the EVMP included a section produced by Insecurity Insight focusing on the effect of explosive violence on provision of aid.

At best, explosive violence can seriously affect development and the progress of programmes like mine removal with potentially huge positive effects for local economies and people. At worst, areas already suffering humanitarian crises as a result of the destruction of infrastructure and huge levels of violence can be deprived of urgent assistance.

The effects of explosive violence on aid have been placed in the spotlight by the ongoing crisis in Syria, where the provision of aid to badly-affected areas in the interior has been seriously impacted – in particular by airstrikes. In many areas, airstrikes have apparently targeted hospitals, striking crippling blows to the ability of organisations like Medecins sans Frontieres to provide medical care to those who need it most. Similar incidents have been recorded in Yemen, where MSF clinics have been repeatedly hit by airstrikes. Targeting hospitals is unambiguously illegal under International Humanitarian Law.
Conclusion

These five years have seen explosive weapons take a huge toll on civilian lives. However, they have also seen the beginnings of movement towards a political solution.

INEW (the International Network on Explosive Weapons) has engaged in tireless advocacy towards the establishment of an international political commitment by states to avoid the use of explosive weapons in populated areas (EWIPA) – a phenomenon that AOAV’s data has irrefutably demonstrated is particularly harmful to civilians. As of June 2016, 53 states and territories and three state groupings have recognised the harm caused by EWIPA, and 38 countries have called for action to address this harm.24

The UN Secretary-General and the International Committee of the Red Cross (ICRC) have also publically noted the huge civilian harm caused by EWIPA. On 10 June 2016 the UN Security Council held an open debate on the protection of civilians in which EWIPA was a significant concern; AOAV provided a briefing paper for this debate based on its EVMP findings.25 In 2016, the use of explosive weapons in populated areas was discussed for the first time as a priority at the World Humanitarian Summit (WHS).

In July 2015 the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), together with the Norwegian Ministry of Foreign Affairs, held a meeting of experts on strengthening the protection of civilians from the use of explosive weapons in populated areas. This was the second such meeting, and demonstrates increased commitment towards the development of a political commitment. AOAV also convened a meeting of experts to address the humanitarian impact of improvised explosive devices (IEDs) in September 2015.26

The steps which have been taken so far are not to be dismissed, and give cause for hope. But there is much still to be done. AOAV urges that all states and users of explosive weapons:

- Strive to avoid such harm and suffering in any situation, review 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.
- States and other actors should stop using explosive weapons with wide area effects in populated areas.
- Previous AOAV reports have shown the impact that strong, progressive rules of engagement can have in limiting the impact of explosive weapons on civilians.28 States should review their policies and practices on the use of explosive weapons in populated areas, particularly those which may be expected to impact a wide area.
- States, international organisations and civil society 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 recommendations of the United Nations Secretary-General.29
- The UN Security Council should call upon parties to refrain from using explosive weapons in populated areas. Whenever relevant Security Council resolutions should include specific recommendations for civilian protection from such use of these weapons, building on recent examples in Syria, Libya and Cote d’Ivoire.30
- States and international organisations should publically condemn any use of explosive weapons in populated areas.
- Recognising the large number of civilian casualties caused by IEDs, all parties should work on measures 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 control of source materials, and more systematic data collection.31
- 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 stakeholders can accurately assess the impact of explosive weapons. More should also be done to protect and support people and organisations who gather such data, including providing access to journalists on the ground.
- More research is needed to better understand the long-term harm from explosive weapons, including on the impact of these weapons on vital infrastructure and services, public health, economic livelihoods, and environmental contamination. More funding support for NGOs working on data collection, investigations and victim assistance is necessary to advance collective understanding of the impacts of explosive weapons in populated areas.
- AOAV has demonstrated over four years the importance of systematic and continuing monitoring of explosive violence and its impacts in populated areas. This monitoring must continue in order to assess if 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.30 Data on explosive violence incidents is gathered from English-language media reports on the following factors: the date, time, and location of the incident; the number and circumstances of people killed and injured; 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.

The data collected by AOAV is always open to amendments in light of new information which becomes available after the publication of reports. No claims are made that this data captures every incident or casualty of explosive violence between 2011 and 2015.

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.

SURCES
AOAV uses a wide range of English-language news sources, many of which are translated by the publisher. Over the five-year period AOAV recorded incidents reported in more than 1100 sources. By far the most widely-used, however, are Reuters, AFP and AP.

RECORDING GUIDELINES
Civilian/ armed actor or security personnel: All casualties are assumed to be civilians unless otherwise stated. Casualties are recorded as ‘armed actors’ if they are reported as being members of the military, members of non-state armed groups, or security personnel who are likely to be armed, for example: police, security guards, intelligence officers, and paramilitary forces. If there is a strong possibility that armed actors are among the dead and injured, this is noted in the recording. Over the five years 782 such incidents occurred (6%).

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, such as 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.”31

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.

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.

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.32

AOAV is focused on capturing the harm caused by explosive weapons at the time of use. 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 2014, for instance, AOAV recorded 143 civilian casualties from unexploded or abandoned ordnance. These casualties occurred in 21 different countries and territories. The actual number of casualties from ERW is likely to be far higher.33

Poorly secured or stockpiled explosive weapons can also cause unintended harm to civilians. AOAV recorded 8 stockpile explosions from 2011-2015.

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 1,613 incidents out of a total of 12,566 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.
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. If there is a strong possibility that armed actors are among the dead and injured, this is noted in the recording. Over the five years 782 such incidents occurred (6%).

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 anti-vehicle 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- 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.

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. If there is a strong possibility that armed actors are among the dead and injured, this is noted in the recording. Over the five years 782 such incidents occurred (6%).

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.

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- **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.
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- **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.
1. A populated area is one that is likely to contain concentra-
tions of people. The Convention on Certain Conventional
Weapons (CCW) includes both antipersonnel land-
mines and antivehicle mines. In many incidents, news sources
include non-explosive weapons) gives a conservative estimate
of 16,115 non-combatant deaths for 2015. In the same period
the Syrian Observatory for Human Rights cites a figure of 20,977
(Protocol III), ICRC, Geneva, 10 October 1980, posted by U.S.
DefenceLink (accessed 01 June 2015); Jenna Corderoy, “Material Harm,”
(accessed 01 June 2015).

2. ‘Car bombs’ is a slightly imprecise term. This category
includes both guided and unguided missiles, although it tradi-
tionally is used to refer to weapons that may be an explosive warhead or other device. The term often
includes both guided and unguided missiles, although it tradi-
tionally is used to refer to weapons which follow a high-
arched, unpowered, parabolic trajectory to the

target.” Definition taken from The Center for Arms Control and Non-
Proliferation, Fact Sheet: U.S. Ballistic Missile Defense,
July 2012, http://armcontrolcenter.org/issues/missiledefense/ar-
ticles/fact_sheet_us_ballistic_missile_defense(accessed 11
April 2015).

3. Mortars are generally indirect fire weapons whose firepro-
ticles over a high-trajectory and do not depend on a line-of-sight.

4. “The Violent Road: Violence in Nigeria,” AOAV and NWGAV,
December 2015, http://www.aoav.org.uk/2015/male-civilians-explosive-


Humanitarian Crisis Of Our Era,’” ABC, 29 August 2014, Syria
www.abc.net.au/news/2014-08-29/3442193/syri
an-refugee-crisis-is-biggest-humanitarian-crisis-of-our-era
(accessed 01 June 2015).


9. The category of ‘mines’ includes both antipersonnel land-
mines and antivehicle mines. In many incidents, news sources
may be an explosive warhead or other device. The term often
includes both guided and unguided missiles, although it tradi-
tionally is used to refer to weapons which follow a high-
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July 2012, http://armcontrolcenter.org/issues/missiledefense/ar-
ticles/fact_sheet_us_ballistic_missile_defense(accessed 11
April 2015).

10. “The Violent Road: Violence in Nigeria,” AOAV and NWGAV,
December 2015, http://www.aoav.org.uk/2015/male-civilians-explosive-

11. The ‘area-impact explosive weapons’ category includes
missiles, rockets, and other projectiles which follow a high-
arched, unpowered, parabolic trajectory to the

target.” Definition taken from The Center for Arms Control and Non-
Proliferation, Fact Sheet: U.S. Ballistic Missile Defense,
July 2012, http://armcontrolcenter.org/issues/missiledefense/ar-
ticles/fact_sheet_us_ballistic_missile_defense(accessed 11
April 2015).

changed the rules, 2008-2015,” Action on Armed Violence
Robert Perkins, “Under Fire: Israel’s artillery polices
scrutinized,” Action on Armed Violence (AOAV), December


14. “Specific explosive weapons such as the March 2016
Lahore park suicide bombing. See Taha Siddiqui, ‘Pakistan
hunts those behind attack that killed more than 70 in Lahore,’”

Devices,” 18 September 2015, InEW, “Acknowledging the Harm,”
http://www.inew.org/ihl.nsf/Full/515
(accessed 17 April 2014).

16. “Attackers described as strikes can combine the fireing of
explosive missiles, the dropping of aerial bombs, and/or shuff-
ing using automatic weapons. There is often a lack of media
and official statements as to which specific weapons were used.
One example was the use of an explosive weapon unless it is clear that only non-
explosive weapons were used.

changed the rules, 2008-2015,” Action on Armed Violence
(accessed 01 June 2015).
