

AN EXPLOSIVE SITUATION

Monitoring explosive violence
in 2012



Report by

Henry Dodd and Robert Perkins

Editor

Katherine Harrison

With thanks to

Hector Guerra, Iain Overton, Devin O'Shaughnessy, Steven Smith

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Cover illustration

Fire and smoke rises from an explosion after air strikes hit Gaza City, 17 November 2012.
(REUTERS/Suhaib Salem)

Infographics

Sarah Leo

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Introduction



I welcome the research carried out by Action on Armed Violence [...] While the use of certain explosive weapons in populated areas may, in some circumstances, fall within the confines of the law, the humanitarian impact, both short- and long-term, can be disastrous for civilians. I therefore urge parties to conflict to refrain from using explosive weapons with a wide-area impact in densely populated areas...

**United Nations Secretary-General Ban Ki-moon,
22 May 2012.¹**

Over the past two years, Action on Armed Violence has monitored worldwide incidents and impacts of explosive violence. Our findings paint a grim picture of a world where civilians are increasingly the victims when explosive weapons are used. A world where the number of civilians reported killed or wounded by explosive weapons such as tank shells, mortars, car bombs, landmines, and grenades was 26% higher in 2012 than it was in 2011. A world where ‘collateral damage’ is an ugly word, hiding an ugly truth.

2012. A year when governments stood by and watched the mounting number of civilians killed and injured in Syria. Tens of thousands were harmed. It was not just Syria, however. Bombs and shells killed and injured civilians across the world. From Colombia to Kenya, Thailand to Sudan; over fifty countries were directly affected by explosive violence in 2012. It was civilians, not armed actors, who bore the brunt of the impacts of these weapons.

Explosive weapons:

Weapons that share common characteristics causing injuries, deaths, and damage by projecting explosive blast, heat, and often fragmentation around a point of detonation. These weapons include a variety of munitions such as air-dropped bombs, mortars, improvised explosive devices, and artillery shells.²

An Explosive Situation presents an overview of the casualties recorded by AOAV in 2012, showing where and when they happened.

It looks at the use of explosive weapons in populated areas, and investigates those locations where civilians were most affected. It explores the types of explosive weapons that were most frequently used according to their launch-method.

Lastly, the report highlights the fact that weapons whose explosions impact over a wide area were of particular concern in 2012.

An Explosive Situation shows that these wide impact explosive weapons, which indiscriminately project large amounts of blast and fragmentation across a wide area, are clearly unacceptable for use in populated areas. Data from the report shows that such weapons often kill and injure intolerably high numbers of civilians in a single blast. The injuries inflicted can be severe and complex, with life-long implications.

The true impact on the lives, limbs, and livelihoods lost through explosive violence cannot begin to be quantified in this report. The true cost of a home destroyed, a business gone, a hospital without medicine, or a schoolhouse demolished, is hard to even imagine.³ The long-term and indirect harm that civilians suffer from explosive weapons is rarely mentioned in the media. This trauma is, as such, absent from this report.

The data presented here is also not an attempt to capture every casualty of every incident of explosive violence around the world, and no claims are made in this report that this sample of data represents the

total impact of explosive weapons on civilians in 2012. Rather this data should be considered as an indicator of the scale and scope of these impacts over the course of a year. The actual number of civilians killed and injured by explosive violence in 2012 is likely far higher than the figures shown here.

The data in this report is drawn from over 580 English-language media sources reporting on incidents and impacts of explosive weapons use around the world. The methodology used by AOA is outlined in further detail on pages 37-38. The data is particularly limited with respect to ongoing and intense conflict situations, such as in Syria. In these contexts, AOA's casualty figures are significantly under-representative due to the project's methodological constraints and the nature of media reporting (see page 13 for details).

What the report does do is show in a clear light some hard trends that are occurring around the world and it provides evidence that will feed into a growing debate. Already, the international community is no longer standing by in silence while the use of explosive weapons in populated areas continues to cause devastating and disproportionate harm to civilians. Concerned states are increasingly speaking out in greater numbers to acknowledge the serious threat from explosive violence. There have been recent calls from the UN Secretary-General, the ICRC, international organisations, academics, medical professionals,

journalists, and civil society for urgent action to address the humanitarian harm to civilians from these weapons.

Far more is needed, however, to prevent the consistently high levels of suffering inflicted on civilians from the use of explosive weapons in populated areas as documented in this report. AOA is a founding member of the International Network on Explosive Weapons (INEW), a network of non-governmental organisations that believes explosive weapons with wide-area impacts must not be used in populated areas.

In this way, AOA calls on states and other actors to immediately:

- 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, 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.



People pray at the graves of victims of an IED attack on St Theresa's Church outside Abuja, Nigeria, 24 December 2012 (REUTERS/Afolabi Softunde)

Key findings

OVERVIEW

There was a 26% rise in the number of civilian casualties from explosive weapons in 2012, compared to 2011.

- 34,758 people were killed and injured by explosive weapons in 2,742 incidents in 2012 compared to 30,127 people killed or injured 2,522 incidents in 2011.
- 78% (27,025) of those affected were civilians, up from 71% (21,499) in 2011.

When explosive weapons were used in populated areas 91% of casualties were reported to be civilians. In other areas this figure was 32% – a marked decrease.⁴

In incidents where the age of casualties was reported, children accounted for 15% of all world-wide civilian casualties.

Syria was the worst affected country in the world in 2012 for explosive violence.

- Syria had 23% more casualties from explosive weapons than Iraq, the second most affected country in the world.⁵
- Nine out of every 10 of the explosive violence victims in Syria were civilians.

There were reports of explosive violence victims in 58 separate countries and territories 2012.

- Syria, Iraq, Pakistan, Afghanistan, and Nigeria were the top five most affected countries from explosive violence.
- 80% of all recorded civilian casualties were in these countries.

POPULATED AREAS

- On average, 16 people were killed or injured every time explosive weapons were used in populated areas. In other areas, the average number recorded was seven.⁶
- Over half (61%) of all explosive violence incidents reportedly occurred in populated areas.⁷

EXPLOSIVE WEAPON TYPES

Air-launched explosive weapons

- 54% of casualties from air-launched explosive weapons were civilians. Slightly less than half of incidents involving air-launched weapons occurred in populated areas (47%).⁸
- Air-launched weapons were responsible for at least 2,518 civilian casualties (9% of all civilian casualties recorded by AOAV in 2012).⁹ 58% of all worldwide civilian casualties from air-launched explosive weapons were in Syria.
- Air-dropped bombs and rockets stood out as causing very high percentages of civilian casualties. When these weapons were used in populated areas, 82% of the casualties were reported to be civilians.¹⁰

Ground-launched explosive weapons

- 86% of casualties from the use of ground-launched explosive weapons were civilians in 2012. 80% of these incidents occurred in populated areas.¹¹
- AOAV recorded 6,508 civilian casualties from the use of ground-launched explosive weapons (25% of all civilian casualties worldwide recorded in 2012).¹²
- Mortars again stood out as a weapon that caused high percentages of civilian casualties. 90% of all mortar casualties were reported to be civilians. 60% of all worldwide mortar use in 2012 was reported in Pakistan and Syria.¹³

IEDs

- IEDs caused over half (60%) of the total casualties from explosive weapons recorded by AOAV in 2012.
- IEDs were reported to have caused casualties in 42 countries. The top three countries for IED explosions were Iraq, Afghanistan, and Pakistan. These accounted for 68% of all recorded IED incidents.¹⁴
- On average, 23 civilians were killed or injured when an IED was detonated in an attack involving suicide. This was more than double the average recorded in other types of IED incidents.¹⁵
- AOAV recorded an average of 32 civilian casualties per incident from the use of car bombs in populated areas. This compared to six civilian casualties per incident in other areas.¹⁶

EXPLOSIVE WEAPONS WITH WIDE-AREA IMPACTS

Large scale blast and fragmentation

- Weapons which can project a large amount of blast and fragmentation across a wide area, such as air-dropped bombs and car bombs containing large quantities of explosives, were frequently the cause of mass casualty incidents in 2012.¹⁷

Inaccuracy of delivery

- When armed actors were reported to be the target of attacks, civilians made up 52% of the recorded casualties.¹⁸ When attacks targeting armed actors occurred in populated areas, the percentage of civilian casualties increased dramatically to 80%.

Multiple munitions

- The use of multiple explosive weapons in combination simultaneously across urban areas was one of the most destructive patterns of explosive violence recorded by AOAV.¹⁹

CIVILIANS KILLED & INJURED



78% CIVILIAN CASUALTIES

TOTAL REPORTED CASUALTIES: 34,758

TOTAL CIVILIAN CASUALTIES: 27,025

+26%
CIVILIAN CASUALTIES (KILLED & INJURED) COMPARED TO 2011

TARGETED AREAS

91%

CIVILIAN CASUALTIES
IN POPULATED AREAS

1,674 ATTACKS

32%

CIVILIAN CASUALTIES IN
NON-POPULATED AREAS

1,068 ATTACKS



MARKETS

2,905
TOTAL CASUALTIES

93%
CIVILIAN CASUALTIES

25
AVERAGE CIVILIAN
CASUALTIES PER ATTACK



URBAN RESIDENTIAL AREAS

2,868
TOTAL CASUALTIES

91%
CIVILIAN CASUALTIES

9
AVERAGE CIVILIAN
CASUALTIES PER ATTACK



PLACES OF WORSHIP

1,950
TOTAL CASUALTIES

94%
CIVILIAN CASUALTIES

23
AVERAGE CIVILIAN
CASUALTIES PER ATTACK

58

COUNTRIES & TERRITORIES WHERE
EXPLOSIVE VIOLENCE WAS REPORTED

LETHAL LOCATIONS

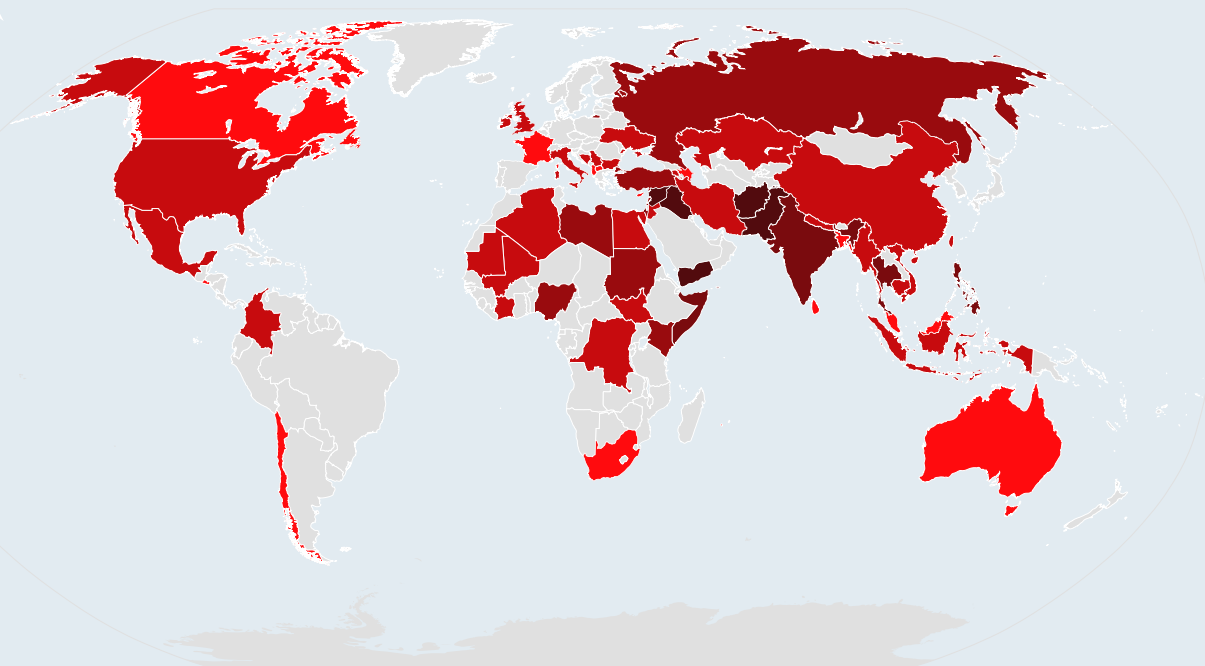
100-600 INCIDENTS

50-100 INCIDENTS

15-50 INCIDENTS

2-15 INCIDENTS

1 INCIDENT



DEADLY WEAPONS

AVERAGE CIVILIAN CASUALTIES PER INCIDENT BY WEAPON TYPE



CAR BOMBS

26



AIR-DROPPED BOMBS

14



MORTARS

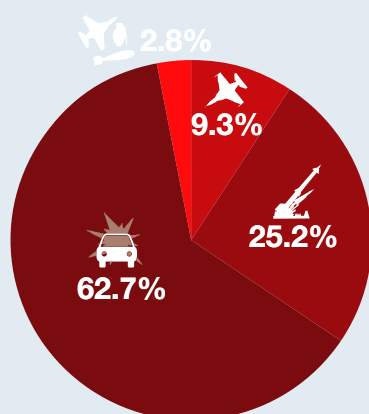
9



GRENADES

6

CIVILIAN CASUALTIES BY EXPLOSIVE WEAPON LAUNCH METHOD



2.8%

9.3%

25.2%

62.7%



AIR-LAUNCHED WEAPONS



GROUND-LAUNCHED WEAPONS



IED (IMPROVISED EXPLOSIVE DEVICES)



COMBINATIONS OF LAUNCH METHODS

Key terms

CASUALTY:

Refers to people who were killed or physically injured.²⁰

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 AOA 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.²¹

EXPLOSIVE WEAPONS TYPES:

Weapons were classified by AOA 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 WEAPON TYPES:

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

MINES:

Refers to incidents where the explosive weapon was described as a mine or landmine. These include both antipersonnel and anti-vehicle mines.²²

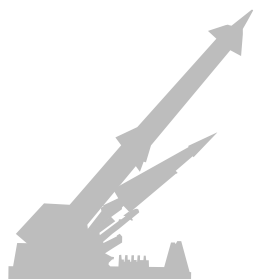
AIR-LAUNCHED:



- **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.²³ Where the munition used is specified in news sources they are recorded as a more specific weapon category (see below).
- **Air-dropped bomb:** Refers to bombs reported as being delivered by air. References to areas being 'bombed' by military aircraft were recorded as air-dropped bomb incidents. This can include make-shift manually-deployed bombs, as well as cluster bombs.²⁴
- **Missile:** These may be air or ground-launched and were recorded when reference was made to a 'missile' being explosive.²⁵
- **Rocket:** These may be air or ground-launched. Rockets were recorded wherever they are specified in a news source, or where a known rocket type was reported in the incident (e.g. Grad, Katyusha).

Ruined residential buildings after months of shelling in the central Jourat al-Shayah district of Homs, 9 October 2012. (www.facebook.com/LensYoungHoms)



GROUND-LAUNCHED:

- **Unspecified shelling:** The broadest recording category in this grouping. It refers to reports of the use of explosive shells which did not specify how they were delivered (e.g. mortars, artillery, or tanks).
- **Artillery shell:** A projectile fired from a gun, cannon, howitzer, or recoilless gun/rifle. This refers to medium and large-calibre munitions primarily designed to fire indirectly.²⁶ Incidents were recorded as an artillery shell wherever specified in sources.
- **Mortar:** Incidents where reports specified that a mortar bomb was the munition used.²⁷
- **Tank shell:** Explosive shells fired by tanks.
- **Grenade:** Incidents 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. IEDs which were reported as being attached to vehicles, such as a sticky bomb attached to a 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.
- **Multiple IED types:** Incidents where a combination of different IEDs were used in an incident, and where news sources did not separately attribute casualties from individual devices.



2012 Overview

AOAV recorded **34,758** people killed and injured by explosive weapons in 2,742 incidents in 2012.

Of these, **78%** were civilians (27,025 civilian casualties).

This was a **26% increase** in the number of civilian casualties from explosive violence in 2012 from 2011.

TOTAL CASUALTIES

Data recorded by AOAV in 2012 strongly reinforces evidence that when explosive weapons are used in populated areas the victims are overwhelmingly civilians.²⁸

Out of the total 34,758 casualties of explosive violence recorded by AOAV, 78% (27,052) of persons killed or injured were reported to be civilians.²⁹ This was a significant 26% increase in the number of civilians killed and injured by explosive weapons in 2012 compared to data recorded by AOAV in 2011.

Civilians were even more at risk when explosive weapons were used in populated areas. In 2012, civilians made up 91% of victims of the use of explosive weapons in populated areas, compared to 32% in other areas. This was an increase from 2011, where civilians made up 84% of the total victims in populated areas.

These increases were likely caused by the escalating explosive violence in Syria, where one quarter of all explosive weapons casualties were recorded. In 2012 in Syria, nine out of 10 of reported casualties from explosive violence were civilians. The actual numbers

of civilian casualties from explosive weapons are undoubtedly far greater than those AOAV could record under the strict methodology of this project.³⁰

GEOGRAPHICALLY WIDESPREAD HARM

Contrary to the association of explosive violence with large-scale armed conflict and 'war' in the traditional sense, AOAV recorded harm from explosive weapon use across 58 countries and territories in 2012.³¹

Syria, Iraq, Pakistan, Afghanistan, and Nigeria were the top five most heavily affected countries by explosive violence. AOAV recorded 80% of all civilian casualties worldwide in 2012 in these countries alone.

Syria was the single most affected country by explosive weapons in 2012. AOAV recorded a nearly 800% increase in civilian casualties in Syria in 2012. Iraq was the most heavily affected country in 2011.

In 2012 AOAV also recorded increases in explosive violence in Iraq,³² Thailand,³³ Gaza,³⁴ and Kenya.³⁵

At the other end of the scale, in 13 countries there was only one recorded incident. Civilian casualties from explosive violence decreased notably in a few countries in 2012, including in Yemen,³⁶ Somalia,³⁷ and Libya,³⁸ and ceased to be recorded in Côte d'Ivoire.³⁹

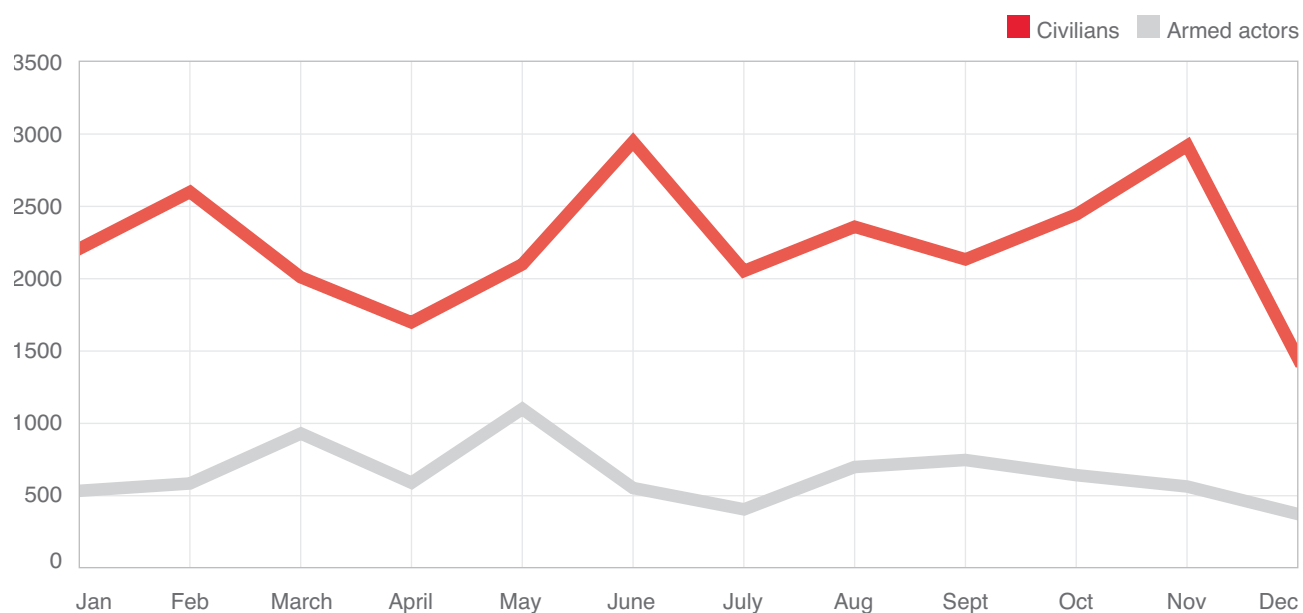
In many places levels of explosive violence remained depressingly static.

Pakistan continued to experience high levels of explosive violence. Hundreds of civilians were killed and injured by IED attacks, often in markets and places of worship, as well as in drone strikes on 'suspected militants'.⁴⁰ In Afghanistan, thousands of civilians were killed and injured by explosive weapons, despite a 41% drop in the number of civilian casualties from NATO air strikes.⁴¹ The Sudanese Air Force continued to use large unguided bombs dropped from Antonov cargo planes against rebel forces in regions of Sudan and South Sudan. IED attacks in Nigeria, many carried out by the Islamist group Boko Haram, killed hundreds of civilians in 2012, including 186 people who died on 20 January when a series of bombs exploded in the city of Kano.⁴²

Figure 1 Top 15 countries and territories with the highest reported number of civilian casualties from explosive violence

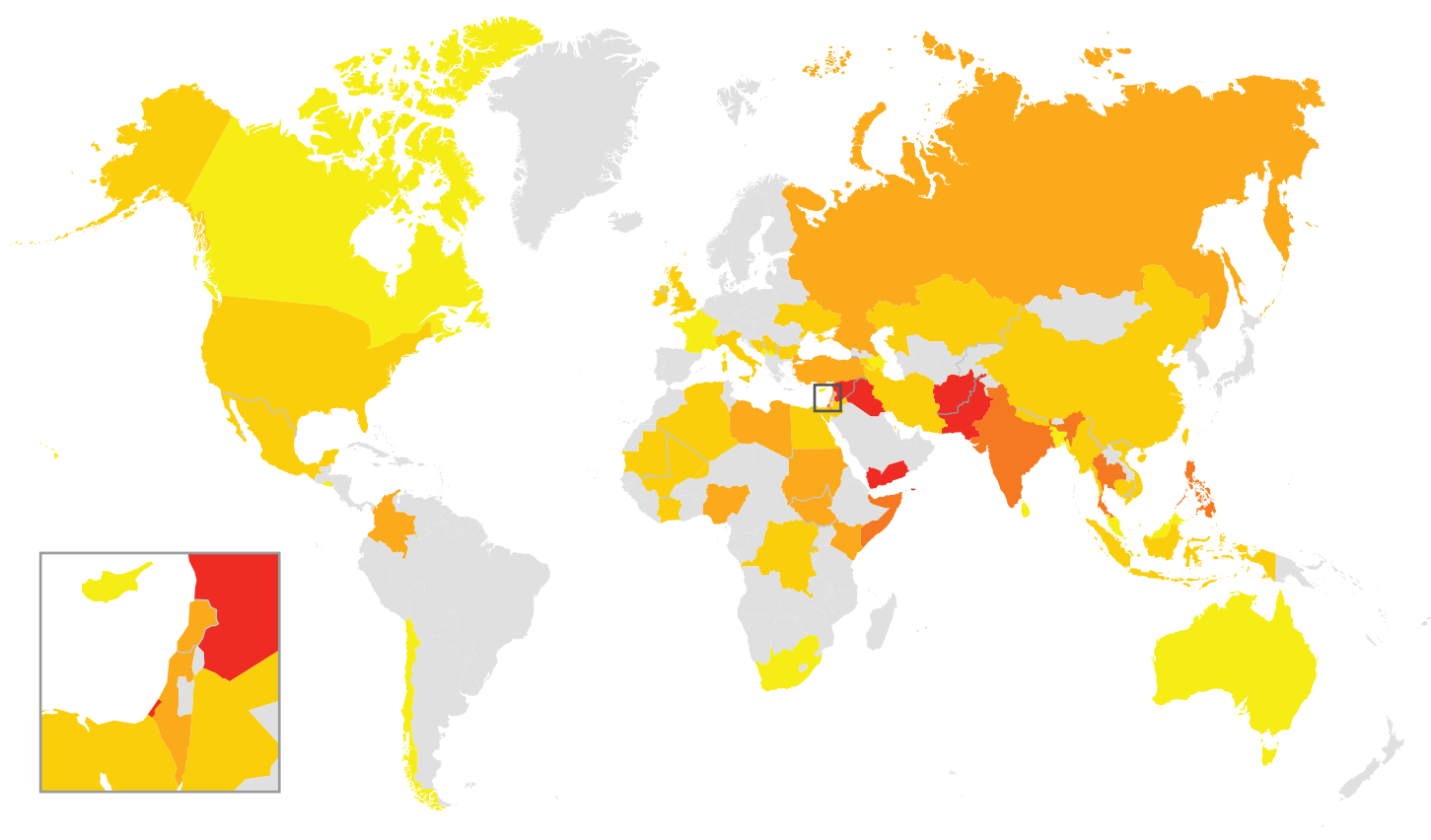
	Country/ territory	Civilian casualties	Number of incidents	Average civilian casualties per incident	Percentage of casualties that were civilians	Global ranking in 2011
1	Syria	8,382	427	20	91	↑ 7
2	Iraq	6,710	472	14	89	↓ 1
3	Pakistan	3,287	420	8	71	↓ 2
4	Afghanistan	2,338	465	5	62	↓ 3
5	Nigeria	1,017	48	21	89	↑ 8
6	Thailand	769	60	13	83	↑12
7	Gaza	641	154	4	83	↑10
8	Somalia	605	77	8	67	↓ 5
9	Kenya	418	35	12	88	↑21
10	Colombia	317	35	9	60	↑14
11	Yemen	312	135	2	18	↓ 6
12	Libya	299	19	16	87	↓ 4
13	Philippines	292	63	5	75	↑13
14	India	220	89	2	56	↓ 9
15	Lebanon	182	16	11	99	↑36

Figure 2 Casualties by month in 2012



Incidents of explosive violence recorded by AOAV in 2012

AOAV recorded explosive violence in 58 countries and territories across the world. Explosive violence was particularly intense in several contexts.



- **Countries and territories with between 100 and 500 incidents**
 Iraq 472, Afghanistan 465, Syria 427, Pakistan 420, Gaza 154, Yemen, 135
- **Countries with between 50 and 100 incidents**
 India 89, Somalia 77, Philippines 63, Thailand 60
- **Countries with between 15 and 50 incidents**
 Nigeria 48, Colombia 35, Israel 35, Kenya 35, Sudan 27, Turkey 27, Russia 21, Libya 19, Lebanon 16, South Sudan 16
- **Countries with between 2 and 15 incidents**
 Mexico 11, Bahrain 7, Rwanda 6, USA 6, Egypt 5, Cambodia 5, Burma 4, Ukraine 4, Algeria 3, Bosnia and Herzegovina 3, China 3, Democratic Republic of Congo 3, Indonesia 3, Nepal 3, Armenia 2, Bulgaria 2, Iran 2, Italy 2, Jordan 2, Kazakhstan 2, Mali 2, Republic of Ireland 2, Serbia 2, UK 2, Vietnam 2
- **Countries and territories with 1 incident**
 Australia 1, Azerbaijan 1, Bangladesh 1, Canada 1, Chile 1, Cyprus 1, El Salvador 1, France 1, Kosovo 1, Malaysia 1, Montenegro 1, South Africa 1, Sri Lanka 1

The number of civilians who were victims of explosive weapons was consistently and significantly higher than armed actors throughout the year. Peaks in civilian casualties occurred in February, June, and November 2012. These peaks corresponded respectively to the use of explosive weapons in the Syrian city of Homs, a number of IED attacks in Iraq, and Israel's launch of airstrikes in Gaza.⁴³ (see Figure 2, page 10)

WOMEN AND CHILDREN

In 2012, AOAV recorded a 45% increase in the number of child casualties from explosive weapons use, from 1,017 in 2011 to 1,471 in 2012. This increase was in a large part due to the conflict in Syria, which was accountable for 27% of the child casualties of explosive violence recorded in 2012.⁴⁴

Children made up 5% of the total civilian casualties recorded by AOAV. Of the 1,471 children reported killed or injured, 196 were identified as boys and 159 as girls.⁴⁵

Media reporting however of child casualties of explosive weapons was often limited. In many incidents children were reported as being among the casualties but specific numbers were not given. As such, it is highly likely that children accounted for a much greater proportion of civilian casualties. For example, from a sample of incidents where the age of casualties was reported, children made up 15% of civilian casualties.

Media reporting on gender was similarly limited. AOAV only recorded reports of 911 women and girls killed or injured by explosive weapons in 2012. This meant women and girls made up only 3% of civilian casualties.

⁴⁶ There are a number of factors that could have contributed to distorting data on gender, from difficulties with conducting media reporting on the ground, to the nature of the content of media reports. Often in the aftermath of an incident of explosive violence, it may not have been possible for journalists to access the location, particularly where violence was ongoing.

In incidents where explosive weapons caused mass casualties it was rare for news sources to disaggregate reporting on casualties by gender or age. To put this in context, of the 107 incidents where there were more than 50 civilian casualties, just half included any demographic information on the victims.⁴⁷

More data and research is needed to better understand the extent to which children in particular are impacted by explosive violence. Recent research by Save the Children has highlighted how explosive violence in Syria has severely affected children.

Children there have been traumatized by violence, left homeless or without access to education, and struggling to cope with bereavement over the loss of parents and family members from explosive violence. Around 2,000 schools have been damaged in the conflict, the effects of which are still unclear.⁴⁸

Less has been documented about the gendered impacts of explosive violence. An analysis of casualties recorded by Iraq Body Count between 2003 and 2011, however, found that the proportion of women and children killed and injured was significantly higher for explosive weapons than for firearm incidents and other forms of violence in Iraq.⁴⁹



We should stop the shelling. For me, explosions lead to destruction. And more than that – the shelling makes people get injured, and it makes people die. The only effect is destruction, death and wounded people. My home has been destroyed. We were in it when it was hit, and when it fell. I feel as though all of Syria has been destroyed.

Saba (last name withheld)

A displaced Syrian child, aged 13.⁵⁰

Syria

Detailed reporting on explosive violence was limited in Syria as a result of the intensity of the fighting in 2012. The nature of the conflict there meant it was almost impossible to identify the specific time, location, weapon used, or number of persons killed and injured from media reports. As such, it was particularly difficult to record casualties occurring in Syria (and in other similar conflict situations) under AOAV's project methodology.

For example, media reporting that, 'over the past week, heavy shelling and widespread fighting across Homs killed over 100 persons,' could not be recorded in AOAV's data as it is unclear how many of those casualties were caused by explosive weapons, as opposed to gunfire or other forms of armed violence. Nor could other criteria necessary for an incident to be recorded under AOAV's methodology be satisfied, such as an indication of the specific 24-hour period in which the violence occurred.⁵¹ The casualty figures recorded by AOAV are therefore an especially limited reflection of the total scale of humanitarian harm which explosive weapons caused in Syria.

In December 2012, the United Nations estimated that at least 60,000 people had been killed during the conflict in Syria.⁵² Many of these deaths were not caused by explosive weapons, as the total figure included

deaths from gunfire and torture as well as other forms of violence.⁵³ A disaggregation of deaths recorded by the Centre for Documentation of Violations (VDC) in Syria suggested that around a third of the deaths since fighting began in early 2011 had occurred in incidents where explosive weapons were likely to have been used.⁵⁴

Both AOAV and the VDC recorded that more than nine out of every 10 casualties of explosive violence in Syria were civilians.⁵⁵

Since protests in Syria began in early 2011, AOAV recorded 10,260 casualties of explosive violence in the country. Half of these were fatalities.⁵⁶ AOAV recorded similarly low numbers of casualties in other intense periods of conflict, such as in Libya in 2011 and in Lebanon in 2006, compared with estimates of total casualties from on-the-ground investigations.⁵⁷

These issues impact the overall total of casualties recorded by AOAV for a given year. For 2012, the figure of 34,758 persons killed and injured by explosive weapons is likely to be significantly higher in actuality. However, AOAV's research gives a clear sense of the world's hotspots for explosive violence in 2012, and the trends emerging from these conflicts.



Syrian women and children walk past damaged buildings in Aleppo, 26 December 2012 (REUTERS/Muzaffar Salman).

THE FIVE HARDEST-HIT PROVINCES IN SYRIA

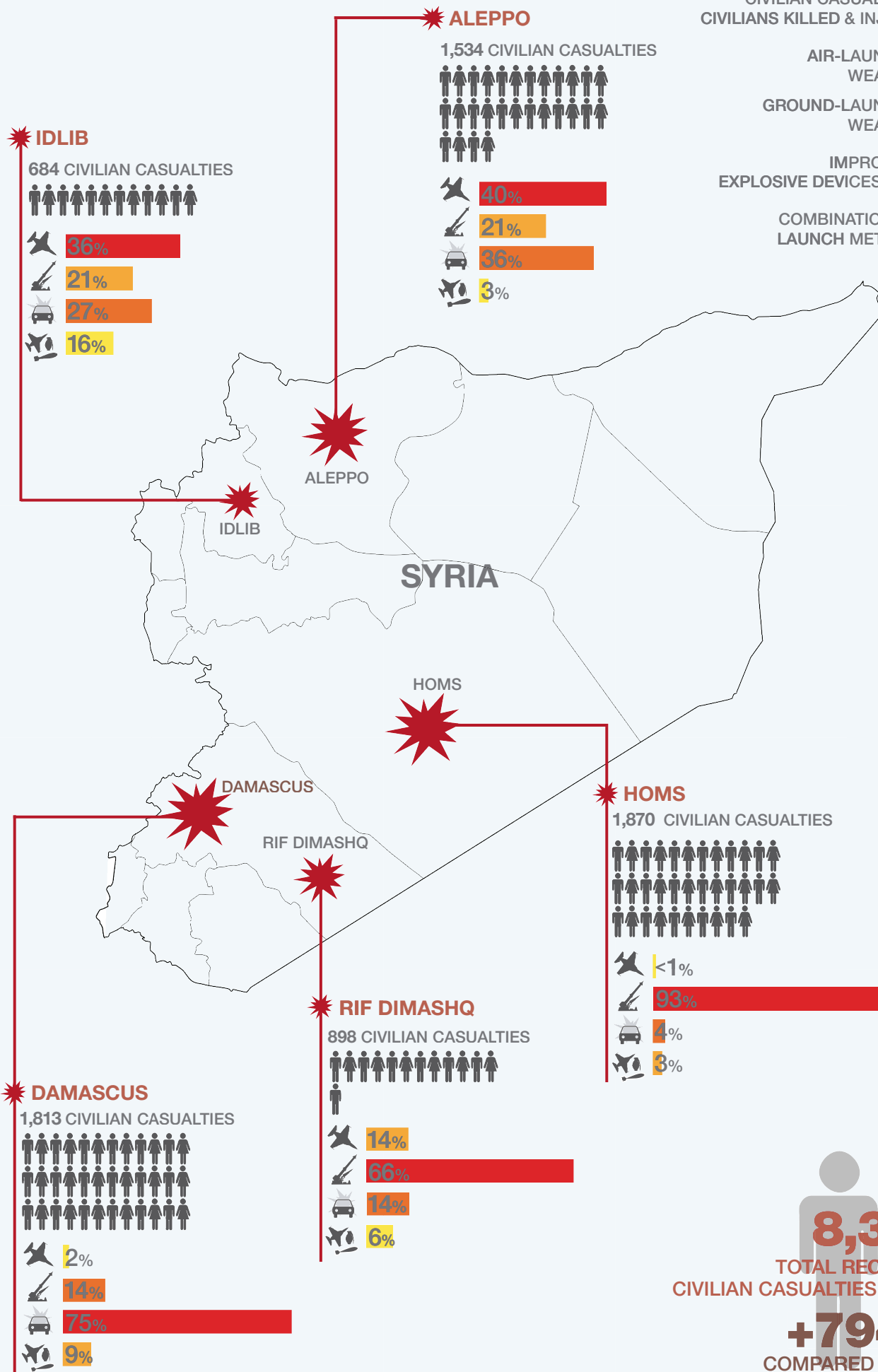
CIVILIAN CASUALTIES =
CIVILIANS KILLED & INJURED

AIR-LAUNCHED
WEAPONS

GROUND-LAUNCHED
WEAPONS

IMPROVED
EXPLOSIVE DEVICES (IEDs)

COMBINATIONS OF
LAUNCH METHODS



Explosive weapons in populated areas

In populated areas, **91%** of casualties in 2012 were reported as civilians. This compared to 32% in other areas.

On average, **16** people were killed or injured in each incident recorded in a populated area. In other areas in 2012 the average number was seven.

In incidents reportedly targeting armed actors, over half (**52%**) of all casualties were still civilians. When these attacks occurred in populated areas, 80% of casualties were civilians.

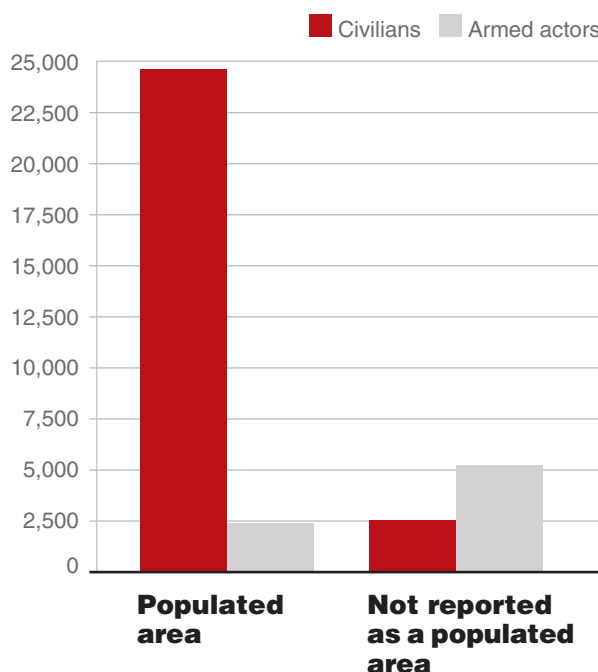
Urban centres, markets, and residential neighbourhoods were the most heavily affected locations.

POPULATED AREAS

In populated areas, 91% of explosive violence casualties were reported as civilians, compared to 32% in other areas. This was an increase from 2011, where 84% of casualties in populated areas were civilians, compared to 35% elsewhere.

This increase was recorded amidst increasing concern in 2012 over the size and power of explosive weapons being used in populated areas, as well as the means of their deployment, particularly in Syria.

Figure 3 Total casualties by populated area / non-populated area



In 2012, AOAV recorded 24,603 civilian deaths and injuries in populated areas. More than nine in 10 civilian casualties (91%) were recorded in just 61% of all the incidents reported in 2012.

This pattern is not surprising. When explosive weapons are used in areas where civilians are concentrated, civilians are at greater risk of harm. The very nature of explosive weapons' blast and fragmentation effects compounds this harm in populated areas.

These weapons can often result in entire buildings being destroyed or collapsing, trapping victims, and causing severe crush injuries and high numbers of fatalities in a single instance.⁵⁸

In 2012, when an explosive weapon was used in a populated area, 16 people were on average killed or injured per incident. This was more than double the average recorded in areas that were not reported as populated.⁵⁹

Explosive weapons are also often indiscriminate in their impacts. AOAV recorded that in incidents where explosive weapons reportedly were used to target armed actors or military objectives, civilians still made up 52% of casualties.⁶⁰ When attacks targeting armed actors occurred in populated areas, this percentage increased dramatically with civilians making up 80% of the total casualties.⁶¹

The long-term impacts of the damage and destruction frequently caused by explosive weapons when used in populated areas can be devastating, leaving civilians homeless, without possessions, without access to vital public services, and deprived of their means of livelihood.

I had to watch as he died right in front of my eyes. It's the most awful tragedy imaginable. My son was the family's only breadwinner because my husband has cancer and is no longer able to work. Now we have lost our only source of income from this incident too. I have no idea how we can live after this; no idea how we will survive. All of our belongings were either destroyed by the blast or in the fire that followed and completely burned our home to the ground.

Sumalee Yeesaman,
seriously injured in a car bombing in Thailand, 21 September 2012.⁶²

LOCATIONS

AOAV recorded explosive weapons use in populated areas and crowded locations such as places of worship, buses and trains, cinemas, sports stadiums, cafés, restaurants, and festivals. Civilians were overwhelmingly the majority of casualties in these instances, making up 94-99% of all casualties recorded in these locations.⁶³

AOAV found that when attacks occurred in populated areas, explosive weapons were most often used across multiple urban locations in a single incident, in markets, and in urban residential areas.⁶⁴ A third of all civilian casualties were recorded in these three types of locations (see Figure 4 overleaf).

Most of the incidents and casualties involving the use of explosive weapons across urban centres or multiple urban locations were caused by combinations of heavy shelling, including by rockets, mortars, and artillery. The majority of these incidents involved ground-launched explosive weapons (65%). These types of attacks were reported in a total of 13 countries and territories, including Afghanistan, Israel, Libya, and Sudan. The vast majority, though, were recorded in Syria (74%).

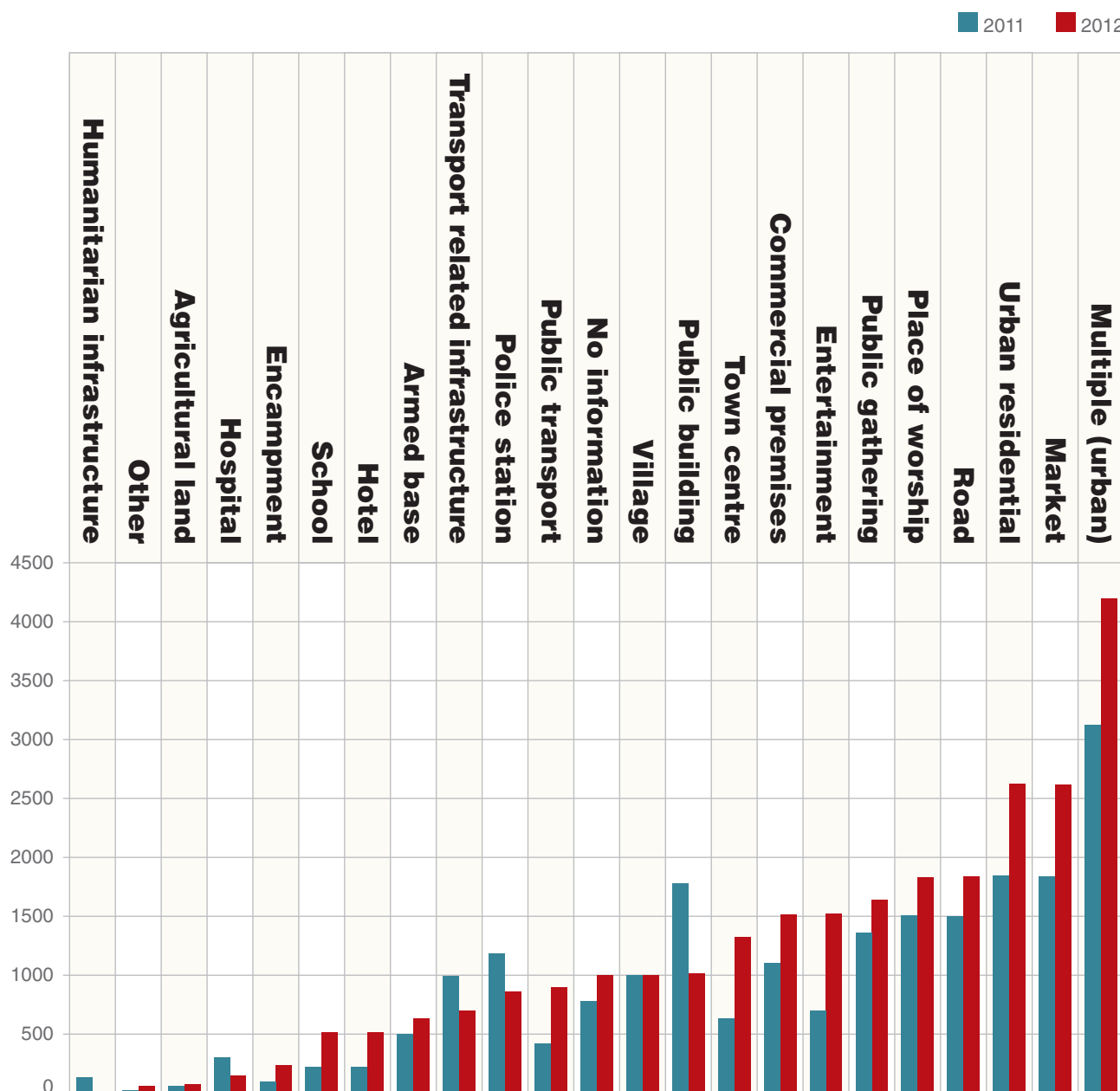
Explosive weapons attacks on markets were responsible for the second highest number of civilian casualties in populated areas. IEDs were the explosive weapon most frequently used in these incidents.⁶⁵ In 2012, AOAV recorded 2,905 casualties in over 100 explosive weapons attacks on markets. Of these 93% were reported to be civilians.

Civilians also continued to be killed and injured in disproportionately high numbers by explosive weapons in their own homes and neighbourhoods, particularly in urban areas.⁶⁶ These attacks caused the third highest percentage of civilian casualties in populated areas (11%), occurring in urban residential areas across 28 countries and territories in 2012.⁶⁷

In 2012, AOAV recorded a relatively small number of incidents (61) where explosive weapons were used in or near schools, hospitals, and humanitarian infrastructure.⁶⁸ These incidents caused 667 civilian casualties, including 100 children.⁶⁹

There are strong existing presumptions and legal prohibitions against any violent attacks on schools, hospitals, or humanitarian infrastructure.⁷⁰ The current outrage and widespread condemnation of these attacks reflect evidence of a strong norm on the unacceptability of using explosive weapons in such areas.⁷¹

Figure 4 Civilian casualties by incident location

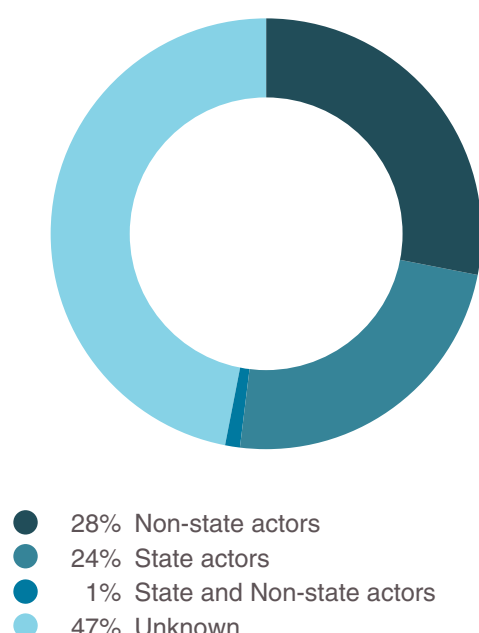


UNICEF condemns yesterday's shelling of a school near Damascus that killed a number of students and a teacher. Since the violence in Syria began, schools have been looted, vandalized and burned. This is unacceptable. Schools are, and must remain, zones of peace.

Maria Calivis,
UNICEF Regional Director,
5 December 2012. ⁷²

USERS OF EXPLOSIVE WEAPONS

Figure 5 Civilian casualties by reported user



The percentage of civilian casualties from explosive weapons was roughly the same regardless of whether the weapons were used by states or non-state actors. Where the user of explosive weapons was reported in media sources, states were responsible for 28% of the total recorded civilian casualties and non-state actors were responsible for 24%.

However, in almost half of all recorded incidents the user of explosive weapons was not reported.⁷³ Of the incidents where the user was 'unknown,' 74% involved the use of IEDs. Given that no incident of state use of IEDs was recorded in 2012, it is likely that the number of civilian casualties caused by non-state actors is higher than those which could clearly be attributed under AOA's methodology.

Nineteen different states were recorded as using explosive weapons, independent of states contributing troops to multilateral forces such as the African Union Mission in Somalia, and NATO ISAF (North Atlantic Treaty Organisation International Security Assistance Force).⁷⁴ State use of explosive weapons caused a recorded 9,191 casualties, of which 72% were civilians.

Figure 6 shows the states and coalitions of states involved in the most incidents of explosive violence recorded by AOA in 2012.

Figure 6 States and coalition actors with the highest use of explosive weapons

States	
1	Syria
2	Israel
3	NATO ISAF
4	US
5	Yemen
6	Sudan

AOA recorded more than 70 non-state armed groups using explosive weapons. These caused 9,937 casualties, of which 75% were civilians.⁷⁵ In some contexts multiple non-state groups were active. For example, AOA found 12 different non-state groups firing rockets and mortars from Gaza into Israel, including Islamic Jihad, Abu Ali Mustafa brigades, Al-Quds Brigade, and the Mujahedeen Shura Council.

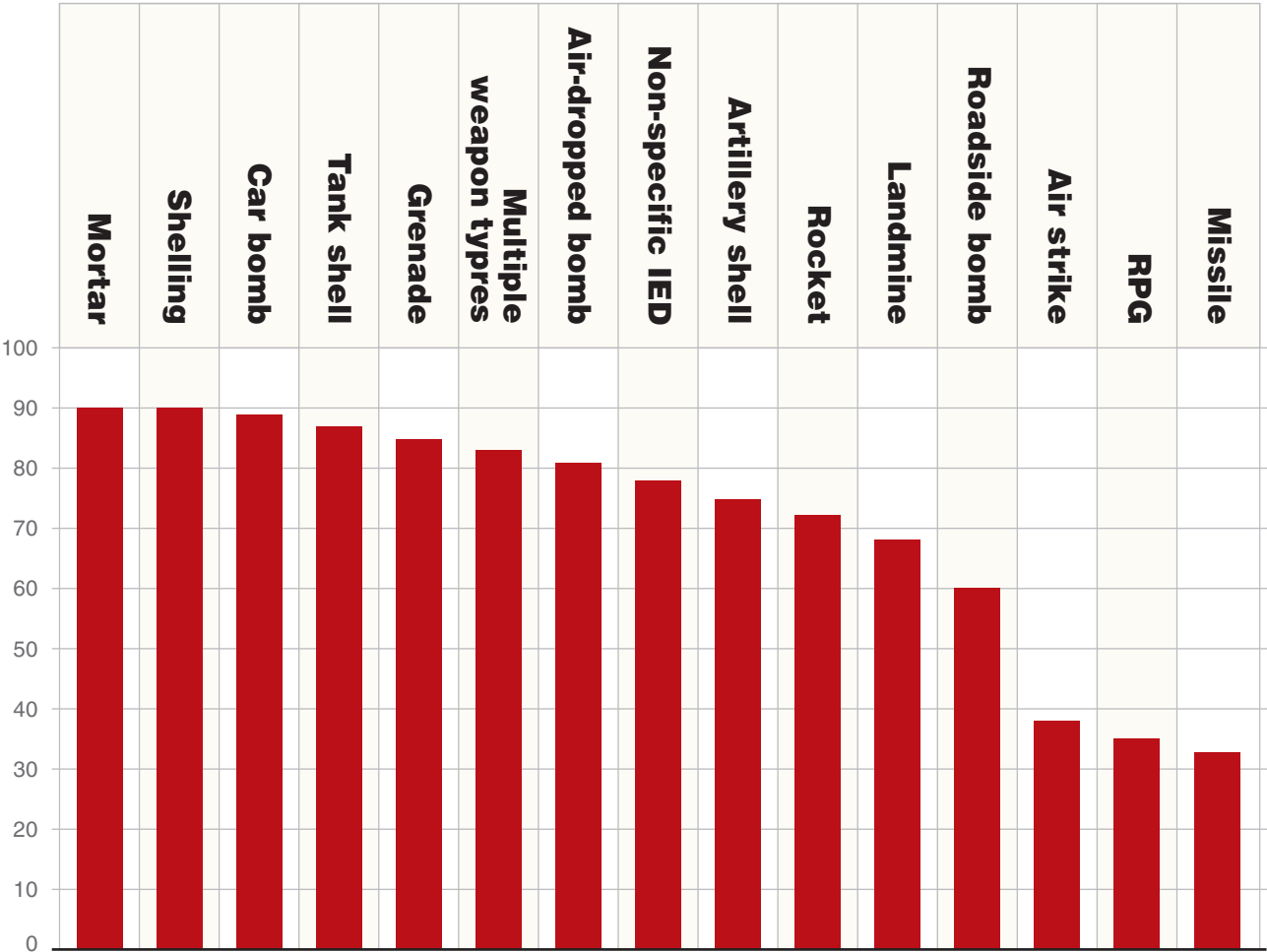
Figure 7 shows the non-state armed groups most involved in explosive violence. They largely correspond with the list of the countries most affected by explosive violence in figure 6.

Figure 7 Non-state groups with the highest use of explosive weapons

Non-state	
1	Islamic State of Iraq
2	Taliban (Afghanistan)
3	Groups with links to the Free Syrian Army
4	Tehrik-i-Taliban Pakistan
5	Al Shabaab (Somalia)
6	Boko Haram (Nigeria)

Explosive weapons types

Figure 8 Percentage of casualties that were civilians by explosive weapon type

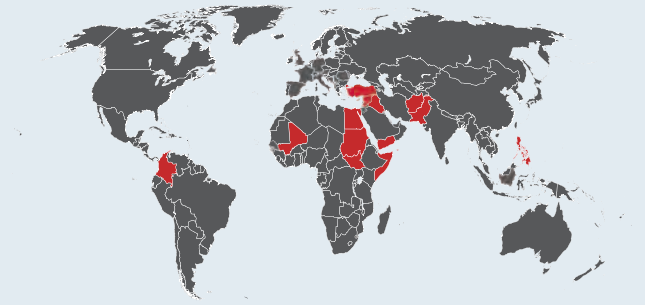
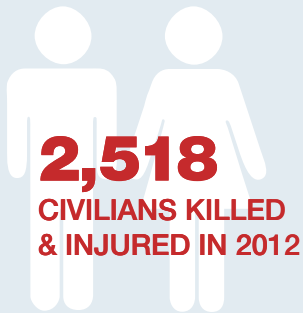


AOAV records information on the explosive weapon used in any incident, the full list of which can be found listed on pages 7 and 8. The categories it uses are kept broad and reflect the language used to report explosions and shelling in news sources.

AOAV has grouped these weapons broadly according to their delivery; by air, by ground, or if they are improvised explosive devices (IEDs).

AIR-LAUNCHED EXPLOSIVE WEAPONS

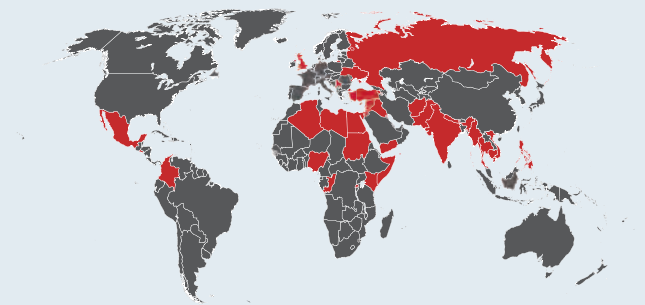
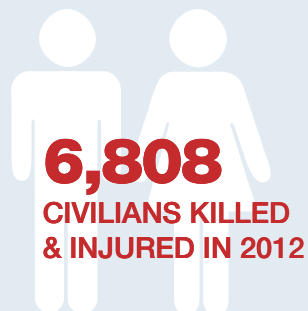
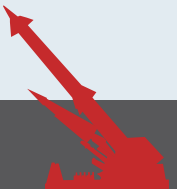
Weapons fired and dropped from aircrafts



INCIDENTS RECORDED IN 14 COUNTRIES
AND TERRITORIES IN 2012

GROUND-LAUNCHED EXPLOSIVE WEAPONS

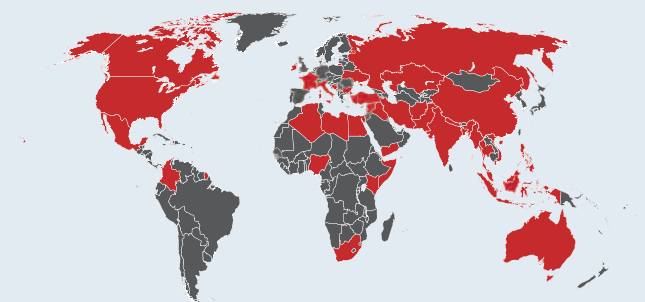
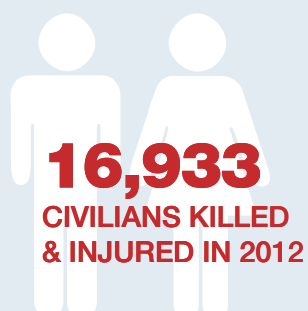
Shelling and grenade attacks



INCIDENTS RECORDED IN 36 COUNTRIES
AND TERRITORIES IN 2012

IMPROVISED EXPLOSIVE DEVICES (IEDs)

Homemade bombs and makeshift bombs



INCIDENTS RECORDED IN 42 COUNTRIES
AND TERRITORIES IN 2012

Air-launched explosive weapons

Air-launched explosive weapons were responsible for **9%** of civilian casualties recorded in 2012 (2,518).

87% of casualties were reported to be civilians when air-launched explosive weapons were used in populated areas.

Air-launched explosive weapons were used in **30%** of all incidents involving the use of manufactured explosive weapon in populated areas. 70% of incidents were ground-launched.

Air-dropped bombs and rockets stood out as air-launched explosive weapons types causing particularly high percentages of civilian casualties (**82%**).⁷⁶

AOAV recorded 92 incidents of drone strikes in 2012 in six different countries and territories. This was an **increase of 17%** from 2011.

Air-launched explosive weapons include a variety of ordnance ranging from unguided bombs dropped from planes to guided missiles fired by drones.⁷⁷ AOA V recorded that air-launched explosive weapons caused nine percent of all civilian casualties in 2012. More than twice as many civilian casualties were recorded from air-launched explosive weapons in 2012 than in 2011.⁷⁸ This substantial rise was linked to the increasingly widespread use of air-delivered weapons in populated areas in Syria.

Casualties from air-launched explosive weapons occurred in at least 14 different countries and territories. However, just under half of all incidents recorded occurred in Afghanistan (20%) and the Gaza strip (28%). There was an increase in the percentage of aerial attacks in populated areas, up from 37% in 2011 to 47% in 2012.

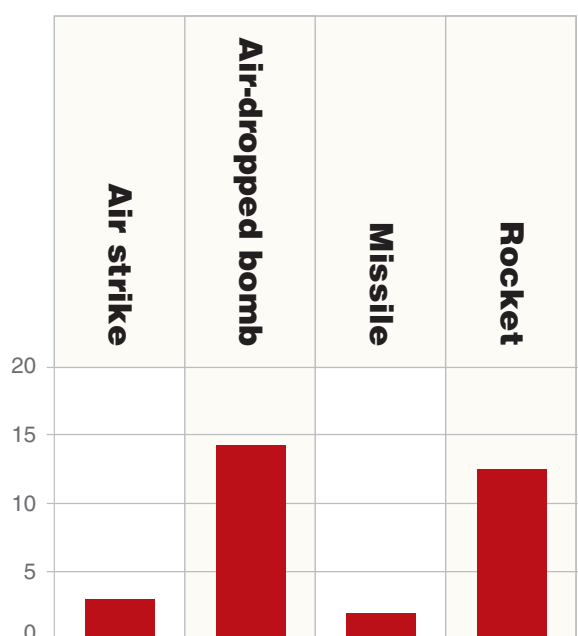
This was largely due to the commencement of air strikes by the Syrian air force in mid- 2012. Fifty-eight percent of civilian casualties from air-launched explosive weapons were recorded in Syria. This was despite only 13% of the incidents occurring there.

Air-dropped bombs and rockets stood out as two types of air-launched explosive weapons that caused particularly high levels of civilian casualties when they were used in populated areas (see figure 9). 82% of all casualties recorded from the use of these weapons in populated areas were civilians.⁷⁹

In one incident on 12 November, Syrian government fighter jets dropped bombs on residential areas in the Syrian town of Ras al-Ain, close to the Turkish border. At least 20 civilians were killed in four air strikes. Bombs fell across the town, demolishing at least 15 buildings. Another 70 people were injured, 10 of whom died later in hospitals across the border in Turkey.⁸⁰

Generally, however, air-launched explosive weapons were globally used less frequently in populated areas than ground-launched explosive weapons.

Figure 9 Average civilian casualties per incident from air-launched explosive weapons



The use of air-launched explosive weapons was recorded in 30% of all incidents involving the use of manufactured explosive weapons in populated areas. This compared to 70% of incidents that were ground-launched.

Civilians accounted for 54% of casualties recorded from air-launched explosive weapons. Whereas 86% of casualties from the use of ground-launched explosive weapons were civilians.

When these weapons were used in populated areas, however, air-launched and ground-launched explosive weapons caused similarly elevated levels of civilian casualties.

In populated areas, 86% of casualties from air-launched explosive weapons were civilians. Eighty per cent of casualties from ground-launched explosive weapons use in populated areas were civilians.

DRONES

AOAV recorded 92 incidents of the use of air-launched explosive weapons involving drones in 2012. The number of drone strikes increased by 21% in 2012 from 2011. Despite this rise, casualties recorded in these strikes were down eight percent compared to 2011. Incidents were recorded in six different countries and territories, including Afghanistan, Egypt, Gaza, Pakistan, Somalia, and Yemen.

The impact that drone strikes had on civilians was unclear. In total, only 43 civilian casualties were recorded by AOA in 2012, compared to 627 armed actor casualties. However, many of the drone strikes occurred were recorded in remote and insecure parts of Pakistan and Yemen, where journalists had limited or no access. It is likely that civilian casualties from drone use could be much higher.⁸¹

BARREL BOMBS

The use of improvised 'barrel bombs' by Syrian government forces was recorded for the first time in September 2012.⁸² These were described as makeshift weapons, consisting of containers filled with fuel, explosives, and chunks of jagged steel. In Sudan's Blue Nile province, Human Rights Watch found evidence of barrel bombs filled with nails and other pieces of metal dropped from Sudanese government Antonov planes.⁸³

On 1 November, activists in Syria reported that government air-force planes dropped old storage tanks filled with explosives on a line of people queuing outside a bakery. Fifteen died.⁸⁴ French Foreign Minister Laurent Fabius was among the world leaders who stressed the emerging use of these weapons in Syria marked a concerning escalation of violence in the country. Human rights watchdogs condemned the use of barrel bombs, along with the use of other similarly high explosive and fragmentation aircraft bombs, in populated areas.⁸⁵

Ground-launched explosive weapons

Ground-launched explosive weapons were responsible for **25%** of civilian casualties recorded in 2012.

86% of total casualties from these types of weapons were civilians in 2012. This was up from 73% in 2011.

80% of these incidents occurred in populated areas.

Mortars were among the worst types of ground-launched explosive weapons causing high levels of civilian harm. **90%** of mortar casualties were civilians.

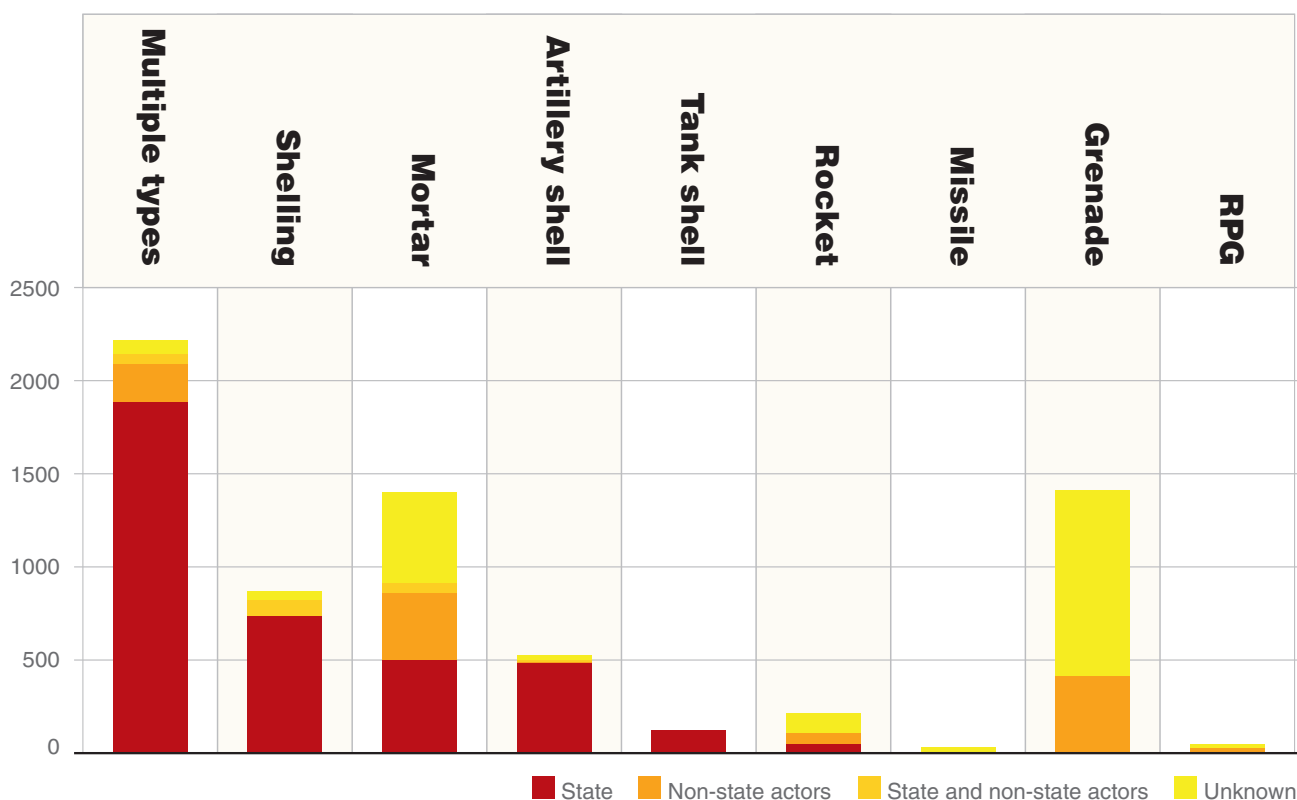
Ground-launched manufactured explosive weapons include a broad range of weapons, from small hand grenades to large artillery and mortar shells, fired from land or sea. In 2012, AOAV recorded that ground-launched weapons caused 25% of all civilian casualties reported worldwide (6,508).

Of all casualties caused by ground-launched explosive weapons in 2012, 86% were reported to have been civilians. This was an increase from 73% in 2011.⁸⁶ This change may have been caused in part by increasing violence in Syria where 95% of ground-launched explosive weapon casualties were recorded to be civilians.⁸⁷

Over 50% of the civilian casualties from ground-launched explosive weapons occurred in incidents where a state military was reported as the user.⁸⁸

Ground-launched explosive weapons tended to be used more frequently in populated areas than air-launched weapons. This may explain why ground-launched explosive weapons resulted in a higher proportion of civilian casualties than aerial attacks.

Figure 10 Civilian casualties per ground-launched weapon/user



Eighty percent of incidents of ground-launched explosive weapons use occurred in populated areas.⁸⁹ Mortars, grenades, and attacks using combinations of ground-launched explosive weapons were responsible for three-quarters of all civilian casualties from these types of explosive weapons.⁹⁰

MORTARS

Mortars were identified as among the types of ground-launched explosive weapons that were particularly harmful to civilians in both 2012 and 2011.⁹¹ In 2012, there was an increase in the number of mortar incidents recorded. The proportion of civilian casualties from mortar use however remained disproportionately high at 90%.⁹² Mortar casualties were recorded in 15 different countries, although 60% of their use was reported in Pakistan and Syria.

GROUND-LAUNCHED COMBINATIONS

Many civilian casualties from ground-launched explosive weapons in 2012 came from multiple types of ground-launched explosive weapons that were used in combination. This included, for example, the firing of rockets, artillery, and tanks shells into an area.⁹³ These incidents tended to occur in situations of particularly intense explosive violence and often resulted in a high number of civilian casualties. Of the nearly 2,500 people killed and injured by these attacks, 93% were civilians.⁹⁴

Ground-launched explosive weapons were also often used in large numbers and as part of sustained bombardments.⁹⁵ On 21 February 2012, during the siege of the Syrian city of Homs, it was reported that 31 people were killed and over 300 more injured, by barrages of 250 rockets and artillery shells. They fell at a rate of several shells per minute.⁹⁶

GRENADES

Grenades were the most frequently recorded type of ground-launched explosive weapon used in 2012. AOAV recorded 238 incidents of grenade use causing 1,410 civilian casualties in 2012. This was a four percent decrease compared to 2011. Incidents were recorded in 24 countries, though most frequently in India, Pakistan, and the Philippines, where over half (57%) of grenade casualties occurred.

Many of the attacks involving grenades were reported in the contexts of domestic disputes, extortion demands, or other acts of personal violence. For example, 31 incidents were reported as occurring on commercial premises. In one incident in Colombia, a six-year-old girl was amongst those killed when a grenade was thrown into a supermarket in the town of Santa Marta on 23 October. Three people were killed in the attack and 23 further were injured. Reports suggested that the attack was connected to a dispute between two rival gangs.⁹⁷

It is likely that many such smaller incidents of explosive weapons use are underrepresented in the dataset.

Further research carried out for AOAV analysing grenade use in Mexico found that a number of incidents were not picked up by English-language news sources.⁹⁸ According to local media sources, over 100 casualties were caused by grenades in Mexico over a 12-month period. Nuevo Leon and Tamaulipas, near the U.S border, were among the most heavily affected regions where nearly half of these incidents occurred.

Prevalent use of explosive weapons in non-conflict contexts by non-state actors could be seen as an indicator of a loss of state control over legitimate means of force and as a significant elevation of levels of armed violence in a country.⁹⁹

Improvised explosive devices (IEDs)

60% (20,914) of total casualties from explosive weapons use were caused by IEDs.¹⁰⁰

81% (16,933) of these were reported to be civilians.

An average of **23** civilians were killed or injured in IED attacks involving suicide. This was double the average recorded for other IED types – such as those detonated by remote-control or a timer.

Car bomb explosions in populated areas caused an average of **32** civilian casualties per incident.

In 2012, IEDs, as opposed to manufactured explosive ordnance such as artillery or mortars, were responsible for over half (60%) of the total casualties from explosive weapons use recorded by AOAV.¹⁰¹

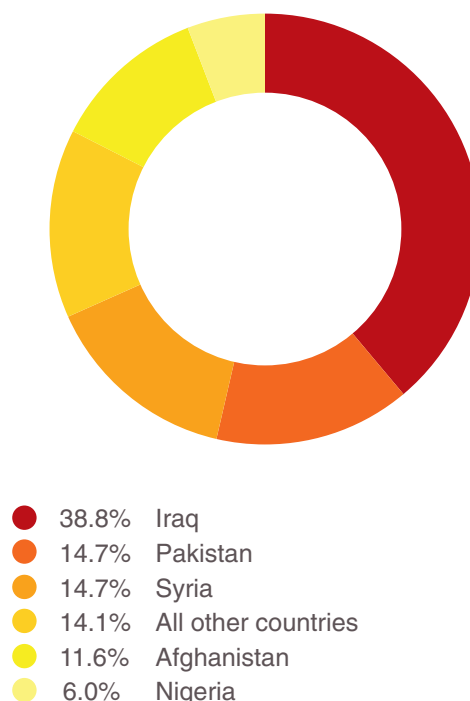
The percentage of IED casualties that were civilians increased from 76% in 2011 to 81% in 2012.

IEDs were the predominant explosive weapon used by non-state armed groups (73%). Civilian casualties from IEDs were recorded in 42 different countries and territories in 2012.¹⁰² As in 2011, IED use was particularly intense in Iraq, Afghanistan, and Pakistan.¹⁰³

High numbers of casualties were also reported in Syria, where AOAV recorded a dramatic increase in IED use.¹⁰⁴ More than 10 times the number of civilian casualties from IEDs were recorded in Syria in 2012 than in 2011, an upsurge in keeping with the wider

escalation in explosive weapon use in the populated areas across the country.¹⁰⁵

Figure 11 Countries with the most civilian casualties from IEDs



DETONATION METHOD

AOAV was able to record a clearly described mode of detonation in a third of IED incidents in 2012. Where the activation method of an IED was reported, attacks involving suicide bombers stood out as a particular concern.¹⁰⁶ AOAV recorded 4,950 civilian casualties from 212 IED incidents that involved suicide as part of the act of detonation. This was an average of 23 civilians killed or injured per suicide-bomb IED attack. This was more than double the average recorded for all other detonation types, including victim-activated and remote-controlled bombs.¹⁰⁷ More than two-thirds of suicide attacks took place in populated areas where civilians were gathered, often in large crowds.

In one such incident on 14 July, an IED exploded without warning during a wedding party in northern Afghanistan. A man detonated his explosive vest in the middle of a crowd of wedding guests, killing himself and 23 others, and wounding another 60 people.¹⁰⁸ The power of the blast blew apart windows, sending flying

glass and debris across the wedding hall.¹⁰⁹ One of the witnesses told reporters, *“There were bloody bodies all around the first floor. The explosion was so strong. There were people even on the third floor who were wounded.”*¹¹⁰

CAR BOMBS IN POPULATED AREAS

Car bombs accounted for one in five (21%) of all IED incidents reported in 2012. They had a major impact however, causing almost half (48%) of all the civilian casualties from IED use in 2012.

Car bombs were responsible for a particularly high number of civilian casualties per incident, as they tended to contain large quantities of explosive materials and were frequently used in civilian areas (78%). AOVAV recorded an average of 32 civilian casualties

per incident when car bombs were detonated in populated areas. This compared to six civilian casualties per incident in other areas.

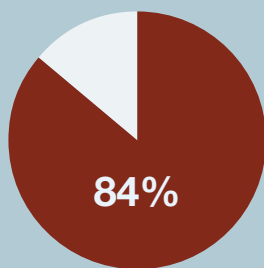
In one example on 29 November, two car bombs detonated outside a restaurant in the Iraqi town of Hilla. The second bomb was targeted at ambulances responding to the initial blast.¹¹¹ Thirty-three civilians were reportedly killed and 166 people wounded in the attack. Many of the civilians killed and injured were Shiite pilgrims queuing to receive food from a restaurant set up in an outdoor tent.¹¹²

Ihsan al-Khalidi, a 39-year-old schoolteacher present at the site recalled that, *“we started to stop civilian cars asking them to take the wounded to hospital since there were not enough ambulances to transfer them.”*¹¹³



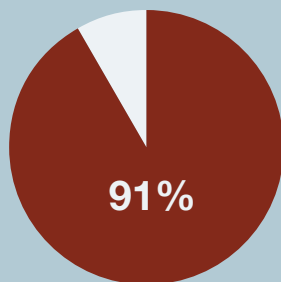
A Pakistani child cries to his injured father following an IED blast in Peshawar, Pakistan on 19 September 2012. (AFP Photo/Hasham Ahmed)

CIVILIANS KILLED & INJURED: 2011 v 2012



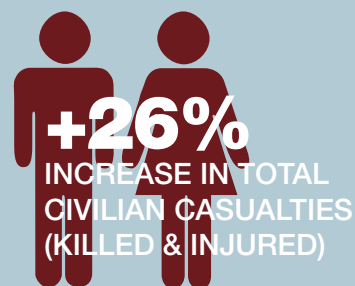
18,803

CIVILIAN CASUALTIES
IN POPULATED AREAS IN 2011



24,603

CIVILIAN CASUALTIES
IN POPULATED AREAS IN 2012



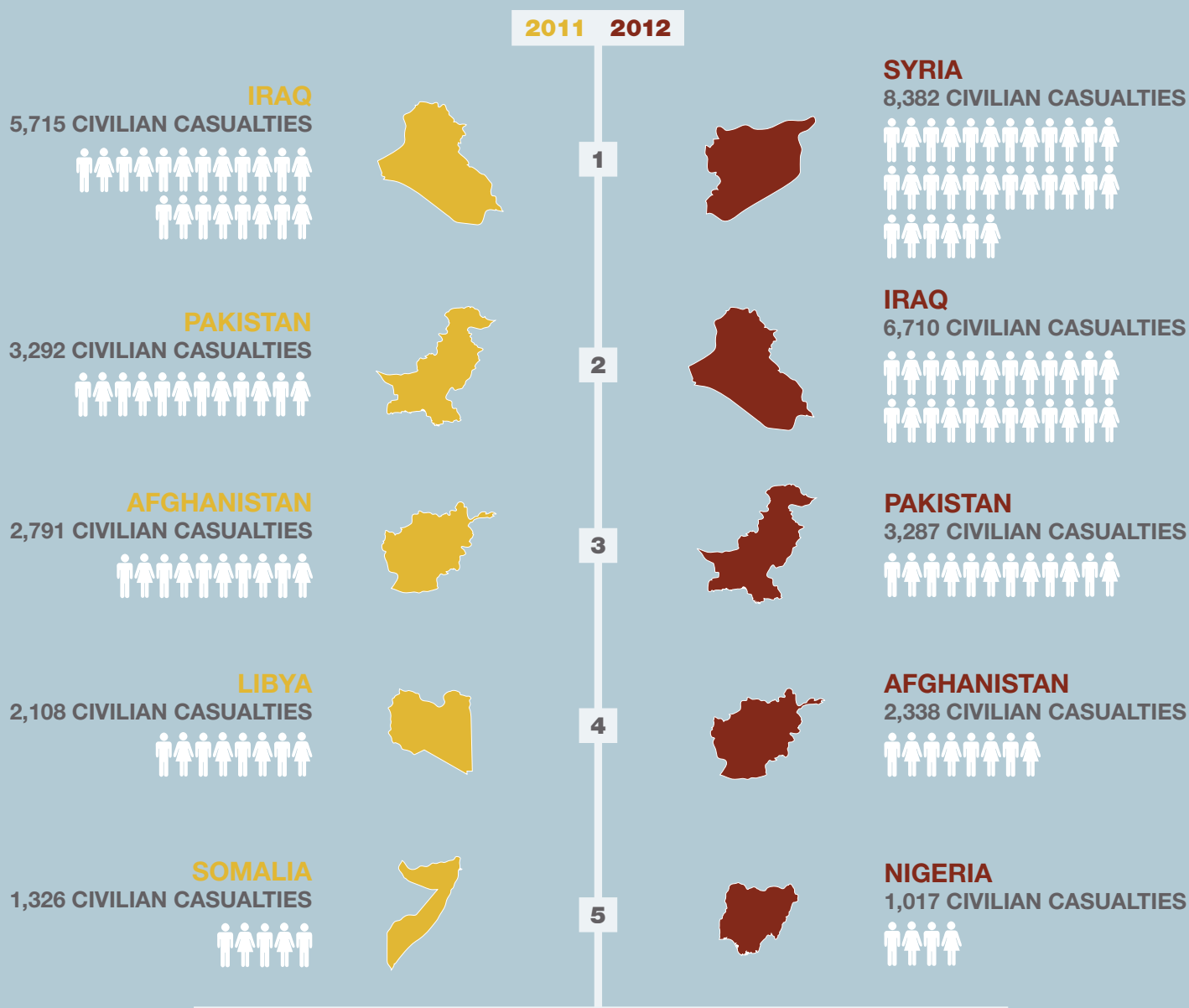
2011

2,510 TOTAL CIVILIAN CASUALTIES PER MONTH

2012

2,882 TOTAL CIVILIAN CASUALTIES PER MONTH

THE MOST DANGEROUS PLACES TO BE A CIVILIAN



Wide-area effects of explosive weapons

A number of explosive weapon types stood out in AOAV's data as causing particularly severe and consistently high levels of harm to civilians when used in populated areas. These weapons are defined by their ability to affect a wide area from their point of detonation. Their impact was usually brutal and indiscriminate.

The use of these weapons that have wide-area effects, particularly in populated areas, has been singled out as a particular concern for the protection of civilians in armed conflict.

In 2012, United Nations Secretary-General Ban Ki-moon highlighted the threat to civilians from explosive weapons use. He specifically urged all actors *"to refrain from using explosive weapons with a wide-area impact in densely populated areas."*¹¹⁴ In incident after incident recorded by AOAV in 2012,

the use of these weapons repeatedly demonstrated their acute and devastating impact on civilians.

Explosive weapons may be considered as having wide area impacts based on a number of factors, including:

- the size and scale of the blast and fragmentation they produce;
- the inaccuracy of the delivery of individual weapons; and
- when multiple explosive munitions are fired into an area.

The following section provides a brief description of some of the harm AOAV recorded in 2012 from weapons that might be considered as meeting one, a combination, or all of these criteria for having wide-area effects.

Figure 12 Weapons that killed the greatest number of civilians

Explosive weapon category	Civilians killed
IEDs (type unspecified)	1,649
Multiple types	1,605
Car bombs	1,471
Air-dropped bombs	644
Shelling (type unspecified)	569

Figure 13 Weapons with the highest percentage of casualties who were civilians

Explosive weapon category	Percentage of casualties were civilians
Mortars	90%
Shelling (type unspecified)	90%
Car bombs	89%
Tank shells	87%
Grenades	85%

Large blast and fragmentation effects

Certain explosive weapons types containing large quantities of explosive material were often found to be especially destructive.¹¹⁵

The impacts of these weapons are amplified by the size and power of the explosive force produced and the distance over which blast and fragmentation is projected. Their large blast radius affects people and buildings indiscriminately, regardless of the target.¹¹⁶ They can include weapons such as air-dropped bombs, high-explosive artillery or tank shells, car bombs, and ballistic missiles.¹¹⁷

On 18 November, a single bomb with a large explosive content dropped by an Israeli fighter jet killed three generations of the same family in their own home in Gaza City.¹¹⁸ Ten members of the Dalu family, including

five women and four children, were killed when the bomb exploded through their three-storey house in the densely populated Nasser neighbourhood. The whole of the Dalu house collapsed under the force of the explosion. Many of the family inside were crushed to death. The damage was so extensive and the rubble so densely packed that it took rescue workers more than an hour to uncover the casualties buried beneath.¹¹⁹ The blast was so powerful it also destroyed several neighbouring homes, killing a young man and an elderly woman living next door.¹²⁰

Human Rights Watch stated the attack was a “*clear violation of the laws of war*” and called on Israel explain why such a large munition was used in the attack in a densely populated area.¹²¹



A crowd gathers at the site of the Dalu house in Gaza, destroyed by an air-dropped bomb, 18 November 2012. (REUTERS/Suhaib Salem)



IED explosion in Landi Kotal market, Pakistan, 16 June 2012. (REUTERS/Shahid Shinwari)

“We were asleep and there was a terrific blast. There are no words to describe what happened later, only smoke and dust and heavy silence because the sound shut our ears,” said Abdul-Latif Dahman, a resident who lived nearby to the Dalu family.¹²²

AOAV recorded the use of such air-dropped bombs on a frequent number of occasions. In one incident, two large bombs dropped by the Syrian Air Force completely levelled an entire housing block in a residential neighbourhood in the town of Azaz on 15 August. The two bombs immediately killed 46 civilians and injured 200 others. Rescue workers needed bulldozers to retrieve the dead and injured from the rubble.¹²³

A local resident retrieved a fragment of what appeared to be a 500 kg bomb, which would potentially explain the scale of the destruction. A Human Rights Watch investigation after the attack found that a 70 by 70 square metre area was flattened by the bombs.

The use of IEDs containing large quantities of explosives in densely populated areas caused some of the most deadly incidents of 2012. On 16 June, a truck bomb in a busy market in the town of Landi Kotal in northwest Pakistan killed 25 people, including three children. Another 65 were injured.¹²⁴ Hundreds of

people were shopping when the bomb exploded in a narrow lane. Most of the victims were fruit and vegetable sellers.

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. Weapons, such as aerial bombs with a large blast radius may be considered indiscriminate when used in populated areas.

Human Rights Watch,
August 2012.¹²⁵

The local administration claimed that 25 shops, three vehicles, and a number of surrounding buildings were damaged.¹²⁶ The bomb disposal unit reported that 50 kg of explosives were used in the attack.

A journalist present at the site reported that *“The explosion was of a high intensity and it shook the entire Landikotal bazaar and nearby villages.”*¹²⁷

Inaccurate delivery system

AOAV's data reflects considerable humanitarian harm caused by the inaccuracy of many types of explosive weapons. AOAV recorded that even when explosive weapons were used specifically to target armed actors and military-related objectives, 52% of the casualties were still civilians.¹²⁸

This alarming statistic is an indication that many explosive weapons are totally inappropriate for use in populated areas. Even a small margin of error can result in civilian deaths and injuries.

Certain types of explosive weapons, such as unguided bombs, mortars, and artillery were notably harmful in AOAV's dataset.

In both Sudan and South Sudan, unguided and inaccurate bombs were repeatedly dropped by Sudanese Armed Forces' airplanes on villages and farmland. AOAV recorded 35 of these incidents in 2012, causing at least 188 civilian casualties.

On 14 April, four civilians and a soldier were killed when six bombs were dropped on Bentiu, the capital of South Sudan's Unity State.¹²⁹ Media reports claimed that the intended target of the strikes was a nearby bridge which led to the Sudan/South Sudan border. However, at least one of the bombs missed its target and hit a market 100 metres away, killing traders. The bridge was left undamaged.¹³⁰



Aftermath of bombing of Bentiu market in South Sudan, 14 April 2012 (Adriane Ohanesian/AFP/Getty Images)



Free Syrian Army members use an improvised catapult to launch an IED in Aleppo, 15 October 2012 (Reuters/Asmaa Waguih)

In both 2012 and 2011, the victims of mortar use were overwhelmingly civilians, making up 90% of all casualties caused by these weapons. This finding is an indication that mortars and other such 'indirect fire' weapons, such as artillery shells and rockets, are unacceptable for use when civilians are present in proximity to a target.¹³¹

In an incident typical of many recorded by AOA, six civilians were killed and two children were injured when a mortar shell fell short of its target and hit a refugee camp in Mogadishu, Somalia on 19 March 2012.¹³² Officials blamed the Al-Shabaab group for the attack, which was believed to have been aimed at the nearby presidential palace.¹³³ The incident was condemned by the UN High Commissioner for Refugees who called on "all parties to the conflict to cease attacks targeting civilians and humanitarian agencies, or where there is a high risk of harm to civilians located near the target."¹³⁴

In Syria, AOA recorded a number of instances where large artillery shells and bombs struck in proximity to

queues of people waiting for flour outside bakeries in the city of Aleppo. Fragmentation from the high-explosive shells sprayed into the tightly-packed queues, killing and injuring hundreds of civilians. In one incident at the Al-Zarra bakery, on 16 August, artillery shells landed near a breadline of several hundred people.¹³⁵ As many as 60 people were killed and at least 70 more were injured by four artillery shells.

There were between 40 and 50 people on the ground, covered in blood, and body parts- arms and legs all over. I remember a little boy, maybe five years old, killed, his head split open, and there was still a piece of bread in his mouth.

Samir (last name withheld),
a resident who lived across the street from the bakery.¹³⁶

Multiple explosive weapons

AOAV recorded numerous incidents in 2012 where explosive weapons were dropped, detonated, or launched in large numbers across an area.¹³⁷

The use of multiple explosive weapons in combination simultaneously across urban areas was one of the most destructive patterns of explosive weapons use recorded by AOA. The use of explosive weapons to attack multiple locations at once caused the highest numbers of civilian casualties of any form of explosive violence.¹³⁸

Combinations of ground-launched, as opposed to air-launched, explosive weapons were most frequently recorded, with multiple mortars, rockets, and artillery shells used to saturate wide areas. During the month of February, AOA recorded more than 1,000 civilian casualties from the use of multiple explosive weapons in the Syrian city of Homs alone.

Multiple launch rocket systems were a type of explosive weapon with a wide-area impact that caused disproportionately high numbers of civilian casualties and widespread devastation when used in populated areas.

These weapons fire multiple munitions in rapid succession and blanket large areas with explosive force. The Grad rocket system is one example. It fires 40 unguided rockets, each with a large warhead weighing 60 kg, in a period of 20 seconds.¹³⁹ Rockets such as these were reported in a third of all the incidents in 2012 where combinations of different ground-launched explosive weapons thundered into towns and cities.¹⁴⁰

AOAV recorded many incidents where the devastating impacts from the use of multiple launch rocket systems were magnified when they were used alongside other explosive weapons such as long-range artillery.

In one example, on 8 February, at least 53 people were killed and hundreds wounded by a sustained barrage of mortars, shells, and Grad rockets, fired by Syrian government forces. More than 200 rockets fell in less than three hours.¹⁴¹ Twenty-three buildings in the besieged Baba Amr district of Homs were completely destroyed.¹⁴² The casualties included children as well as ICRC personnel.¹⁴³

The use of multiple explosive weapons with wide-area impacts would be in many instances already illegal

under international humanitarian law, which prohibits attacks involving ‘bombardment’ of civilian areas.¹⁴⁴

We’ve seen some horrific injuries caused by artillery exploding in built up areas, hitting homes with often civilians in, including young children. The very complicated reconstructive surgery that is needed is just not available.

**Paul Woods, BBC journalist,
Beirut, 9 February.¹⁴⁵**

CLUSTER MUNITIONS

Cluster munitions, explosive weapons notorious for their ability to scatter large numbers of explosives across a wide area, have been banned by the international community for their indiscriminate and inhumane wide-area impacts.¹⁴⁶ However, in 2012, AOA recorded 11 incidents in Syria where casualties were reported from the use of these weapons. On 25 November, 10 children playing in an outdoor playground were killed by cluster bombs dropped by a Syrian government MiG fighter jet over Deir al-Asafir in Damascus.¹⁴⁷ One witness told Human Rights Watch *“I heard people screaming and running toward the playground [...] When I reached the playground I saw five children dead and many other wounded.”*¹⁴⁸

Many states have condemned the use of cluster bombs in Syria, including British Foreign Minister William Hague who called the apparent use of cluster munitions *“an appalling disregard for human life.”*¹⁴⁹

The consistent harm recorded by AOA from explosive weapons with wide-area impacts raises serious questions on the acceptability of the use of these weapons in civilian areas. While existing provisions of international humanitarian law undoubtedly apply to the use of these weapons, it appears that international law is not stopping this harm from happening.

The humanitarian suffering demonstrated in AOA’s data shows that new, stronger international standards, including more robust prohibitions and restrictions on the use of explosive weapons in populated areas, are urgently needed.

“We didn’t sleep all night. The situation is a mess— all kinds of explosions and heavy weapons. We could hear the blast from the rockets hitting in the neighbourhood nearby. If we were afraid, you can imagine how afraid our children are.”

Adnan, resident of Daraa, June 2012.¹⁵⁰



Stockpile incidents and explosive remnants of war

STOCKPILE INCIDENTS

While not included in the figures presented in this report, AOA V recorded a number of unintended explosions in stockpiles of explosive weapons that inflicted significant harm on civilians, especially when the stockpiles were located in populated areas. These incidents killed and injured local residents, damaged homes, businesses, and infrastructure, and scattered unexploded ordnance over a wide area.¹⁵¹

Unintended explosions at munitions sites are a global problem and a persistent threat to the safety of civilians, especially in populated areas. In 2012, AOA V recorded 18 stockpile explosions causing civilian casualties. These explosions were reported in nine countries, including Afghanistan, Belgium, Bulgaria, Egypt, Lebanon, Republic of Congo, Russia, Turkey, and Yemen.¹⁵²

In a particularly devastating example, on the 4 March 2012, a series of explosions at a large ammunition depot rocked a densely populated neighbourhood of Brazzaville, the capital city of the Republic of Congo.

At least 292 people were killed, and more than 2,000 were injured.¹⁵³

The depots contained significant stockpiles of explosive ordnance including rockets, artillery and tank shells, and the powerful blasts sent kick-outs as far as 2.8 km from the epicentre.¹⁵⁴ Many residents had their homes and belongings completely destroyed, one hospital was badly damaged, the city's health care capacity completely overwhelmed, and a primary school and numerous shops and businesses demolished.

Nearly a month after the incident, over 14,000 people were still living in tents in camps set up to shelter the displaced.

EXPLOSIVE REMNANTS OF WAR

Explosive weapons can also continue to affect civilians long after they have been fired. Explosive weapons which fail to explode as intended can linger in the form of explosive remnants of war for years, if not decades afterwards.

In 2012, AOA V recorded 218 civilian casualties from unexploded or abandoned ordnance in 24 different countries and territories. The actual number of casualties from explosive remnants of war is likely to be far higher.¹⁵⁵



Fanny Oba and her five children in a displacement camp in Brazzaville following the stockpile explosions on 4 March 2012. Their house was destroyed in the blast. AOA V/Simon Conway, March 2012.

Conclusion

Civilians faced an even greater threat from explosive weapons in 2012. The conflict in Syria may have dominated headlines, yet civilians were killed, injured, and had their lives blown apart by explosive weapons across the world. From the incessant use of IEDs in Iraq to air strikes in Sudan, attacks continued on a near daily basis.

AOAV's data over the past two years documents a truly alarming pattern. In 2012, as in 2011, civilians made up the overwhelming majority of the victims of explosive weapons recorded by AOAV. This was true in nearly every country where explosive weapons were recorded used and for nearly every explosive weapon type.

In 2012, there was a 26% increase in the total number of casualties from explosive weapons and a greater proportion of civilians amongst the total victims.

The message is clear. When explosive weapons are used in populated areas, it is civilians who pay the price.

The world is beginning to take note and take action. Governments, the UN, international organizations, and civil society have acknowledged and appealed for urgent measures to address the humanitarian harm caused by explosive weapons in populated areas. The use of explosive weapons, particularly those with wide-area impacts, in populated areas has been increasingly condemned as entirely unacceptable.¹⁵⁶

The desperate humanitarian crisis in Syria has thrown in stark relief the inhumanity and unacceptability of the use of explosive weapons with wide-area impacts in civilian areas. States have condemned the size and power of explosive weapons being used in populated areas in the country.¹⁵⁷ Ending the use of heavy, high-explosive weapons in the markets and streets of Syria was a central precondition of UN efforts to bring about peace during the year.¹⁵⁸

I condemn unequivocally the use of tanks, mortars and artillery in civilian areas.

**UK Foreign Secretary
William Hague,
4 February 2012.¹⁵⁹**

The international stigma against the use of explosive weapons in populated areas is growing.

And it is about time. People will suffer from what has happened in 2012 for years to come. Whether from a misfired missile that strikes a civilian home, a massive car bomb ripping through a crowded market, or the bombardment of an entire city, the blast and fragmentation of explosive weapons not only causes death and injury but also creates severe and long-lasting harm to affected communities.

AOAV is a founding member of the International Network on Explosive Weapons (INEW).¹⁶⁰ Together with other INEW members, AOAV calls on states and users of explosive weapons, as a matter of urgency:

- to acknowledge the unacceptable harm caused by the use of these weapons in populated areas;
- to strive to avoid this harm by reviewing and strengthening national policies and practices;
- to work towards fulfilling the rights of victims of explosive violence; and
- to develop stronger international standards, including prohibitions and restrictions on the use of explosive force.

Immediate action must be taken to prevent the levels of human suffering from the use of explosive weapons in populated areas such as documented by AOAV in 2012.

Recommendations

- All users of explosive weapons should refrain from using them in populated areas.
- States should review their policies and practices on the use of explosive weapons in populated areas, particularly those which may be expected to affect a wide area.
- States should publically condemn any use in populated areas of explosive weapons with wide-area effects as a matter of urgency.
- States, international organizations, and civil society should strive to develop a common understanding of how explosive weapons affect a wide area and engage in more-focused dialogue on the issue.
- 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, including by sex and age, so that stakeholders can accurately assess the impact of explosive weapons. In particular, users of explosive weapons have a responsibility to record the impacts of these weapons and make public their efforts to track the consequences of their use of these weapons in populated areas.
- The developing stigma against the use of all explosive weapons in populated areas must continue to be extended and entrenched. More should be done in this regard to work with voices of influence to help and develop a cohesive stigma based on the humanitarian impacts of IEDs. A shift is needed from the current discourse of terrorism that is highly politicised and failing to take effect to change the behaviour of IED users.
- States and users of explosive weapons should recognise 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.
- More research is needed to explore the long-term and indirect harm that is known to be a distinct result of the use of explosive weapons in populated areas. The damage that explosive weapons cause to vital infrastructure and services, the impact on economic livelihoods, the ways in which they induce psychological trauma and shock are all consequences that must be investigated.

Methodology

AOAV uses a methodology adapted from incident-based casualty recording used by Landmine Action and Medact in 2009, which in turn was based on a model created by Robin Coupland and Nathan Taback.¹⁶¹ 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. **No claims are made that this data captures every incident or casualty of explosive violence in 2012.**

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.

SOURCES

AOAV uses a wide range of English-language news sources, many of which are translated by the publisher. In total there were 588 different sources used in 2012, with the ten most used being *The Associated Press*

(used as either the first or second source for 751 incidents in 2012), *Agence France-Presse* (501), *Reuters* (424), *Xinhua* (241), *CNN* (167), *BBC* (136), *The Express Tribune* (134), *The International News* (117), *DAWN* (107), and *The New York Times* (96).

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.

Intended target: The target for an attack is only recorded if one of the three conditions below is 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."¹⁶²

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 is discussed with specific reference to the conflict in Syria on page 13.

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.¹⁶³

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.¹⁶⁴ However, reporting on these effects is often limited, with news sources focusing on the immediate aftermath of an incident. For instance, only 31 of the 2,742 incidents had accounts of people being displaced in the source reports. 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.

Notes

- 1 United Nations Secretary-General Ban Ki-moon, "Report of the Secretary-General on the protection of civilians in armed conflict," UN Security Council, S/2012/376, 22 May 2012, http://reliefweb.int/sites/reliefweb.int/files/resources/Full_Report_4150.pdf (accessed 15 March 2013).
- 2 The characteristics of explosive weapons are further detailed in Maya Brehm and John Borrie, "Explosive Weapons: Framing the Problem," Background Paper No. 1 of the Discourse on Explosive Weapons (DEW) project, UNIDIR, www.explosiveweapons.info/wp-content/uploads/2011/04/DEW-paper-No-1.pdf (accessed 5 March 2012).
- 3 The media reports which make up AOAV's dataset most often do not capture the longer-term or indirect harm suffered by civilians, long after the cameras have gone, in their attempts to rebuild their lives. These distinctive impacts will mean that the suffering recorded by AOAV from explosive weapons in 2012 is likely to continue for years to come. For more on the long-term, indirect harm caused by explosive weapons see for example, Henry Dodd and Robert Perkins, "Case studies of explosive violence: Libya," AOAV, June 2012, www.aoav.org.uk/uploads/changing_policy/The%20Impact%20of%20Explosive%20Weapons/Reports/2012_06_case_study_of_explosive_violence_libya.pdf (accessed 2 March 2013); Esther Cann and Katherine Harrison, "100 Incidents of Humanitarian Harm: Explosive weapons in populated areas, 2009-10," Action on Armed Violence (Landmine Action), March 2011, www.aoav.org.uk/uploads/changing_policy/The%20Impact%20of%20Explosive%20Weapons/2011_03_100_incidents_of_humanitarian_harm.pdf (accessed 2 March 2013).
- 4 In 2011, 84% of casualties in populated areas were civilians, in other areas this figure was 35%.
- 5 AOAV recorded 8,382 civilian casualties from explosive weapons in Syria (a fraction of the true impact, see p.13). In 2011, the most affected country was Iraq with 5,715 civilian casualties. There were ten fewer countries where explosive violence was recorded compared to 2011. Newly-affected countries included Armenia, Bahrain, Bosnia and Herzegovina, France, Jordan, Malaysia, Serbia, Ukraine, and Vietnam.
- 6 The same averages were recorded in AOAV's dataset in 2011.
- 7 This is a similar percentage to 2011, when 55% of all incidents recorded by AOAV were reported in populated areas.
- 8 In 2011, 47% of the casualties from air-launched explosive weapons were civilians, and only 37% of air-launched explosive weapon attacks were reported in populated areas.
- 9 In 2011, air-launched explosive weapons were responsible for at least 1,671 civilian casualties (8% of all civilian casualties recorded by AOAV in 2011).
- 10 In 2011, this figure was 87% across all areas.
- 11 In 2011, 73% of casualties from ground-launched weapons were civilians, and 71% of ground-launched incidents occurred in populated areas.
- 12 In 2011, AOAV recorded 5,904 civilian casualties from the use of ground-launched explosive weapons (27% of all civilian casualties recorded that year).
- 13 This was the same pattern as was recorded in 2011. Pakistan, Somalia, and Afghanistan were most affected in 2011.
- 14 AOAV recorded 453 IED incidents in Iraq; 321 in Afghanistan; and 208 in Pakistan. They were also the same three most-affected countries in 2011. In 2011, IEDs caused casualties in 48 countries.
- 15 In 2011, 14% of IED incidents involved self-killing as a mode of detonation causing 5,107 civilian casualties. There was an average of 27 civilian casualties in self-killing attacks; the average across IED types was 10.
- 16 In 2011 there was an average of 34 casualties from car bombs in populated areas compared to 13 in other areas.
- 17 For example, a third of car bombs caused more than 25 civilian casualties, as did one in every eight incidents where an air-dropped bomb was recorded. Not every incident in either

category would have necessarily involved a bomb with large explosive content. However, the higher proportion of incidents with such high casualty numbers that were recorded within each weapon category suggests the frequent use of large blast and fragmentation effects.

18 A target could be ascribed from the reporting of news sources in about a third of all incidents. In 2011, a target could be ascribed in 39% of incidents. In 2011, even when armed actors were reported to be the target of attacks civilians still made up 49% of the casualties.

19 More than 4,000 civilian deaths and injuries were recorded in 'multiple urban' attacks (see fig.4). The category *multiple explosive weapons* is used to capture incidents where more than one of the AOAV's weapon recording categories are documented, invariably in large numbers. Casualties cannot be ascribed to a specific weapon category when these incidents occur; such is the scale, speed, and ferocity of their impacts. Within any one of the weapon categories used by AOAV, multiple explosive weapons can be used and reported. See for example when eight mortars were fired towards a political conference in Sudan, or when a sequence of IEDs detonated together in a hospital and market in the Nimroz province of Afghanistan. "France Condemns Rebel Mortar Attack on Sudan's Kadugli," *Sudan Tribune* posted in *All Africa*, 9 October 2012, <http://allafrica.com/stories/201210100349.html> (accessed 1 March 2013) and "Bomb Blasts Kill Dozens Across Afghanistan," *Radio Free Europe/Radio Liberty*, 1 March 2012, www.rferl.org/content/afghanistan-suicide-attack/24676785.html (accessed 1 March 2013).

20 The people injured by explosive weapons may include casualties who were treated for psychological harm. These are rarely clearly described in news sources as distinct from physical wounds, but may have been included where, for example, news sources quoted hospital sources and did not provide further detail regarding the types of injuries. AOAV cannot determine what criteria are used by each media source to determine how severe an injury must be to be reported as a casualty, and is therefore subject to the assessment of its sources.

21 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 as 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, 10 October 1980, www.icrc.org/ihl.nsf/FULL/515 (accessed 7 March 2013). AOAV guidelines for recording an area as populated are included in the Methodology.

22 The category of 'mines' includes both antipersonnel landmines and anti-vehicle 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. For detailed information on the incidents of antipersonnel and other types of mine use around the world see ICBL-CMC, *The Landmine and Cluster Munition Monitor 2012*, November 2012, www.the-monitor.org/index.php/publications/display?url=lm/2012/ (accessed 7 March 2013).

23 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.

24 There were several incidents in Syria in 2012 where the use

of improvised 'barrel bombs' was suggested in news reporting. A similar dynamic has also been reported in Sudan. While the use of such weapons was widely described by witnesses and analysts the actual use of these weapons to cause casualties was unclear. For example, a bomb was dropped on the Light of the Martyrs Mosque in Aleppo on 17 October killing 10 civilians. While some activists claimed that a so-called 'barrel' bomb was involved, this claim could not be confirmed in all news sources, see for example "'Devastation' after mosque bombing in Aleppo, activists say," *CNN*, 18 October 2012, <http://edition.cnn.com/2012/10/17/world/meast/syria-civil-war/index.html> (accessed 8 March 2013), and "Dozens killed in 5 Syrian towns," *The Associated Press* posted by *CBC*, 18 October 2012, www.cbc.ca/news/world/story/2012/10/18/syria-airstrike-rebel.html (accessed 8 March 2013).

25 Missiles are defined as "an armament store designed to be released from an aircraft or discharged from a gun or launcher towards a selected point usually to cause damage at that point." United Nations Office for Disarmament Affairs, "International Ammunition Technical Guidelines, Glossary of terms, definitions and abbreviations," ATG 01.40:2011(E) 1st Edition (2011-10-01), [www.un.org/disarmament/convarms/Ammunition/IATG/docs/IATG_01.40-Glossary_and_Definitions\(V.1\).pdf](http://www.un.org/disarmament/convarms/Ammunition/IATG/docs/IATG_01.40-Glossary_and_Definitions(V.1).pdf) (accessed 20 March 2013).

26 AOV does not employ a single strictly technical definition of an artillery shell in its categorisation of media reporting, and relies on definitions based in part on the International Ammunition Technical Guidelines. United Nations Office for Disarmament Affairs, "International Ammunition Technical Guidelines, Glossary of terms, definitions and abbreviations," ATG 01.40:2011(E) 1st Edition (2011-10-01), [www.un.org/disarmament/convarms/Ammunition/IATG/docs/IATG_01.40-Glossary_and_Definitions\(V.1\).pdf](http://www.un.org/disarmament/convarms/Ammunition/IATG/docs/IATG_01.40-Glossary_and_Definitions(V.1).pdf) (accessed 7 March 2013); and NATO, "Glossary of terms and definitions concerning the safety and suitability for service for munitions, explosives and related products," AOP-38, April 2002, www.nato.int/structur/ac/310/pdf/aop-38-3.pdf (accessed 7 March 2013).

27 Mortars are generally indirect-fire weapons which fire projectiles over a high-trajectory and do not depend on a line-of-sight. Erich G. Berman, Pierre Gobinet and Jonah Leff, "Mortars," Small Arms Survey, Research Notes - Number 2, February 2011, www.smallarmssurvey.org/fileadmin/docs/H-Research_Notes/SAS-Research-Note-2.pdf (accessed 20 March 2013).

28 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 which AOV considers likely to be armed, for example police, security guards, intelligence officers, and paramilitary forces. All casualties that were not reported as belonging to the armed groups listed above were recorded as civilians.

29 Across all areas, the total proportion of civilian to armed actor casualties remained at a disproportionately high level, rising from 71% of total casualties in 2011 to 78% in 2012.

30 The ongoing and high level of violence in Syria as covered in media reports, as with any other similarly intense and/or protracted conflict, does not lend itself to be broken down into individual incidents of explosive weapons use where the specific time, location, weapon used, or number of persons killed and injured can be identified. As such, it is particularly difficult to capture casualties occurring in these situations under AOV's project methodology. For example, media reporting that, 'over the past week, heavy shelling and widespread fighting across Homs killed over 100 persons,' cannot be recorded in AOV's data, firstly because it is unclear how many of these casualties were caused by explosive weapons, as opposed to shooting or other forms of armed violence. Nor can other criteria necessary for an incident to be recorded under AOV's methodology be satisfied, such as the clear date on which the violence occurred.

31 This was 10 fewer than the 68 affected countries and territories recorded in 2011, but nevertheless a confirmation that explosive violence is a geographically diverse and widespread phenomenon. Since 1 October 2010 AOV has recorded explosive violence in 86 different countries and territories.

32 In Iraq AOV recorded a thousand more civilian casualties in 2012 than in 2011.

33 Civilian casualties increased in Thailand in part due to two large IED attacks that killed and injured more than 500 civilians. Most of those injured suffered respiratory problems due to smoke inhalations after the car bombing at the Lee Gardens Plaza Hotel in Hat Yai on 31 March 2012. "Car bombs kill 14 in southern Thailand," *AFP in Daily Times Pakistan*, 2 April 2012, www.dailytimes.com.pk/default.asp?page=2012%5C04%5C02%5Cstory_2-4-2012_pg4_6 (accessed 14 March 2013).

34 In Gaza, Israeli air strikes in response to rocket attacks in October and November killed and injured nearly 500 people.

35 A series of grenade attacks across the year that took place in places of worship in Kenya caused over 100 civilian casualties and contributed to a steep climb in the number of civilians killed and injured by explosive weapons in the country.

36 In Yemen, the number of civilian casualties recorded during the year fell from 943 in 2011 to 312 in 2012, as the number of incidents of explosive weapons use in populated areas decreased by 52%.

37 In Somalia, civilian casualties reduced by almost half as incidents of shelling in densely-populated Mogadishu between troops from the African Union Mission in Somalia and non-state armed group Al-Shabaab became less frequent. At the same time, a sharp rise in IED and grenade incidents was recorded in neighbouring Kenya as a result of a spillover in violence related to the ongoing conflict in Somalia. For a discussion on this issue, see International Crisis Group, "Kenyan Somali Islamist Radicalisation," 25 January 2012, www.crisisgroup.org/en/regions/africa/horn-of-africa/kenya/b085-kenyan-somali-islamist-radicalisation.aspx (accessed 15 March 2013).

38 Levels of explosive violence in Libya also fell following the overthrow of the Gaddafi regime in 2011. AOV however continued to record exchanges of shelling between Libyan militias as well as several IED attacks. The large number of unsecured explosive weapons and unexploded ordnance remaining in the country continued to present a significant risk for proliferation of explosive weapons use and harm from explosive remnants of war. For example, following the overthrow of Gaddafi, approximately 10,000 man-portable air defence systems (MANPADS) were unaccounted for. Morgan Lorraine Roach and Jessica Zuckerman, "MANPADS on the Loose: Countering Weapons Proliferation in North African and the Sahel," The Heritage Foundation, 5 November 2012, www.heritage.org/research/reports/2012/11/manpads-countering-weapons-proliferation-in-north-africa-and-the-sahel#_edn1 (accessed 15 March 2013). For information on the range of explosive remnants of war following the 2011 conflict see, ICBL-CMC, Landmine and Cluster Munition Monitor, "Libya", last updated 17 December 2012 www.the-monitor.org/custom/index.php/region_profiles/print_theme/1955 (accessed 15 March 2013).

39 The situation appeared to have stabilised in Côte d'Ivoire following electoral violence in 2011. No casualties from explosive weapons were recorded by AOV in 2012.

40 See for example, "US drone strikes 'kill Pakistan militants,'" *BBC*, 16 February 2012, www.bbc.co.uk/news/world-asia-17053995 (accessed 21 February 2013).

41 This reduction followed a policy shift in June in which NATO forces agreed to refrain from aerial bombardment of residential buildings. NATO ISAF, "ISAF Statement on Air Dropped Munitions," Kabul, 12 June 2012, www.isaf.nato.int/article/isaf-releases/isaf-statement-on-air-dropped-munitions.html (accessed 20 March 2013).

42 Kolade Adeyemi, "Police: 10 bomb-laden vehicles found in Kano," *The Nation*, 24 January 2012, www.thenationonlineng.net/2011/index.php/news/34359-police-10-bomb-laden-vehicles-found-in-kano.html (accessed 14 March 2013).

43 In February, AOV recorded 1,078 civilian casualties from artillery and mortar shells during the bombardment of the Syrian city of Homs alone. In June, AOV recorded the highest number of global civilian casualties with around 3,000 killed and injured, 1,114 of whom were victims of a large number of IED attacks across Iraq during the month. Another peak occurred in November concurrent with Israel's launch of a series of air strikes in the Gaza strip in response to militant rocket fire. Although there was a decline in casualties in December, AOV's initial figures for

January 2013 show this was only temporary.

44 AOA V recorded 399 children killed or injured by explosive weapons in Syria.

45 Casualties are recorded as children if they are reported as such in news sources, or if their age is given as under the age of 18. This definition is based on the 1989 UN Convention on the Rights of the Child. The remaining 1,168 casualties were reported simply as 'children' as no gender was provided.

46 It is likely that the deaths or injuries of children were reported as being particularly newsworthy in a way that the death of women was not. This was the same percentage as recorded in 2011.

47 58 incidents. There are several features of explosive weapons use which make casualty counting more difficult than incidents involving small arms. Frequently access for first-responders and journalists was difficult in the chaotic conditions following an explosive blast. Identification of the gender and age of casualties can also be made more challenging by the effects of blast and fragmentation on the body, making victims unrecognisable.

48 Save the Children, "Childhood Under Fire: The impact of two years of conflict in Syria," March 2013, www.savethechildren.org.uk/sites/default/files/images/Childhood_Under_Fire.pdf (accessed 18 March 2013). Save the Children have previously documented the danger explosive weapons pose to children in "Devastating Impact: Explosive weapons and children," 2011, www.unicef.org/protection/Devastating_Impact_low_res.pdf (accessed 18 March 2013).

49 For example, although gunfire killed the greatest number of people 34% of those killed and injured by explosive ordnance were female (only 9% of casualties from gunfire were female).

Richard Moyes, "Impact of weapons by gender and age- Iraq 2003-2011," AOA V, June 2012, www.aoav.org.uk/uploads/changing_policy/The%20Impact%20of%20Explosive%20Weapons/2009_08_the_problem_of_explosive_weapons.pdf

50 Save the Children, "Childhood Under Fire: The impact of two years of conflict in Syria," March 2013, www.savethechildren.org.uk/sites/default/files/images/Childhood_Under_Fire.pdf (accessed 18 March 2013).

51 Reports which failed to identify an explosive weapon as a cause ('106 people were killed by forces who stormed Basatin al-Hasawiya') or occurred across a period of more than 24 hours ('a barrage of army rocket, artillery and aerial bombardment had killed at least 120 civilians and 30 opposition fighters since Sunday,') or failed to give a precise enough location ('144 people were killed across the country') were excluded. See for example; "Syria civil war sees deadliest week, UNICEF says," *CNN*, 3 September 2012,

<http://edition.cnn.com/2012/09/02/world/meast/syria-civil-war> (accessed 20 March 2013); "Syrian troops and militia push to take Sunni Homs areas," Reuters, 25 January 2013,

www.reuters.com/article/2013/01/25/us-syria-crisis-idUSBRE9000EY20130125 (accessed 11 February 2013)

52 The Benetech Human Rights Program, "Preliminary Statistical Analysis of Documentation of Killings in the Syrian Arab Republic," 2 January 2013, www.ohchr.org/Documents/Countries/SY/PreliminaryStatAnalysisKillingsInSyria.pdf (accessed 8 March 2013).

53 Human rights organisations in Syria have calculated fatality numbers since the start of the conflict in early 2011 that range from 45,084 to 52,703 suggesting that even with activists working on the ground there is a difficulty in collecting comprehensive casualty information. Estimates from The Centre of Violations Documentation, <http://vdc-sy.org/index.php/en/> as of 6 February 2013 and Syrian Revolution Martyr Database, <http://syrian-shuhada.com/?lang=en&> as of 4 February 2013 respectively.

54 According to The Centre of Violations Documentation, since early 2011 at least 15,276 people were killed by attacks which may have involved explosive weapons (categories which they use include 'explosive', 'shelling', 'plane shelling') of which 14,209 were civilians. The Centre of Violations Documentation, <http://vdc-sy.org/index.php/en/> as of 6 February 2013

55 93% of casualties of explosive violence that were recorded by the VDC as of 6 February 2013, and 91% of AOA V's casualty

dataset in 2012.

56 5,045 deaths from explosive weapons were recorded by AOA V in Syria up to 31 December 2012.

57 In Libya in 2011, AOA V was able to record 3,150 casualties from explosive violence. While it is still not known how many people were killed or injured in Libya during the conflict last year, the interim Health Minister alleged that the total number of deaths may be as high as 30,000. Karin Laub, "Libya: Estimated 30,000 Died In War; 4,000 Still Missing," *The Associated Press*, posted by *The Huffington Post*, 9 August 2011,

www.huffingtonpost.com/2011/09/08/libya-war-died_n_953456.html (accessed 11 February 2013). Similarly in 2006, AOA V recorded 896 casualties from explosive weapons in Lebanon, including 462 fatalities. In a later analysis, Human Rights Watch recorded 5,508 casualties of explosive weapons. Human Rights Watch, "Why they died: civilian casualties in Lebanon during the 2006 war," September 2007, www.hrw.org/sites/default/files/reports/lebanon0907.pdf (accessed 11 February 2013).

58 In 2012, AOA V recorded 206 incidents in populated areas in which ten or more civilians were reportedly killed. This does not factor in the likelihood of people succumbing to the severity and complexity of their injuries.

59 An average of seven people were killed or injured when explosive weapons were used in areas not reported as populated. The same averages were recorded in 2011 demonstrating the consistently high levels of harm caused when an explosive weapon detonates in a populated area.

60 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 are considered likely to be armed, for example police, security guards, intelligence officers, and paramilitary forces. All casualties that were not reported as belonging to the armed groups listed above were recorded as civilians.

61 A target however could only be ascribed from news reporting on incidents for about one third (29%) of recorded incidents. This is broadly consistent with AOA V's 2011 dataset, where targeting could only be ascribed in 39% of incidents.

62 Sumalee Yeesaman, "Pattani bomb blast victims plead for an end to terror tactics," *Khabar Southeast Asia*, 25 September 2012, http://khabarsoutheastasia.com/en_GB/articles/apwi/articles/features/2012/09/25/feature-03 (accessed 14 March 2013).

63 94% of the casualties recorded in or near places of worship were reported to be civilians. 99% of the casualties recorded on public transport were reported to be civilians. 98% of the casualties recorded in 'entertainment' venues (including cinemas, sports stadiums, restaurants, and cafés) were reported to be civilians.

64 Multiple (urban) is a category used by AOA V to record the victims of incidents where explosive weapons use affected multiple urban areas simultaneously. Common incidents in this category included widespread shelling, or where rockets, mortars, or artillery strikes were used in a number of different locations in a short space of time.

65 While a range of explosive weapon types were reportedly used to kill and injure civilians in markets, the dynamic in 2012 was more dominated by IED explosions, particularly in 55 incidents in Iraq and Pakistan. There was an 82% increase in the number of civilian casualties in markets from IEDs in 2012 compared to 2011.

66 This is in addition to the incidents categorised as taking place in multiple (urban) locations, many of which will have encompassed residential homes in addition to the other impacted locations. Furthermore, not only were 2,619 civilian casualties were recorded in urban residential locations but AOA V also recorded 1,050 civilian casualties in villages.

67 It was common in 2012 for explosive violence incidents in urban residential areas to cause physical damage to homes and neighbouring buildings. In 89 incidents in urban residential areas damage to the location was reported, almost one in three.

68 Humanitarian infrastructure refers to locations which are part of relief and aid operations, e.g. a World Food Programme distribution point, offices of the United Nations, a local charity's headquarters.

69 This data was relatively consistent with findings from 2011,

when 58 such incidents caused 693 civilian casualties, 64 of whom were children.

70 See for example Article 18 of Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War, Geneva, 12 August 1949, www.icrc.org/ihl.nsf/FULL/380?OpenDocument (accessed 20 March 2013), and Additional Protocol I to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, Geneva, 8 June 1977, www.icrc.org/ihl.nsf/FULL/470?OpenDocument (accessed 20 March 2013).

71 See for example, “US condemns Sudan military bombing in South Kordofan,” *Sudan Tribune*, 3 February 2012, www.sudantribune.com/US-condemns-Sudan-military-bombing,41503 (accessed 20 March 2013); UN News Centre, “UN envoy condemns deadly attack on Iraqi primary school,” 24 September 2012, www.un.org/apps/news/story.asp?NewsID=42974&Cr=iraq&Cr1#.UUVltRe-3To (accessed 14 March 2013); Human Rights Watch, “Syria: Fighter Planes Strike Aleppo Hospital,” 15 August 2012, www.hrw.org/news/2012/08/15/syria-fighter-planes-strike-aleppo-hospital (accessed 14 March 2013).

72 United Nations Children’s Fund (UNICEF), “Statement by UNICEF Regional Director Maria Calvis on school shelling near Damascus,” Amman, 5 December 2012, www.unicef.org.uk/Media-centre/Press-releases/UNICEF-condemns-yesterdays-shelling-of-a-school-near-Damascus/ (accessed 20 March 2013).

73 For more information on how responsibility for an incident is attributed please see pp.39-40.

74 States and multi-state groups reported to have used explosive weapons in 2012 include; AMISOM, Burma, Colombia, Egypt, India, Israel, Kenya, Libya, Mali, Mauritania, NATO ISAF (including Afghanistan), Pakistan, Philippines, Somalia, Sudan, Syria, Turkey, USA, Yemen. Given the significant underrepresentation of casualties of explosive violence recorded in Syria under AOA’s methodological constraints, it is likely that the actual number of people killed and injured by state use of explosive weapons is much higher.

75 Non-state use of explosive weapons was reported in countries such as Afghanistan (e.g. Hezb-i-Islami, Taliban); Colombia (Autodefensas Unidas de Colombia, FARC, Urabenos); India (People’s Liberation Army, United Liberation Front of Assam, United National Liberation Front); Iraq (Islamic State of Iraq); Pakistan (Baloch Republican Army, Lashkar-i-Jhangvi, Tehrik-i-Taliban Pakistan); Philippines (New People’s Army, Abu Sayyaf); Syria (Free Syria Army, Al-Nusra Front); Turkey (PKK-Kurdistan Worker’s Party); Yemen (AQAP, Ansar-al-Sharia).

76 AOA recorded 108 incidents in which air-dropped bombs and rockets were explicitly reported. This was 22% of all air-launched incidents, although it is likely that these were used in more incidents where the munition was not clearly described. In aerial attacks where no munition was clearly reported they are recorded under the broader category of ‘air strike’.

77 This grouping also includes cluster bombs, as well as makeshift air-dropped ‘barrel bombs’ that are manually rolled out of aircraft.

78 AOA recorded 2,518 civilian casualties from air-launched explosive weapons, or 9% of the total recorded civilian casualties in 2012, compared to 2011, when 1,671 civilian casualties were recorded.

79 AOA records a weapon as being an air-dropped bomb only in those incidents where this term was used in the source material. In other instances where it was not clear what type of explosive munition was used in an aerial attack these incidents were categorised as ‘air strikes’, which is a broader recording category (see pp.7-8). Air-dropped bombs were identified in 96 incidents in 2012. This is a greater sample size than had been recorded in 2011, where a bomb was only known to have been used in 14 incidents as opposed to either a rocket or missile. In the incidents where an air-dropped bomb was reported, a greater number of civilian casualties were reported than in incidents involving other air-delivered munitions. The effects of air-dropped bombs with a large explosive content are explored further on pp.29-30.

80 “Syrian air force continues bombing; thousands flee,” *The Associated Press*, posted by *Philly.com*, 14 November 2012, http://articles.philly.com/2012-11-14/news/35113133_1_syrian-air-force-syrian-town-syrian-rebels (accessed 17 March 2013); David Enders, “Residents flee as Syrian jets attack rebels,” *The Age*, 14 November 2012, www.theage.com.au/world/residents-flee-as-syrian-jets-attack-rebels-20121113-29ahp.html (accessed 18 March 2013).

81 Civilians made up just under a third of casualties recorded by missiles. Other organisations which are focused on recording the casualties of drone strikes have recorded higher figures. For example, The Bureau of Investigative Journalists recorded a range of between 357-572 casualties from drone strikes in Pakistan in 2012, AOA recorded 371 casualties. Bureau of Investigative Journalism, “Obama 2013 Pakistan drone strikes,” 3 January 2013,

www.thebureauinvestigates.com/2013/01/03/obama-2013-pakistan-drone-strikes/ (accessed 20 March 2013).

82 “Syria warplane ‘bombs Raqqa petrol station queue’,” *BBC*, 20 September 2012, www.bbc.co.uk/news/world-middle-east-19665075 (accessed 17 March 2013).

83 Human Rights Watch, “Under Siege: Indiscriminate bombing and abuses in Sudan’s South Kordofan and Blue Nile States,” December 2012, www.hrw.org/sites/default/files/reports/sudan1212webwcover_0.pdf (accessed 4 March 2013).

84 “Rebels say Syria using ‘vacuum bombs,’” *UPI*, 1 November 2012, www.upi.com/Top_News/World-News/2012/11/01/Syrian-military-bombs-people-on-breadline/UPI-63101351751400/ (accessed 4 March 2013). See Eliot Higgins, “Clear evidence of DIY barrel bombs being used by the Syrian Air Force,” *Brown Moses Blog*, <http://brown-moses.blogspot.co.uk/2012/10/clear-evidence-of-diy-barrel-bombs.html> for video footage (accessed 4 March 2013).

85 Speech by M. Laurent Fabius, Minister of Foreign Affairs, “Laurent Fabius highlights French support for Syrian revolutionary councils,” Paris, 17 October 2012, <http://ambafrance-uk.org/Laurent-Fabius-highlights-French> (accessed 17 March 2013); Human Rights Watch, “Syria: Despite Denials, More Cluster Bomb Attacks,” 23 October 2013, www.hrw.org/news/2012/10/23/syria-despite-denials-more-cluster-bomb-attacks (accessed 17 March 2013). While the perceived novelty of these weapons meant that barrel bombs are often cited and alleged, AOA recorded only four incidents in which barrel bombs were reported to have caused civilian casualties; a sample size too small to allow for strong conclusions to be made about the pattern of their use.

86 7,916 casualties. However, there was a small decrease in the total number of casualties from ground-launched explosive weapons compared to 2011 where 8,069 casualties were recorded.

87 By contrast, in 2011 while ground-launched explosive weapons were widely used in Libya, civilians accounted for 62% of the casualties. Partly, this difference could be due to the size of the cities which were subject to sustained shelling. Homs and Aleppo, two of the sites of the most intense bombardment in Syria, have a combined population of around 3.3 million whereas in Libya the population of Misrata and Sirte together is around 400,000. In addition, ground-launched explosive weapons took place in populated areas more frequently in Syria (83% of incidents compared to 71% in Libya). See “Profile: Sirte,” *BBC*, 11 September 2011, www.bbc.co.uk/news/world-africa-12885322 (accessed 5 March 2013); “Misrata: City under siege,” *BBC*, 10 May 2011, www.bbc.co.uk/news/world-africa-13118724 (accessed 4 March 2013); Central Bureau of Statistics, “Homs Metropolis 2004 Census,” 2004, www.cbssyr.org/new%20web%20site/General_census/census_2004/NH/TAB04-1-2004.htm (accessed 6 March 2013); Central Bureau of Statistics, “Aleppo 2004 Census,” 2004, www.cbssyr.org/new%20web%20site/General_census/census_2004/NH/TAB02-1-2004.htm (accessed 6 March 2013).

88 The remaining civilian casualties were in incidents where no user was clearly reported or in exchanges of fire by non-state and state groups.

89 This could explain in part why the proportion of civilian

casualties from this group of weapons was so high.

90 These three weapons were also amongst the most deadly to civilians; 85% of grenade casualties were civilians, 90% of mortar casualties, and 93% of casualties from combinations of ground-launched explosive weapons.

91 Henry Dodd and Robert Perkins, "Monitoring Explosive Violence: The EVMP dataset 2011," AOA, March 2012, www.aoav.org.uk/uploads/changing_policy/The%20Impact%20of%20Explosive%20Weapons/EVMP/2012_03_monitoring_explosive_violence_the_evmp_dataset_2011.pdf (accessed 6 March 2013).

92 The number of mortar incidents increased from 120 in 2011 to 161 in 2012.

93 See for example: "Yemen army shells Qaeda posts, kills 12," *AFP*, posted in *Khaleej Times*, 14 February 2012, www.khaleejtimes.com/displayarticle.asp?xfile=data/middleeast/2012/February/middleeast_February435.xml§ion=middleeast&col (accessed 25 February 2013).

94 Incidents involving multiple ground-launched weapons in Syria were occasionally reported as lasting for a period of more than 24 hours and so could not be recorded by AOA. It is likely that the actual number of these incidents is higher. AOA recorded 62 incidents involving multiple ground-launched weapons and 29 of these caused at least 20 casualties.

95 Occasionally these attacks extended for periods of longer than 24 hours and were therefore not eligible to be included in the AOA dataset. The actual number of casualties from these intense bombardments is likely to be higher.

96 "Homs assault kills many as Red Cross seeks aid way," *Reuters*, posted in *World Bulletin*, 21 February 2012, www.worldbulletin.net/?aType=haber&ArticleID=86127 (accessed 20 February 2013); Lauren Williams, "Homs blitz prompts yet more calls for cease-fire in Syria," *The Daily Star Lebanon*, 22 February 2012, www.dailystar.com.lb/News/Middle-East/2012/Feb-22/164182-homs-blitz-prompts-yet-more-calls-for-cess-fire-in-syria.ashx#axzz1nCPbcMbv (accessed 22 February 2013).

97 Caitlin Trent, "Mayor attributes Caribbean bomb attack to criminal gang," *Colombia Reports*, 25 October 2012, <http://colombiareports.com/colombia-news/news/26685-mayor-at-tributes-caribbean-bomb-attack-to-criminal-gang.html> (accessed 17 March 2013).

98 Monitoring carried out at a national level recorded 33 grenade incidents in Mexico between April 2011 and April 2012 while global monitoring only recorded 14. However, both datasets recorded 13 deaths from grenades over that period. Hector Guerra, "The use of hand grenades in Mexico: A problem of explosive violence in populated areas? A media review, 2011-2012," AOA, May 2012.

99 In some situations the use of explosive weapons in populated areas may even be seen as an important indicator as to whether a situation of armed conflict exists in legal terms. For a detailed discussion please see: Maya Brehm, "Protecting Civilians from the Effects of Explosive Weapons: An analysis of International Legal and Policy Standards," UNIDIR, 2012, www.unidir.org/files/publications/pdfs/protecting-civilians-from-the-effects-of-explosive-weapons-fr-293.pdf (accessed 21 March 2013).

100 There is not yet a universally agreed definition of an IED. The NATO definition is "a device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals and designed to destroy, incapacitate, harass or distract. It may incorporate military stores, but is normally devised from non-military components." NATO Standardization Agency, "NATO Glossary of Terms and Definitions," 2008, www.fas.org/irp/doddir/other/nato2008.pdf (accessed 8 March 2013).

101 AOA breaks down IEDs into three different categories based on the language used in source material. These recording categories are: Car bombs, Non-specific IEDs, and Roadside bombs. (For more on these weapon types see Key Terms pp.7-8).

102 The countries most affected by IEDs were very similar to those reported in the previous year's dataset. The ten countries with the most incidents in 2012 were; Afghanistan, India, Iraq,

Nigeria, Pakistan, Philippines, Somalia, Syria, Thailand, Yemen. The only change from 2011 was that Syria was one of the ten most affected countries in 2012, replacing Russia.

103 453 incidents where IEDs caused casualties were recorded in Iraq (33% of IED incidents), 321 (22%) in Afghanistan, and 208 (14%) in Pakistan. Civilian casualties from IEDs increased by 18% in Iraq and 12% in Pakistan in 2012. In both countries, IED attacks occurred mainly in populated areas. In Iraq, 65% of IED incidents were recorded in populated areas like markets, mosques, bus stations, and public offices, an increase from 57% in 2011. In Pakistan, a similar increase of IED use in populated areas was recorded, from 58% in 2011 to 67% in 2012. Iraq Body Count (IBC), which mainly relies on media reports to record data on civilian casualties in the country, recorded a similar increase (14%) in civilian casualties caused by explosive weapons, according to AOA analysis of available data. Iraq Body Count (IBC), "Iraqi deaths from violence in 2012," 1 January 2013, www.iraqbodycount.org/analysis/numbers/2012/ (accessed 6 March 2013).

104 Using English-language media reports AOA recorded 121 incidents in 2012 where an IED caused a casualty in Syria. Only nine incidents were recorded in 2011.

105 The car bomb explosions in central Damascus on 23 December 2011 were the first incidents where an IED caused large numbers of civilian casualties, and marked a trend that continued into 2012. In 2012 AOA recorded 2,490 civilian casualties from IEDs in Syria, compared to 212 in 2011.

106 This includes attacks on foot and by vehicle. The term 'suicide bomber' may overstate the responsibility and agency of the reported attacker. This may not always be appropriate in some cases where the explosive device was triggered remotely, or may involve the coercion of vulnerable people (i.e. children or people with mental disabilities). For example, on 8 September 2012 a 14-year-old boy was reported to have detonated explosives near NATO's headquarters in Kabul, Afghanistan, killing himself as well as several other children. Dan Reichmann, "Suicide bomb kills 6 near NATO gate in Afghanistan," *The Associated Press*, posted by *Big Story* 8 September 2012, <http://bigstory.ap.org/article/afghan-police-say-suicide-bomber-kills-least-4-people-central-kabul> (accessed 5 March 2013).

107 AOA recorded an average of 9.6 civilian casualties in IED incidents that were not reported to have been activated by self-killing.

108 Enayat Najafizada and Matthew Rosenberg, "Prominent Afghan Lawmaker Among Bombing Victims at Wedding," *The New York Times*, 14 July 2012, www.nytimes.com/2012/07/15/world/asia/afghan-lawmaker-among-victims-at-wedding-bombing.html?_r=0 (accessed 18 March 2013).

109 "Top Afghan MP among 23 killed by suicide bomber who blew himself up at a wedding of politician's daughter," *The Associated Press*, posted by the *Daily Mail Online*, 14 July 2012, www.dailymail.co.uk/news/article-2173517/Ahmad-Khan-Saman-gani-killed-suicide-bomb-blast-killed-23.html?ito=feeds-newsxml (accessed 18 March 2013).

110 Mohammed Nawab Sherzai, quoted in "Top Afghan MP among 23 killed by suicide bomber who blew himself up at a wedding of politician's daughter," *The Associated Press*, posted by the *Daily Mail Online*, 14 July 2012, www.dailymail.co.uk/news/article-2173517/Ahmad-Khan-Saman-gani-killed-suicide-bomb-blast-killed-23.html?ito=feeds-newsxml (accessed 18 March 2013).

111 Duraid Adnan, "Bombings in Iraq kill at least 48," *The New York Times*, www.nytimes.com/2012/11/30/world/middleeast/bombings-in-iraq-kill-at-least-48.html?_r=1& (accessed 18 March 2013).

112 "Iraqi bombings kill 40-205 wounded in series of blasts," *AFP* posted by *Kuwait Times*, 30 November 2012, <http://news.kuwaittimes.net/2012/11/29/iraq-bombings-kill-45-205-wounded-in-series-of-blasts/> (accessed 18 March 2013).

113 "Bombings kill Shias in Iraq cities of Hilla and Karbala," *BBC*, 29 November 2012, www.bbc.co.uk/news/world-middle-east-20537797 (accessed 18 March 2013).

114 Ban-Ki-Moon, United Nations Secretary-General. "Report

of the Secretary-General on the protection civilians in armed conflict,” UN Security Council, S/2012/376, 22 May 2012, http://reliefweb.int/sites/reliefweb.int/files/resources/Full_Report_4150.pdf (accessed 1 March 2012).

115 Media reporting is rarely able to provide details on specific features of explosive weapons used, for example the weight of explosive material. AOA uses broad categories to record weapon types involved in any incident, that relate to descriptive language used in media reporting. While not all air-dropped or car bombs necessarily have a large blast radius, the reporting of many of the incidents within these categories means that many are likely to meet the criteria that means they have a wide area impact.

116 For example, a third of car bombs caused more than 25 civilian casualties, as did one in every eight incidents where an air-dropped bomb was recorded. Not every incident in either category would have necessarily involved a bomb with large explosive content. However, the higher proportion of incidents with such high casualty numbers that were recorded within each weapon category suggests the frequent use of large blast and fragmentation effects.

117 Such missiles were reported in 2012 in Syria, but were apparently used to hit remote, unpopulated areas and did not cause casualties in the year. Michael R. Gordon and Eric Schmitt, “Syria Uses Scud Missiles in New Effort to Push Back Rebels,” *The New York Times*, 12 December 2012, www.nytimes.com/2012/12/13/world/middleeast/syria-war-developments-assad.html (accessed 17 March 2013).

118 Human Rights Watch, “Israel/Gaza: Israeli Airstrike on Home Unlawful,” 7 December 2012, www.hrw.org/news/2012/12/07/israelgaza-israeli-airstrike-home-unlawful (accessed 1 March 2013). Palestinian Centre for Human Rights, “Attempts to Rescue the al-Dalu Family Ongoing; Israeli Occupation Forces Destroy House over Its Residents,” 19 November 2012, www.pchrgaza.org/portal/en/index.php?option=com_content&view=article&id=9010:attempts-to-rescue-the-al-dalu-family-ongoing-israeli-occupation-forces-destroy-house-over-its-residents-&catid=145:in-focus (accessed 21 March 2013).

119 John Rudoren, Fares Akram, Isabel Kershner, “Israeli Airstrike Kills Three Generations of a Palestinian Family,” *The New York Times*, 18 November 2012, www.nytimes.com/2012/11/19/world/middleeast/israel-gaza-conflict.html (accessed 17 March 2013).

120 Palestinian Centre for Human Rights, “Attempts to Rescue the al-Dalu Family Ongoing; Israeli Occupation Forces Destroy House over Its Residents,” 19 November 2012, www.pchrgaza.org/portal/en/index.php?option=com_content&view=article&id=9010:attempts-to-rescue-the-al-dalu-family-ongoing-israeli-occupation-forces-destroy-house-over-its-residents-&catid=145:in-focus (accessed 17 March 2013).

121 Human Rights Watch, “Israel/Gaza: Israeli Airstrike on Home Unlawful,” 7 December 2012, www.hrw.org/news/2012/12/07/israelgaza-israeli-airstrike-home-unlawful (accessed 1 March 2013).

122 Jodi Rudoren, Fares Akram, and Isabelle Kershner, “Israeli airstrike kills three generations of a Palestinian Family,” *The New York Times*, 18 November 2012, www.nytimes.com/2012/11/19/world/middleeast/israel-gaza-conflict.html?_r=0 (accessed 7 March 2013).

123 “Airstrike triggers exodus in Syria,” *AFP* posted by *IOL News*, 16 August 2012, www.iol.co.za/news/world/airstrike-triggers-exodus-in-syria-1.1363999 (accessed 1 March 2013).

124 “Bomb blast kills 25 in Landikotal market,” *PakTribune*, 17 June 2012, <http://paktribune.com/news/Bomb-blast-kills-25-in-Landikotal-market-250683.html> (accessed 1 March 2013).

125 “25 killed in Landikotal car bomb blast,” *The International News*, www.thenews.com.pk/Todays-News-13-15406-25-killed-in-Landikotal-car-bomb-blast (1 March 2013).

126 Human Rights Watch, “Syria: Fighter Jet Bombing Kills over 40 civilians,” 16 August 2012, www.hrw.org/news/2012/08/16/syria-fighter-jet-bombing-kills-over-40-civilians (accessed 1 March 2013).

127 “25 killed in Landikotal car bomb blast,” *The International News*, www.thenews.com.pk/Todays-News-13-15406-25-killed-in-Landikotal-car-bomb-blast (1 March 2013).

[in-Landikotal-car-bomb-blast](http://www.thenews.com.pk/Todays-News-13-15406-25-killed-in-Landikotal-car-bomb-blast) (1 March 2013).

128 A target could be ascribed from the reporting of news sources in about a third of all incidents, however, when armed actors were reported to be the targets of attacks, civilians still made up 52% of the casualties.

129 UN Mission in South Sudan, “Five die in second Bentiu air raid,” 14 April 2012, http://reliefweb.int/report/south-sudan-republic/five-die-second-bentiu-air-raid?utm_source=twitter-feed&utm_medium=twitter (accessed 7 March 2013).

130 Satellite Sentinel Project, “Escalation: Evidence of SAF and SPLA Combat Operations (Report),” 22 April 2012, <http://satsentinel.org/report/escalation-evidence-saf-and-spla-combat-operations> (accessed 1 March 2013).

131 Indirect fire is defined by the UK Ministry of Defence as “an engagement in which the target cannot normally be seen by the firer; the delivery means is laid mechanically or electronically using data derived from table or computation.” UK Government, Ministry of Defence, “Handbook of Defence Land Ranges Safety, Volume IV, Glossary of Terms and Definitions,” JSP 403 Volume 4, Edition 2, Change 3, April 2008, www.gov.uk/government/uploads/system/uploads/attachment_data/file/33907/JSP403_Vol4v2_3.pdf (accessed 18 March 2013).

132 “Six Somalis killed in Mogadishu mortar attack: witnesses,” *AFP*, 19 March 2012, <http://english.ahram.org.eg/NewsContent/2/9/37100/World/International/Six-Somalis-killed-in-Mogadishu-mortar-attack-witn.aspx> (accessed 1 March 2013).

133 Hamsma Omar, “United Nations Expresses Alarm at Mogadishu Mortar Attacks,” *Bloomberg*, 20 March 2012, www.businessweek.com/news/2012-03-20/united-nations-expresses-alarm-at-mogadishu-mortar-attacks (accessed 1 March 2013).

134 Hamsma Omar, “United Nations Expresses Alarm at Mogadishu Mortar Attacks,” *Bloomberg*, 20 March 2012, www.businessweek.com/news/2012-03-20/united-nations-expresses-alarm-at-mogadishu-mortar-attacks (accessed 1 March 2013).

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138 More than 4,000 civilian deaths and injuries were recorded in ‘multiple urban’ attacks (see fig.4). AOA uses the category Multiple explosive weapons in incidents where more than one of AOA’s recording categories are documented, invariably in large numbers. Casualties cannot be ascribed to a specific weapon category when these incidents occur; such is the scale, speed, and ferocity of their impacts. Within any one of AOA’s weapon categories, multiple explosive weapons can be used and reported. See for example when eight mortars were fired towards a political conference in Sudan, or when “France Condemns Rebel Mortar Attack on Sudan’s Kadugli,” *Sudan Tribune* posted in *All Africa*, 9 October 2012, <http://allafrica.com/stories/201210100349.html> (accessed 1 March 2013), or when a sequence of IEDs detonated together in a hospital and market in the Nimroz province of Afghanistan, “Bomb Blasts Kill Dozens Across Afghanistan,” *Radio Free Europe/Radio Liberty*, 1 March 2012, www.rferl.org/content/afghanistan-suicide-attack/24676785.html (accessed 1 March 2013).

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CONTACT

Action on Armed Violence

5th Floor, Epworth House

25 City Road

London EC1Y 1AA

T +44 (0)20 7256 9500

F +44 (0)20 7256 9311

E info@aoav.org.uk

www.aoav.org.uk