



Harrison Bardwell* and Mohib Iqbal

The Economic Impact of Terrorism from 2000 to 2018

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Abstract: This paper estimates the economic impact of terrorism at \$US 33 billion in 2018. In the 18 years from 2000 to 2018, terrorism cost the world economy \$US 855 billion. This model follows the methodology of the 2019 Global Terrorism Index and uses a bottom-up cost accounting approach to aggregate the cost of four indicators that result from the incidents of terrorism. The four indicators include terrorism-related deaths, injuries, property damage and GDP losses. The findings of this paper show that global terrorism peaked in 2014 with 33,555 deaths globally and a consequential economic impact of \$US 111 billion. From 2011 to 2014, terrorism-related deaths increased by 353%, and terrorist incidents rose by 190%. The 100 incidents with the highest economic impact from deaths and injuries are included in the analysis. The September 11, 2001 attacks in the United States stands as the incident with the highest economic impact accounting for deaths and injuries only at \$US 40.6 billion, this is followed by the Sinjar massacre in Sinjar, Nineveh, Iraq at \$US 4.3 billion.

Keywords: terrorism, economic cost, economic impact, GDP losses, violence, terrorism tactics

JEL codes: D74, F51, H56, I15

1 Introduction

The loss of human life and the injuries sustained as a result of terrorism cause significant economic disruption. The adverse economic consequences of terrorism affect individuals and societies alike. The immediate economic costs of terrorism can be measured in terms of the value of lives lost, the disability that results from the injuries, and the destruction of private and public property.

*Corresponding author: Harrison Bardwell, Research Fellow, Institute for Economics and Peace, Sydney, NSW, Australia, E-mail: hbardwell@economicsandpeace.org

Mohib Iqbal, Senior Research Fellow, Institute for Economics and Peace, Sydney, NSW, Australia, E-mail: miqbal@economicsandpeace.org

Beyond the immediate impact, terrorism produces disruptions to the broader economy that may only appear days, weeks or months after the terrorist incident. Depending on the scale and frequency of the terrorist events within a country, the economic impact of terrorism on growth, investment, consumption and tourism is a serious threat to the economic development and growth of a country. The broader implications of terrorism also depend on the ability of the economy to reallocate resources from the affected sectors smoothly.

Terrorism alters economic behaviour, primarily by changing investment and consumption patterns as well as diverting public and private resources away from productive activities and towards protective measures. Terrorism destroys capital and reduces the economic capacity of the country affected.

This paper uses the Global Terrorism Index (GTI) framework developed by the Institute for Economics and Peace (IEP) to estimate the global economic impact of terrorism (Institute for Economics and Peace IEP 2019). The data for this study comes from the Global Terrorism Database (GTD) produced by the University of Maryland. The paper only focuses on incidents of terrorism since the turn of the century; thus, the events from 2000 to 2018 are examined. The study uses a cost accounting methodology that costs the deaths and injuries from terrorism incidents using an adjusted unit cost provided by McCollister, French, and Fang (2010).

Measuring the economic impact of terrorism is particularly important considering the rising level of terrorism incidents and fatalities following the terrorist attacks of September 11, 2001 in the United States and consequent rise in global terrorist activities. Incidents of terrorism and the resulting fatalities have continued to increase from 2003 levels. While most of the terrorism activities took place in countries that were suffering from armed conflict, many high-peace countries have also been affected. The spread of terrorism has triggered a strong policy response both in terms of counter-terrorism and prevention programs.

Understanding the economic impact of terrorism provides a substantial evidence base for evaluating the allocation of financial resources to counter-terrorism programs and activities. Measuring the scale and cost of terrorism has important implications for assessing its effects on economic activity both in the short and long run. The estimate of the economic impact of terrorism is useful to inform policymakers as an evidence base for evaluations such as a cost-benefit analysis of terrorism prevention programs.

This paper is divided into five sections. The subsequent section gives a background to the methodologies employed to estimate the cost of terrorism as well as a review of the literature on the effects of terrorism on the economy. This is followed by the methodology section explaining the data sources and the estimation strategies employed to develop the costing model. The results section proceeds and discusses the findings in detail. The final section concludes the

paper. The Appendix includes a detailed explanation of the methodology and extended analysis of the economic impact of terrorism.

1.1 Conceptualising a Costing Model for the Impact of Terrorism

Estimating a monetary value for losses due to terrorism can be conducted in the same way as estimating the economic cost of violence. A large number of studies measure the economic cost of mortality and morbidity due to violence using a diverse range of methodologies. Iqbal, Bardwell, and Hammond (2019) suggest that the monetary cost of violence varies and is dependent on the underlying theory and assumptions used to estimate the costs. It is therefore necessary to provide an overview of the relevant approaches to costing violence and in particular, terrorism.

In generalising the literature that examines the monetisation of violence, four overarching theories can be identified, the bottom-up costing method also known as the cost accounting, contingent valuation, hedonic pricing, and econometric modelling of the variables and impacts of terrorism.

Dubourg, Hamed, and Thorns (2003), Iqbal, Bardwell, and Hammond (2019), McCollister, French, and Fang (2010) and Heek et al. (2018) employ the cost accounting approach to determine the costs of violence. This approach aggregates the direct and indirect costs of incidents of violence. McCollister, French, and Fang (2010) use this approach to estimate both unit costs and the total cost of crime for the United States. The paper aggregates tangible and intangible costs for victims, perpetrators and the public system such as the medical and criminal justice system costs. Iqbal, Bardwell, and Hammond (2019) use the unit costs provided by McCollister, French, and Fang (2010) to estimate the global economic impact of violence for 163 countries from 2008 to 2018. This methodology is applicable to determining the economic cost of terrorism.

Carnis (2004) states that the absence of a voluntary agreement between the victim and perpetrator results in the inability to formally price violent incidents given violence is not transacted in the market. The absence of a market mechanism to set the price or compensation for victims of violence creates a difficulty in estimating the cost of violence. Methods of contingent valuation are employed to estimate a monetary price for economic goods (economic bads in the case of violence). For example, the willingness to pay (WTP) is a technique of the contingent valuation method which enables the costing of different types of violence (Cohen et al. 2004). The benefits of using WTP method to measure violence is that it can provide an estimate of violence without the incident ever

having taken place. The major difference between the contingent valuation and bottom-up approach is the former prices violence before the violence takes place, whereas the latter approach costs it after the incident. In other words, the bottom-up method calculates the cost on the question of 'how much will it take to fix the impact'. Whereas contingent valuation costs based on the question of 'what is the monetary value an individual or society is willing to pay to avoid the violence incident' or alternately, 'how much compensation is required if you were to suffer the violent incident' (Iqbal, Bardwell, and Hammond 2019). This method could be used to estimate how much an individual or a society is willing to pay or invest in prevention programs to avoid terrorism (Mumpower et al. 2013).

Another approach to cost the economic impact of terrorism is to estimate the effect of terrorism on the price of goods such as housing in a particular area. This is achieved using the hedonic pricing methods that measure the price of specific goods by its characteristics. The best example is the price of real estate and how it is influenced by the number of rooms and other facilities, proximity to schools and hospitals and the level of crime in the area. Dubin and Goodman (1982) use the hedonic pricing approach to show that the presence of violence negatively impacts housing prices in Baltimore. Similarly, Tita, Petras, and Greenbaum (2006) use the hedonic pricing method in Columbus, Ohio, United States to find that violent crime has impacts on housing prices.

Another widely used approach is to measure the impact of terrorism on macroeconomic variables such as growth, investments and financial markets. Gaibulloev and Sandler (2008) find terrorism reduces the level of foreign direct investment as well as reduces gross domestic product growth rates (GDP). However, counter-terrorism strategies might increase aid flow and other interventions into a country. The US war on terror in Afghanistan is such an example where Afghanistan received increased support from the United States and other major international donors for the rehabilitation of the economy and government intuitions (Estrada et al. 2015). However, in the absence of peace, these achievements are extremely fragile. Yet, a contrast can be found in Zakaria, Jun, and Ahmed (2019) who show that a 1% increase in terrorism reduces foreign direct investment (FDI) by 0.1%, and economic growth by 0.002%.

Studies have used counterfactual scenarios to estimate direct and indirect costs by comparing states that suffer from violence to those that do not. The difference in the two outcomes is then assumed to be due to violence (Abadie and Gardeazabal 2003, 2008). Abadie and Gardeazabal (2003) show that in the case of Basque Country in Spain, GDP per capita declined by 10% during 1980 and 1990 relative to other states when the Basque region experienced terrorist activates. Bilgel and Kharasan (2017) estimates the difference in GDP per capita in Turkish states. States that suffered from terrorism experienced nearly a 14% decline in GDP

over 21 years compared to states that did not suffer from terrorism. More recently, Sun and Yu (2020) found that Tibetan regions suffered a 27% reduction in GDP per capita due to separatist activities.

Pakistan suffers from a high level of terrorism activities that has led to a reduction in economic activity, created uncertainty and increased risk perception leading to decreased confidence (Ali 2010). Hyder, Akram, and Padda (2015) found a 1% increase in the number of terrorist incidents resulted in a reduction of per capita GDP growth by 0.39 percentage points. Estrada et al. (2015) estimate the total cost of terrorism in Pakistan to amount to \$103 billion.

The adverse economic impact of terrorism varies based on the economic development of an economy, as well as the scale, impact and continuation of terrorist activities. Developed countries experience only short term impacts given the terrorism incidents are usually infrequent. Furthermore, developed economies are more resilient to short term disruptions. Gaibulloev and Sandler (2009) study the economic impact of terrorism in 42 Asian economies and find the impact is much smaller in the developed economies compared to the developing economies. When Gaibulloev and Sandler (2009) divide their model into developed and developing economies in Asia, they find that terrorism does not have a significant impact on the growth of the developed economies in the sample. However, among the 35 developing countries examined, for each additional transnational terrorist incident per one million inhabitants, the GDP per capita growth rate fell by 1.4%, and government spending as a percentage of GDP increased by 1.6%. Similarly, Gaibulloev and Sandler (2008) studied 18 Western European countries and find that for an additional terrorist attack per one million people, GDP per capita falls by 0.2% and the share of GDP directed to investment by 0.33 percentage points.

In addition to economic growth, terrorism also disrupts financial markets and trade, inhibits business investment and reduces tourism. Blomberg and Hess (2006), De Sousa, Mirza, and Verdier (2009), and Mirza and Verdier (2014) find a negative relationship between trade and terrorism. Blomberg and Hess (2006) estimate that terrorism, in addition to internal and external conflicts can distort trade as much as a 30% tariff on trade. Further, bilateral trade may be reduced by approximately 4% if one of the trading partner's experiences domestic terrorism. De Sousa, Mirza, and Verdier (2009) find a similar reduction in bilateral trade between the United States and the countries where higher levels of terrorism occur. Nitsch and Schumacher (2004) and Bandyopadhyay, Sandler, and Younas (2017) confirm a reduction in bilateral trade and an increased cost of trade as a result of terrorism.

Terrorism increases the risk perception among investors leading to a decline in foreign direct investment (FDI). Abadie and Gardeazabal (2008)

examine terrorism risks across 186 countries for 2003 and 2004 finding that the net FDI a country receives reduces by 5% of GDP in response to an increase in the terrorist risk by one standard deviation. Blomberg and Mody (2005) find transnational terrorism to have a greater negative impact on FDI to developing countries.

Tourism is particularly vulnerable to terrorism as it leads to heightened anxiety of travel. Enders and Sandler (1991) estimate the relationship between terrorism and tourism for Spain from 1970 to 1988 and find that on average, a typical terrorism incident results in 140,000 fewer tourists. Enders and Sandler (1996) quantify the dollar value reduction in tourism due to terrorism in a selection of European countries from 1974 to 1988, concluding that collectively, the countries lost \$16.15 billion due to terrorism.

When estimating the global economic impact of terrorism, measuring both the direct and indirect costs that terrorism imposes on individuals and society is essential. Mayhew and Adkins (2003) identifies that the victim's pain, suffering and lost quality of life should be included in the monetary cost of violence. Across the literature, this is defined as the intangible, or indirect cost of violence. Rajkumar and French (1997), Anderson (1999), McCollister, French, and Fang (2010) and Wickramasekera et al. (2015) are examples of papers that discuss or account for the direct and indirect costs of violence.

Direct costs of violence include the costs to the victim and perpetrator that can be monetarily measured. Examples of direct costs include hospital fees and forgone salary. However, the direct costs can include the widespread impacts, such as the costs to society such as policing, judicial systems and incarceration (Wickramasekera et al. 2015). The direct economic costs are the immediate costs to the victim, the perpetrator, and society that can be calculated monetarily in the market (Iqbal, Bardwell, and Hammond 2019).

Indirect costs extend beyond the immediate impact and do not involve a direct monetary exchange such as fear, pain, suffering, and lost quality of life (Wickramasekera et al. 2015). Indirect costs are often psychological and are therefore difficult to measure quantitatively. Estimating indirect costs requires the impact on society and the long term effects on individuals. Indirect costs are often undervalued using simple direct accounting methods as the costs do not have a specific market price; contrary to that of the direct costs.

An exhaustive systematic review of the literature on the economic cost of terrorism can be found in Gaibulloev and Sandler (2019) and Robinson et al. (2010). Wickramasekera et al. (2015) similarly provide a comprehensive literature review on the cost of violence, study designs and the crimes priced.

2 Methodology

This paper uses a cost accounting method also known as the bottom-up approach to estimate the economic losses due to terrorism. The cost accounting method aggregates different costs of terrorism to produce country and global totals. The model estimates cost of terrorism for 163 countries and territories using the following four indicators:

- (1) Deaths from terrorism
- (2) Injuries from terrorism violence
- (3) Property damage from terrorism
- (4) Indirect GDP losses from terrorism

The following methods are used in estimating the cost of each of the stated indicators:

- The cost of deaths from terrorism is estimated using the unit cost of homicide from McCollister, French, and Fang (2010).
- The cost of injuries from terrorism is estimated using the unit cost for an assault from McCollister, French, and Fang (2010).
- Property damage estimates are reported by GTD for a sufficiently large sample of attacks that allows for the imputation of the missing values by income level and attack types.
- GDP losses are calculated at 2% of GDP for countries that suffer over 1000 deaths from terrorism in a given year based on Collier (1999).

2.1 The Model

The economic impact of terrorism includes three components:

1. Direct costs – These are the cost of violence to the victim, the perpetrator, and the government. These include direct expenditure, such as the cost of hospitalisation.
2. Indirect costs – The costs accrue after the violent event and include indirect economic losses, physical and physiological trauma to the victim.
3. The multiplier – The multiplier represents the flow-on effects of direct costs, such as additional economic benefits that would come from alternate investment rather than from containing or dealing with violence.

Equation (1) below displays the formula for calculating the total economic impact of terrorism for country i in year t .

$$\sum \text{Economic Impact of Terrorism}_t^i = \text{Direct Costs}_t^i + \text{Indirect Costs}_t^i + \text{Multiplier}_t^i \quad (1)$$

The multiplier for this study is equivalent to one. This indicates that every dollar saved from an absence of terrorism will be an extra dollar worth of economic activity from the flow-on effect. The multiplier only applies to the direct costs of terrorism and reflects the additional economic boost from reducing terrorism. The direct costs imposed by terrorism create additional productivity losses and to account for this loss, expenditure multipliers are commonly used in economic calculations (Brauer et al. 2009; Home Office 2011; Moretti 2010). The multiplier used in this paper is adopted from the multiplier published in Brauer et al. (2009). These authors use a multiplier equal to one to estimate the peace gross world product.

2.2 Data

Terrorism data is sourced from the Global Terrorism Database (GTD) which is collected and collated by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) a Department of Homeland Security Centre of Excellence led by the University of Maryland. The GTD is considered to be the most comprehensive global dataset on terrorist activity and has now codified over 170,000 terrorist incidents. This dataset provides information on the number of deaths and injuries for each terrorism incident in addition to the level of property damage.

The property destruction estimates from the GTD are used to generate costs of property destroyed by various types of terrorist attacks. Each of the different property costs is further calibrated by country income type to adjust for the difference in property costs across different levels of economic development.

In order to capture the indirect effects of terrorism, GDP losses are included for countries that experience substantial impacts from terrorism; this is defined as over 1000 deaths within a year Collier (1999). There are a number of different ways to estimate the GDP losses from terrorism. Collier (1999), Polachek and Sevastianova (2012), De Groot, Bozzoli, and Brück (2015) and Costalli, Moretti, and Pischedda (2017) provide different methodologies and estimates of the impact of collective violence on the economy using different identification strategies and assumptions. The estimates of GDP losses from these studies range from 1 to 3% of GDP (Bozzoli, Brück, and Sottas 2010). Collier (1999) use a large number of countries and concludes that 2.2% of GDP growth is lost for each year of war. Costalli, Moretti, and Pischedda (2017) estimate the GDP losses at 1.5%, which is

the difference between GDP growth for countries with and without war. Bozzoli, Brück, and Sottas (2010) provide a systemic review of the literature regarding the economic losses associated with conflict and large scale terrorism.

Abadie and Gardeazabal (2003, 2008) show that terrorism reduces GDP per capita by 10% compared to a synthetic control region. Bilgel and Kharasan (2017) estimates a decline of 13.8% in GDP per capita over a period of 21 years comparing states with and without conflict in Turkey. Ali (2010) estimates the cost of terrorism in Pakistan by suggesting that terrorism reduces short term economic activity leading to uncertainty and a reduction in confidence due to an increased risk perception. Enders and Olson (2012) suggest that the indirect cost of terrorism, including GDP losses, are larger than its direct costs. Gaibulloev and Sandler (2019) present an exhaustive review of the literature on the economic effects of terrorism.

At a 1000 deaths from terrorism, the scale of the violence will reach that of a civil war, and as stated by Dunne (2017), the differences among civil war, transnational organised crime, and terror groups are becoming less clear. Therefore, an assumption of this paper is when the scale of terrorism related deaths crosses the threshold of 1000 deaths in a year, GDP losses are to be included in the economic impact for that year. At this level, terrorism will create disruptions at the level of a civil war or an armed conflict. These losses are equal to 2% of the country's GDP.

2.3 Converting Costs to Constant \$US 2018

To compare the cost of terrorism between years, all costs are converted from current prices to constant using the GDP deflator. The GDP deflator data is sourced from the World Bank's World Development Indicators and the International Monetary Fund World Economic Outlook. Where data is unavailable for all years for a particular country, but at least one year is available, we nominate to impute the missing data using the average between years.

Using 2018 as the base year for each country and dividing by each year for every country, we get the factor to multiply the unit costs by. When the unit costs are multiplied by the deflator factor, each country, for a particular year will have the unit costs in constant \$US 2018. Equation (2) below displays the formula used for country i in year t .

$$\text{Deflator factor} = \frac{\text{GDP Deflator}_{2018,i}}{\text{GDP Deflator}_{t,i}} \quad (2)$$

The deflator factor is equal to one for each country in 2018. In order to control for outliers in the deflator, if a country's deflator factor exceeds two, then we adjust their deflator to be equal to two for that particular year.

2.4 Scaling Unit Costs

Unit costs are used to estimate the cost of terrorism deaths and injuries. The unit costs from McCollister, French, and Fang (2010) are adjusted using the GDP per capita ratio as a scale. This is done using the ratio of GDP per capita in PPP terms. A country's GDP per capita in PPP terms for a particular year is divided by the United States' GDP per capita in PPP terms for the same year. Equation (3) below displays the formula used for country i in year t .

$$GDP\ Scale = \frac{GDP\ per\ capita\ in\ PPP_{t,i}}{GDP\ per\ capita\ in\ PPP_{t,UnitedStates}} \quad (3)$$

A country with a GDP per capita PPP that is 60% of GDP per capita PPP of the United States would have a terrorism death unit cost equal to 60% of the United States homicide unit cost.

In the absence of country-specific unit costs for all 163 countries, this paper uses adjusted unit costs. This adjustment attempts to correct for the differences in income levels taking the prices and purchasing power of each country into account. GDP per capita PPP is appropriate for the comparison of non-traded goods and services.

In an ideal scenario, this paper would estimate country-specific unit costs for different categories of crime and violence. These country-specific unit costs would then be used to calculate the aggregate costs of terrorism for each country. However, to develop the unit costs in a way similar to McCollister, French, and Fang (2010) for each country would require detailed country-specific data on wages, productivity, labour markets, hospitalisation costs and court compensation. In the absence of this data, calculating country-specific unit costs for all countries is difficult. As a result, the GDP PPP adjustment method allows for the comparison and scaling of 163 countries using a consistent approach and is therefore used in this paper to estimate a global cost of terrorism.

3 Results: A Global Overview of the Economic Impact of Terrorism

Global terrorism peaked in 2014 with more than 13,500 attacks, which resulted in 33,555 deaths. From 2011 to 2014, terrorism-related deaths increased by 353%, and terrorist incidents rose by 190%. This increasing trend started in 2011 with the emergence of post-Arab uprising conflicts in Syria, Libya, Yemen and Egypt. Meanwhile, the conflict in Iraq saw a significant escalation that coincided with the

rise of the Islamic State terrorist group. In addition, during this time, the conflict in Afghanistan and Pakistan also saw increasing levels of terrorist activities. The level of terrorism in Iraq peaked in 2014 with over 3300 incidents which coincided with the peak in the economic impact of global terrorism.

The period after 2014 has seen a significant decline in global terrorist incidents and casualties. Both terrorism-related incidents and fatalities have declined by 44 and 52% in the four years since 2014, respectively. The decline in terrorism is mainly due to the localisation of the Syrian conflict that led to a reduction in conflict-related deaths, the defeat of Islamic State by the coalition of Iraq and the international community and the decline in terrorist activities in Pakistan and Nigeria. However, Afghanistan has experienced a significant rise in the level of terrorism and in 2018 was the most affected country by terrorism. However, in the period since 2010, more countries have experienced terrorist activities, including high peace countries and regions. For example, Europe has suffered over 5000 terrorist incidents since 2010, resulting in 1953 deaths, while North America has suffered over 500 incidents resulting in 294 deaths.

Another two smaller peaks in terrorism were recorded in 2003 and 2007. These spikes coincided with the start of the Iraq war in 2003, and the US troop surge in Iraq in 2007. During this period, Al-Qaeda in Iraq led by Al Zarqawi unleashed a wave of sectarian violence as well as attacks against Iraqi and international troops in the country led by the US. The earliest peak in global terrorism is related to the September 11, 2001 terrorist attacks in the United States by Al-Qaeda. Figure 1 shows the trends in the global terrorist attacks and the resulting deaths.

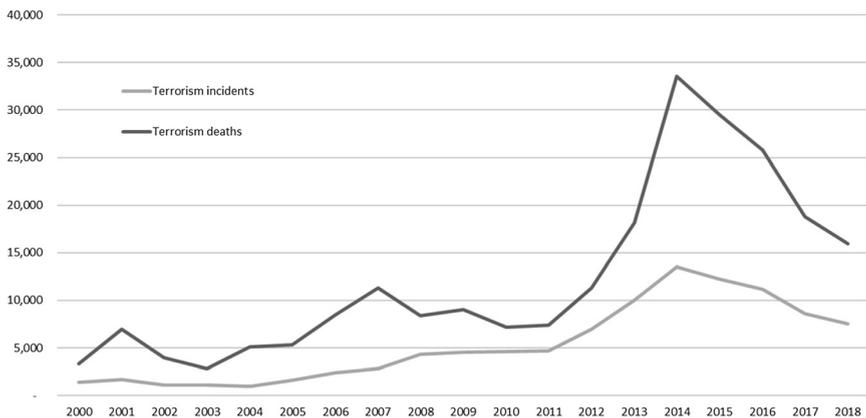


Figure 1: Trend in global terrorism incident and deaths, 2000–2018.

The global economic impact of terrorism amounted to \$US 33.2 billion in 2018 which is a decrease of 38% from 2017. This decline is in line with the decreasing level of global terrorism since 2014. In 2018, the total number of terrorism related deaths declined by 15.2% from its 2017 level, marking the fourth consecutive year of a declining trend in terrorism. This translates to a lower economic impact from terrorism deaths and subsequently, the economic impact of terrorism has similarly fallen. Figures 1 and 2 display a parallel decline in the level of terrorism and its economic impact, which begins in 2014.

The economic impact of terrorism reached \$US 111 billion at its peak in 2014. This was preceded by an increase of 74% in the economic impact of terrorism from 2011 to 2014. The economic impact of terrorism in 2018 is almost three times lower than its peak in 2014.

The economic impact of terrorism consists of the cost of deaths, injuries, property damage and the GDP losses due to terrorism. The GDP losses are estimated for a country if the deaths from terrorism exceed 1000 deaths in a year. Due to the high economic price placed on human lives, the economic cost of terrorism deaths is the majority of the total cost of terrorism suffered by countries. In 2018, deaths from terrorism were the largest component in the economic impact of terrorism model at 58% of the total followed by GDP losses at 39%, as shown in Figure 3. Table 1 displays the breakdown of the economic impact of terrorism by the four categories from 2000 to 2018.

From 2000 to 2018, on average, terrorism deaths consisted of 51% of the total economic impact. However, 2001 is an outlier for which terrorism deaths comprise 13% of the total economic impact of terrorism. This is due to the enormous damage

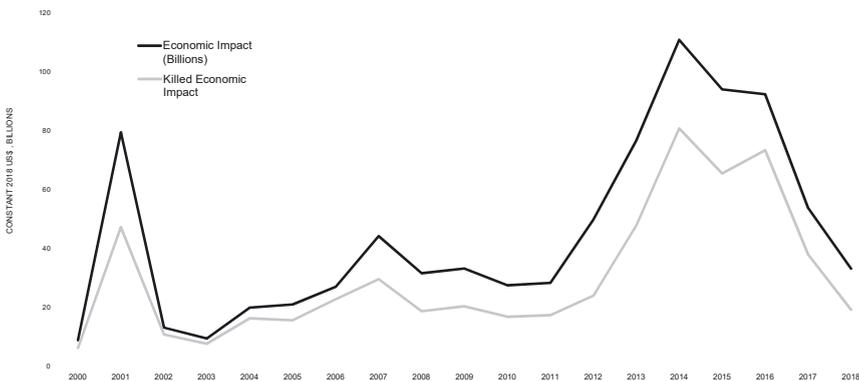


Figure 2: The trend in the global economic impact of terrorism 2000–2018, 2018 constant \$US, billions.

that 9/11 events had on disrupting the US economy and the destruction of property. Therefore, GDP losses and property damages were unusually large that year.

In 2017 and 2018, the economic impact of terrorism declined by 38 and 42% respectively. Table 2 displays the economic impact of terrorism from 2010 to 2018 for each indicator. In 2018, the economic impact of terrorism was below \$US 35 billion for the first time in seven years.

3.1 The Most Affected Countries

The highest level of terrorism in the 18 years to 2018 was recorded in countries that experienced armed conflict. These countries are mainly situated in the Middle East and North Africa (MENA), sub-Saharan Africa and South Asia. Since 2010, over 124,000 of the total 167,000 global terrorism deaths occurred in Iraq, Afghanistan, Nigeria, Pakistan and Syria. In other words, 74% of the global terrorism related deaths occurred in these countries. Figure 4 illustrates the terrorism death burden suffered by the above-listed countries.

Afghanistan suffered the highest economic burden as a percentage of GDP of all the countries analysed in 2018. At 22% of GDP, the economic impact of terrorism is a significant drain on the Afghan economy. Afghanistan is one of the countries that has experienced rising levels of violence related to terrorist activities, contrary to the declining global trend. The economic impact of terrorism as a percentage of GDP is less than 5% in all countries except Afghanistan in 2018.

In 2014, the economic impact of terrorism was equivalent to 27% of Iraq's GDP. Iraq suffered 3373 incidents and over 10,000 deaths from terrorism in 2014. Iraq's two most drastic terrorist events took place in this year, the Sinjar massacre in Sinjar, Nineveh, Iraq and the Badush prison siege in Badush city, Nineveh, Iraq. The Sinjar massacre resulted in the death of at least 953 people and over 5000 people were abducted. This attack was attributed to the Islamic State of Iraq and

Table 2: Change in the economic impact of terrorism, billions, 2010–2018, 2018 constant \$US, billions.

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDP losses	8.80	9.60	24.20	26.10	26.70	26.10	15.80	14.10	12.90
Terrorism deaths	16.90	17.50	24.10	47.90	80.70	65.50	73.40	38.10	19.30
Property damage	1.30	0.80	0.90	1.30	2.10	1.10	1.70	0.80	0.70
Terrorism injuries	0.60	0.50	0.70	1.30	1.20	1.30	1.40	0.70	0.30
Total	27.60	28.40	49.80	76.60	110.70	94.00	92.30	53.70	33.20

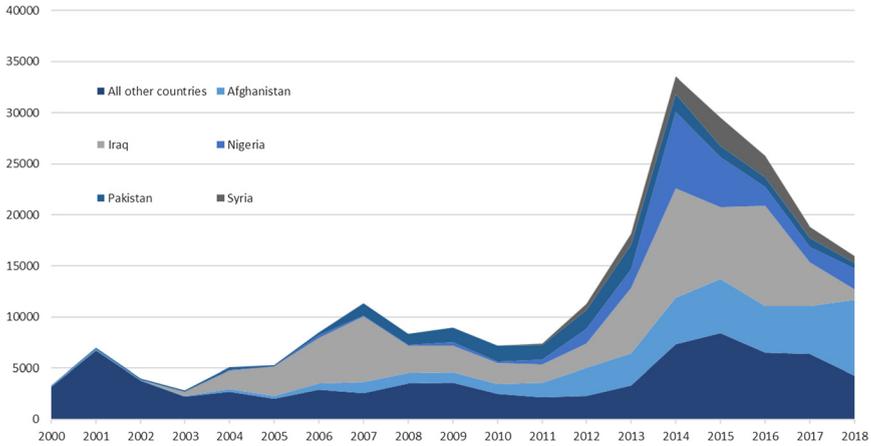


Figure 4: Number of deaths globally and by the five most affected countries, 2010–2018.

the Levant (ISIL). The Badush prison siege saw the assailants release the Sunni inmates and kill 670 Shia prisoners and was similarly attributed to ISIL.

Iraq had the second-highest economic cost of terrorism as a percentage of GDP, equivalent to 4% of GDP in 2018. The 10 countries most affected by terrorism since 2010 are shown in Table 3 and all were experiencing ongoing conflict at the time of the study. This suggests that armed conflict and fragility provides a platform for terrorist groups to organise and undertake violent activities. An extension of Table 3 which includes more countries is available in Appendix.

Table 3: The most affect countries in terms of the largest economic impact as a percentage of GDP, 2010–2018.

Country/Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Iraq	8%	7%	8%	18%	27%	18%	24%	11%	4%
Afghanistan	3%	5%	9%	10%	14%	16%	15%	14%	22%
Syria	0%	0%	2%	5%	7%	10%	8%	5%	2%
Nigeria	0%	0%	2%	2%	4%	3%	3%	3%	3%
Pakistan	3%	3%	3%	3%	3%	3%	0%	0%	0%
Somalia	1%	1%	1%	1%	2%	2%	2%	5%	1%
Central African Republic	0%	0%	0%	1%	5%	2%	2%	4%	2%
Libya	0%	0%	0%	1%	3%	4%	3%	2%	1%
Yemen	1%	0%	1%	0%	1%	4%	1%	1%	1%
South Sudan	0%	0%	0%	0%	1%	0%	4%	3%	1%

3.2 Regional Trends in Terrorism and Its Economic Impact

The Middle East and North Africa is the most affected region by terrorism, followed by South Asia. Since 2000, MENA has experienced over 35,000 terrorist attacks that have resulted in over 95,000 deaths. Figure 5 shows the number of terrorist attacks and deaths by region aggregating the number of deaths and incidents from 2000 to 2018. Central America and the Caribbean is the least affected region suffering 225 attacks since 2000. These attacks have resulted in 190 deaths.

Figure 6 displays the disproportionate burden of terrorism deaths suffered by sub-Saharan Africa, the Middle East and North Africa and South Asia. These three regions have suffered 91% of all terrorism deaths since 2000. In 2014, MENA suffered over 14,000 terrorism deaths, the largest annual number of deaths of any region. In 2018, MENA suffered 2407 terrorism deaths, an 83% decline from its 2014 level.

The economic impact of terrorism in sub-Saharan Africa amounted to \$US 12.2 billion in 2018, which is 37% of the global impact of terrorism. This is followed by the Middle East and North Africa where the economic impact of terrorism was \$US 11.9 billion. As shown in Table 4, Central America and the Caribbean were least affected by the economic impact of terrorism, representing \$US 120 million. This amounts to 0.4% or of the global economic impact of terrorism. In 2018, South Asia

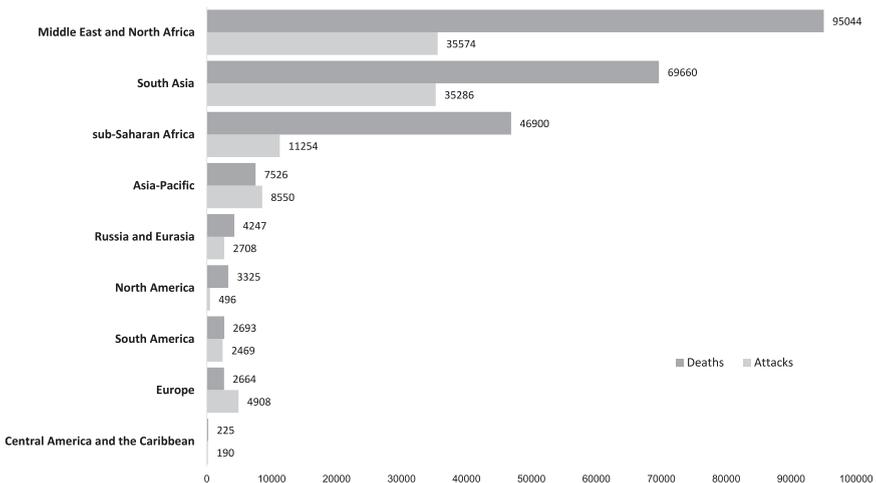


Figure 5: Attacks and fatalities from terrorism by region, 2000–2018.

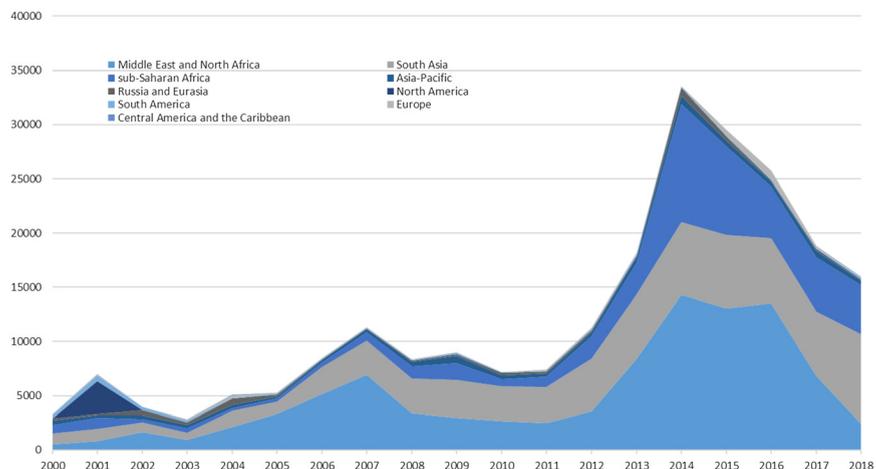


Figure 6: Number of deaths globally by region, 2010–2018.

Table 4: Economic impact of terrorism by region, \$US billions, 2000–2018.

Region/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Asia-Pacific	0.71	0.68	0.76	0.47	0.50	0.65	0.78	1.35	1.50	2.05
Central America and the Caribbean	0.03	0.01	0.00	0.02	0.04	0.00	0.01	0.16	0.01	0.01
Europe	0.64	0.81	0.15	0.47	2.50	1.07	0.55	0.26	0.40	0.42
Middle East and North Africa	2.20	3.47	6.20	4.78	11.21	16.20	21.45	31.26	16.46	16.89
North America	0.01	67.32	0.05	0.06	0.03	0.00	0.02	0.00	0.06	0.24
Russia and Eurasia	0.94	1.12	2.99	1.90	4.07	1.12	0.30	0.35	0.85	1.19
South America	2.63	3.00	2.13	0.95	0.32	0.72	0.26	0.52	0.74	0.75
South Asia	1.29	1.93	0.78	0.67	1.19	1.12	3.26	10.00	11.14	10.91
Sub-Saharan Africa	0.53	1.06	0.23	0.20	0.15	0.19	0.44	0.35	0.49	0.81
Grand total	8.98	79.41	13.27	9.53	20.00	21.08	27.07	44.26	31.65	33.26
Region/Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Asia-Pacific	1.09	1.06	1.32	1.68	2.77	1.68	1.72	1.52	1.22	
Central America and the Caribbean	0.00	0.00	0.08	0.23	0.01	0.03	0.02	0.07	0.12	
Europe	0.16	1.78	0.89	0.50	0.27	4.54	7.21	1.96	0.60	
Middle East and North Africa	13.92	12.99	17.77	41.76	61.78	50.93	62.38	31.03	11.90	
North America	0.07	0.00	0.10	0.14	0.63	0.66	0.88	1.33	0.49	
Russia and Eurasia	1.83	1.45	1.18	1.14	2.18	0.94	0.55	0.42	0.23	
South America	0.36	0.20	0.50	0.36	0.50	0.32	0.23	0.33	0.59	
South Asia	9.72	9.97	11.18	12.23	12.04	11.53	5.12	5.07	5.87	
Sub-Saharan Africa	0.40	0.95	16.84	18.58	30.56	23.37	14.21	12.05	12.17	
Grand total	27.56	28.41	49.85	76.62	110.74	93.99	92.33	53.77	33.19	

suffered the third largest economic impact driven by Afghanistan's high economic impact of terrorism.

The following analysis examines the economic impact from terrorism deaths, injuries and property damage by attack type and by region shown in Table 5.

Bombings and explosions account for 66% of MENA's economic impact from terrorism. It indicates that guerrilla tactics are used by terrorist groups in the region. Similarly, bombings and explosions were the costliest tactics for South Asia at 60% of its total economic impact by attack type, followed by armed assault at 31%. Sub-Saharan Africa is most impacted by armed assault at 65% of the economic impact from deaths, injuries and property damage. This analysis has strong implications for counter-terrorism policies in specific regions.

Similar to the regional terrorism attack tactics, countries of particular income levels are also more or less targeted by specific types of terrorism tactics. Across all income groups, armed assault, and bombing/explosions account for more than 50% of the economic impact of deaths, injuries and property damage as displayed in Table 6. This highlights the needs to promote policies that reduce armed assault terrorism tactics such as disarmament and reduces bombings by means of early bomb detection.

The economic impact of terrorism deaths, injuries and property damage in high-income countries is mainly armed assault at 45% of the total. Whereas, in low-income countries bombing and explosions make up 55% of the economic impact of terrorism deaths, injuries and property damage.

3.3 The World's Largest Terrorist Attacks in the Last 18 Years

Table 7 highlights the 20 costliest terrorist attacks since 2000. This analysis excludes property damages and GDP losses and rather reflects the cost of death and injuries from these incidents. An extension of Table 7 is provided in the Appendix with the 100 costliest terrorist attacks since 2000.

The attacks of September 11, 2001 in the United States are the most significant attacks both in terms of deaths and injuries, but also in terms of economic impact. The economic impact of the attacks is estimated at \$US 40.6 billion. The events of 9/11 led to 2957 deaths and almost 16,500 injuries. Kunreuther, Michel-Kerjan, and Porter (2003) estimate the cost of the 9/11 attacks in the United States at \$US 80 billion, which is double the amount calculated in this study. The differences arise from what elements of the cost are included in the estimation. This study includes the cost of deaths and injuries as well as property loss. Other studies have included

Table 5: The composition of the economic impact of terrorism by attack type, 2010 to 2018.

Region	Armed assault	Assassination	Bombing/explosion	Facility/infrastructure attack	Hijacking	Hostage taking	Unarmed assault	Unknown
Asia-Pacific	50%	12%	28%	2%	1%	6%	0%	1%
Central America and the Caribbean	24%	30%	2%	36%	0%	9%	0%	0%
Europe	37%	2%	46%	2%	1%	9%	3%	1%
Middle East and North Africa	11%	2%	66%	0%	0%	14%	0%	7%
North America	59%	0%	8%	7%	1%	19%	6%	0%
Russia and Eurasia	32%	7%	56%	0%	0%	3%	0%	0%
South America	31%	7%	41%	4%	0%	11%	0%	7%
South Asia	24%	4%	60%	1%	0%	5%	0%	5%
Sub-Saharan Africa	65%	1%	30%	1%	0%	3%	0%	1%

Table 6: The composition of the economic impact of terrorism for by income, by attack type, 2010–2018.

Income level	Armed assault	Assassination	Bombing/explosion	Facility/infrastructure attack	Hijacking	Hostage taking	Unarmed assault	Unknown
High income	45%	1%	29%	3%	1%	14%	4%	3%
Low income	23%	3%	55%	1%	0%	10%	0%	9%
Lower middle income	53%	2%	40%	1%	0%	4%	0%	1%
Upper middle income	13%	2%	64%	0%	0%	14%	0%	7%

Table 7: The 20 costliest terrorist incidents, 2000–2018, \$US 2018 constant, billions.

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
United States	2001	2957.00	16,487.00	40.64	Hijacking	9/11 Terrorist attacks
Iraq	2014	953.00	–	4.30	Hostage taking (Kidnapping)	Sinjar massacre – Sinjar, Nineveh, Iraq
Iraq	2014	670.00	–	3.02	Armed assault	Badush prison siege
Russia	2004	344.00	727.00	2.09	Hostage taking (Barricade incident)	Siege in Beslan, Russia of a school
Iraq	2016	383.00	200.00	1.90	Bombing/ explosion	Bombing of a shopping centre in Karada, Iraq
Iraq	2014	400.00	–	1.80	Hostage taking (Kidnapping)	Kojo massacre – Kojo, Nineveh, Iraq
Iraq	2016	300.00	–	1.48	Hostage taking (Kidnapping)	Mosul, Nineveh, Iraq executions
Iraq	2016	284.00	–	1.40	Hostage taking (Kidnapping)	Execution of hostages at an agricultural facility in Mosul, Nineveh, Iraq
Iraq	2015	300.00	–	1.35	Hostage taking (Kidnapping)	Execution 300 tribal civilians in Qaim, Al Anbar governorate, Iraq
Iraq	2016	250.00	–	1.23	Hostage taking (Kidnapping)	Execution – Mosul, Nineveh, Iraq
Iraq	2017	230.00	–	1.07	Hostage taking (Barricade incident)	Residential building siege in Maawsil al-Jadidah neighbourhood, Mosul, Nineveh, Iraq
Egypt	2017	311.00	127.00	1.05	Bombing/ explosion	Attack on the Al-Rawda mosque in Al-Rawda, Beir al-Abd, North Sinai, Egypt
Iraq	2016	190.00	–	0.94	Hostage taking (Kidnapping)	Execution – Hammam al-Alil, Nineveh, Iraq
Iraq	2017	200.00	–	0.93	Hostage taking (Kidnapping)	Execution – Tal Afar, Nineveh, Iraq
Iraq	2007	250.00	750.00	0.92	Bombing/ explosion	Four coordinated vehicle bombs in the town of Qahtaniya, Iraq
Iraq	2007	250.00	750.00	0.92	Bombing/ explosion	Four coordinated vehicle bombs in the town of Jazeera, Iraq
Russia	2002	170.00	–	0.91	Hostage taking (Barricade incident)	Attack of the Dubrovka Theatre in Moscow, Russia

Table 7: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Iraq	2017	163.00	–	0.76	Armed assault	Snipers opened fire on fleeing civilians in Zanjili neighbourhood, Mosul, Iraq
Egypt	2015	224.00	–	0.75	Bombing/ explosion	An explosive device detonated on a Kogalymavia passenger flight travelling from Sharm el-Sheikh, Egypt to Saint Petersburg, Russia
Iraq	2006	205.00	257.00	0.75	Bombing/ explosion	Five car bombs exploded, three suicide bombs and two detonated in parked cars, and two mortars struck Sadr city, the Shi i slum in Baghdad, Iraq

The 100 costliest incidents are provided in the Appendix.

the cost of the insurance providers, the cost of business interruptions and worker's compensation (Kunreuther, Michel-Kerjan, and Porter 2003).

Iraq recorded 31 of the 100 costliest terrorist attacks in the last 18 years, the most of any country globally. Those 31 incidents in Iraq combine to cost \$US 31 billion in lost GDP from deaths and injuries. Iraq's most severe incident was the Sinjar massacre. This event was the second-costliest incident globally from 2000 to 2018 in terms of deaths and injuries, resulting in an economic impact of \$US 4.3 billion. This attack was attributed to ISIL in which the assailants attacked Yazidi civilians in Sinjar, Nineveh, Iraq. This event led to the deaths of at 953 people, and 5350 people were abducted in the assault.

Nigeria suffered the second-largest number of incidents with 14 incidents in the 100 costliest. Iraq and Nigeria have been among the 10 most affected countries by terrorism, with Iraq becoming the most affected country 14 times between 2000 and 2018. Russia and Egypt are the two other countries that appear in the 20 deadliest terrorist attack list. Russia's costliest terror incident was a siege of a school in the town of Beslan, Russia. This event was the fourth costliest event and is estimated at \$US 2.1 billion and resulted in 344 fatalities and 727 injuries.

4 Conclusion

Terrorism has had a significant economic impact globally. This paper estimates the economic impact of terrorism at \$US 33 billion in 2018, and since 2000, terrorism has cost the world economy \$US 855 billion.

Terrorism experienced a sharp increase since the September 11, 2001 attacks in the United States. However, the sharpest increase came during the period of 2011–2014 in the wake of the post-Arab uprising conflicts in Syria, Libya, Yemen and Egypt. This period also saw more intensified conflicts in Iraq, Afghanistan and Pakistan with the rise of the Islamic State terrorist group in the Middle East. The economic impact of terrorism escalated with the rising level of global terrorism, reaching \$US 111 billion in its peak in 2014.

This paper uses a cost accounting method also known as the bottom-up approach to measure the global economic impact of terrorism. The model costs death, injuries, property damage and GDP losses due to terrorism. The global terrorism database is used to examine the costs of terrorism from 2000 to 2018.

Iraq is the most affected country by terrorism over the period of 2003 and 2018. The US invasion of Iraq was followed by waves of high-intensity conflicts, and consequently, Iraq was the most affected country by terrorism for 14 of the 15 years from 2003 to 2018. The level of terrorism in Iraq has experienced a decline since 2014 after the defeat of ISIL. However, Iraq still remains one of the world's most terrorism affected countries.

In 2018, Afghanistan overtook Syria and Iraq as the country most affected by terrorism. A consequence of the ongoing conflicts between the Taliban, ISIS and the government forces and the decrease in international troops. The economic impact of terrorism in Afghanistan reached 22% of GDP in 2018.

The Middle East and North Africa is the most affected region by terrorism. The economic impact of terrorism in the region amounted to \$US 434 billion since 2000. This was followed by sub-Saharan Africa as the second most affected region at \$US 133 billion. South Asia is the third most affected region at \$US 125 billion.

Across South Asia, the Middle East and North Africa and sub-Saharan Africa regions, armed assault, and bombings and explosions account for the majority of the economic impact of terrorism deaths, injuries and property damage. Implementing policies to target such attacks, such as disarmament or bomb detection may have beneficial outcomes for reducing terrorism related violence and its consequential cost across these three regions.

Extension of Table 2: (continued)

Country/Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Yemen	0.8%	0.5%	0.6%	0.5%	0.9%	3.7%	0.9%	0.7%	0.8%
South Sudan	0.0%	0.0%	0.1%	0.3%	1.1%	0.3%	3.6%	2.9%	0.9%
Lebanon	0.0%	0.0%	0.1%	1.3%	0.8%	0.6%	0.4%	0.1%	0.0%
Algeria	0.1%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Burundi	0.2%	0.3%	0.0%	0.0%	0.0%	0.7%	0.5%	0.2%	0.2%
Palestinian territories	0.0%	0.1%	0.1%	0.1%	0.2%	0.5%	0.3%	0.2%	0.1%
Macedonia	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nepal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Colombia	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%
Sudan	0.1%	0.2%	0.1%	0.1%	0.4%	0.2%	0.1%	0.1%	0.1%
Angola	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cameroon	0.0%	0.0%	0.0%	0.0%	1.4%	1.7%	0.7%	0.6%	0.6%
Israel	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
Chad	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.1%	0.1%	0.3%
Mali	0.0%	0.0%	0.2%	0.3%	0.5%	0.7%	0.4%	0.6%	1.6%
Niger	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	0.4%	0.3%	0.2%

Extension of Table 3: 100 costliest incidents, \$US constant 2018, billions, 2000–2018.

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
United States	2001	1384	8190	\$ 40.64	Hijacking	9/11 terrorist attacks – North Tower of the World Trade Center Complex in New York City, New York
Iraq	2014	953	0	\$ 4.30	Hostage taking (Kidnapping)	Sinjar massacre – Sinjar, Nineveh, Iraq
Iraq	2014	670	0	\$ 3.02	Armed assault	Badush prison siege
Russia	2004	344	727	\$ 2.09	Hostage taking (Barricade incident)	Siege in Beslan, Russia of a school
Iraq	2016	383	200	\$ 1.90	Bombing/explosion	The bombing of a shopping centre in Karada, Iraq
Iraq	2014	400	0	\$ 1.80	Hostage taking (Kidnapping)	Kojo massacre – Kojo, Nineveh, Iraq
Iraq	2016	300	0	\$ 1.48	Hostage taking (Kidnapping)	Mosul, Nineveh, Iraq executions
Iraq	2016	284	0	\$ 1.40	Hostage taking (Kidnapping)	Execution of hostages at an agricultural facility in Mosul, Nineveh, Iraq

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Iraq	2015	300	0	\$ 1.35	Hostage taking (Kidnapping)	Execution 300 tribal civilians in Qaim, Al Anbar governorate, Iraq
Iraq	2016	250	0	\$ 1.23	Hostage taking (Kidnapping)	Execution – Mosul, Nineveh, Iraq
Iraq	2017	230	0	\$ 1.07	Hostage taking (Barricade incident)	Residential building siege in Maawsil al-Jadidah neighbour- hood, Mosul, Nineveh, Iraq
Egypt	2017	311	127	\$ 1.05	Bombing/ explosion	Attack on the Al-Rawda mosque in Al-Rawda, Beir al-Abd, North Sinai, Egypt
Iraq	2016	190	0	\$ 0.94	Hostage taking (Kidnapping)	Execution – Hammam al- Aliil, Nineveh, Iraq
Iraq	2017	200	0	\$ 0.93	Hostage taking (Kidnapping)	Execution – Tal Afar, Nineveh, Iraq
Iraq	2007	250	750	\$ 0.92	Bombing/ explosion	Four coordinated vehicle bombs in the town of Qahtaniya, Iraq
Iraq	2007	250	750	\$ 0.92	Bombing/ explosion	Four coordinated vehicle bombs in the town of Jazeera, Iraq
Russia	2002	170	0	\$ 0.91	Hostage taking (Barricade incident)	Attack of the Dubrovka Theatre in Moscow, Russia
Iraq	2017	163	0	\$ 0.76	Armed assault	Snipers opened fire on fleeing civilians in Zanjili neighbourhood, Mosul, Iraq
Egypt	2015	224	0	\$ 0.75	Bombing/ explosion	An explosive device detonated on a Kogaly- mavia passenger flight travelling from Sharm el-Sheikh, Egypt to Saint Petersburg, Russia
Iraq	2006	205	257	\$ 0.75	Bombing/ explosion	Five car bombs exploded, three suicide bombs and two detonated in parked cars, and two mortars struck Sadr City, the Shiite slum in Baghdad, Iraq

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Ukraine	2014	298	0	\$ 0.75	Bombing/ explosion	A surface-to-air missile at a Malaysia Airlines aircraft, travelling from Amsterdam to Kuala Lumpur, near Hrabove, Donetsk, Ukraine
Turkey	2015	105	245	\$ 0.73	Bombing/ explosion	Two suicide bombers detonated at a peace rally near the train station in Ankara, Turkey
Iraq	2014	150	0	\$ 0.68	Hostage taking (Kidnapping)	Assailants executed 150 former security members in Mosul city, Nineveh governorate, Iraq
Iraq	2014	150	0	\$ 0.68	Hostage taking (Kidnapping)	Execution of members of the Albu Nimr tribe from villages near Ramadi city, Al Anbar governorate, Iraq
Iraq	2014	150	0	\$ 0.68	Hostage taking (Kidnapping)	Execution of 150 women in Fallujah city, Al Anbar governorate, Iraq
Iraq	2016	130	0	\$ 0.64	Hostage taking (Kidnapping)	Execution of former police officers near Hammam al-Alil, Nineveh, Iraq
Iraq	2005	160	542	\$ 0.59	Bombing/ explosion	Bombings in Baghdad, Iraq
Iraq	2007	153	347	\$ 0.56	Bombing/ explosion	Truck bombings in Tal Afar, Iraq
Iraq	2016	112	30	\$ 0.55	Bombing/ explosion	Explosive vehicles and other explosive devices detonated in Hadithah, Al Anbar, Iraq
Iraq	2015	121	130	\$ 0.55	Bombing/ explosion	A suicide bomber in an explosives-laden vehicle detonated at a market in Bani Saad, Diyala governorate, Iraq
Nigeria	2014	315	0	\$ 0.55	Armed assault	Attack on residents and buildings with firearms

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Iraq	2007	150	250	\$ 0.54	Bombing/ explosion	and explosive devices in Gomboru Ngala town, Borno state, Nigeria
Syria	2016	433	0	\$ 0.54	Hostage taking (Kidnapping)	Suicide bombing in the village of Amerli, Diyala Governorate, Iraq
Iraq	2007	145	170	\$ 0.52	Hostage taking (Kidnapping)	Suicide bombers, armed with explosives-laden vehicles, projectiles, and firearms, attacked Palmyra in Homs, Syria
Iraq	2007	145	170	\$ 0.52	Bombing/ explosion	Attack on residents of Al-Wihdah neighbourhood, Tal Afar, Iraq
China	2009	184	0	\$ 0.51	Armed assault	Booby-trapped cars blew up in residential areas, Tal Afar, Iraq
Iraq	2007	127	148	\$ 0.46	Bombing/ explosion	Attacks in streets of Urumqi, the capital of China's north-west Xinjiang region
Iraq	2007	120	246	\$ 0.44	Bombing/ explosion	Car bomb explosion in Sadriyah market in Baghdad, Iraq
Iraq	2009	102	552	\$ 0.43	Bombing/ explosion	Bombing attack on a market in Baghdad, Iraq
Syria	2014	310	0	\$ 0.43	Hostage taking (Kidnapping)	Simultaneous bombing in Ar Rusafa and Al Karkh districts of Baghdad, Iraq
Iraq	2004	110	233	\$ 0.42	Bombing/ explosion	Attack on National Defense Force soldiers and the Shaer Gas Field in Homs governorate, Syria
Iraq	2005	110	130	\$ 0.40	Bombing/ explosion	Attack on the holy shrine of Hussain in Karbala, Iraq
Nigeria	2014	212	0	\$ 0.37	Armed assault	Suicide bombing in the town square of a Shitte town of Al-Hilla, Iraq
						Attack on the Giwa Army Barracks and a University

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Libya	2017	141	0	\$ 0.36	Hostage taking (Barricade incident)	of Maiduguri hostel in Maiduguri city, Borno state, Nigeria Attack of the Brak al-Shati Airbase near Brak, Wadi Al Shatii, Libya
Syria	2015	280	0	\$ 0.36	Hostage taking (Kidnapping)	Execution in Palmyra, Homs governorate, Syria
Nigeria	2014	201	0	\$ 0.35	Armed assault	An attack in Konduga town, Borno state, Nigeria
Nigeria	2014	200	0	\$ 0.35	Armed assault	Attack on community leaders and residents that were meeting in Galadima village, Zamfara State, Nigeria
Nigeria	2014	200	0	\$ 0.35	Armed assault	Attack on residents and buildings in Tsangayari village, Kalabalge district, Borno state, Nigeria
Colombia	2002	119	80	\$ 0.35	Bombing/ explosion	Attack on a church in Bojaya, Colombia
Angola	2001	259	160	\$ 0.34	Armed assault	Attack on a train carrying refugees between Luanda and Dondo in Angola
Ukraine	2015	143	30	\$ 0.32	Bombing/ explosion	Attack on Ukrainian sol- diers with artillery and tanks near Starohnativka, Donetsk oblast, Ukraine
Nigeria	2015	174	0	\$ 0.30	Armed assault	Attack on residents in Kukuwa-Gari village, Yobe state, Nigeria
Nepal	2004	518	216	\$ 0.28	Armed assault	Attack on a town in Bedi, Nepal
Nigeria	2006	200	0	\$ 0.26	Bombing/ explosion	Attack on an oil pipeline killing 200 in Atlas Creek Island, Nigeria
Nigeria	2014	151	0	\$ 0.26	Armed assault	Attack on residents and buildings in Garawa

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
						village, Kalabalge district, Borno state, Nigeria
Syria	2015	200	0	\$ 0.25	Hostage taking (Kidnapping)	Attack in Ishtabraq, Idlib governorate, Syria
Nigeria	2013	142	0	\$ 0.24	Armed assault	Illegal checkpoints set up and civilians attacked in Beni Shiek village, Borno state, Nigeria
Afghanistan	2018	466	0	\$ 0.24	Bombing/explosion	Attack in Ghazni, Afghanistan
Syria	2015	174	201	\$ 0.22	Bombing/explosion	An explosive-laden vehicle detonated near the Syrian Border Police border crossing in Kobani, Aleppo, Syria
Nigeria	2014	122	270	\$ 0.22	Bombing/explosion	A roadside bomb detonated at the Grand Mosque in Kano city, Kano state, Nigeria
Pakistan	2014	158	121	\$ 0.22	Hostage taking (Barricade incident)	Attack on the Army Public School in Peshawar city, Khyber Pakhtunkhwa province, Pakistan
Pakistan	2018	150	186	\$ 0.22	Bombing/explosion	A suicide bomber detonated at an election rally in Darengarh, Balochistan, Pakistan
Indonesia	2002	101	150	\$ 0.22	Bombing/explosion	Bombing in Kuta, Bali
Indonesia	2002	101	150	\$ 0.22	Bombing/explosion	Bombing in Kuta, Bali
India	2006	188	817	\$ 0.22	Bombing/explosion	Train bombings in Mumbai, India
Sudan	2008	134	0	\$ 0.19	Armed assault	An attack in Omdurman, Al Khartum, Sudan
Pakistan	2007	141	250	\$ 0.19	Bombing/explosion	An attack in Karsaz neighbourhood, Karachi, Sindh Province, Pakistan

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Syria	2013	123	0	\$ 0.19	Armed assault	Attack on the town of Khan al-Assal, Aleppo governorate, Syria
Nigeria	2014	106	0	\$ 0.19	Armed assault	Attack on residents in the Izghe village, Borno state, Nigeria
Nigeria	2015	107	0	\$ 0.18	Armed assault	Attack in Zamfara state, Nigeria
Philippines	2004	116	0	\$ 0.18	Bombing/ explosion	The bombing of a ferry in Manila Bay, Manila, Philippines
Nigeria	2014	101	6	\$ 0.18	Armed assault	Attack on the Damaturu-Benishek-Maiduguri road in Borno state, Nigeria
South Sudan	2014	287	400	\$ 0.17	Hostage taking (Kidnapping)	Attack on a mosque in Bentiu town, Unity state, South Sudan
Afghanistan	2018	330	116	\$ 0.17	Bombing/ explosion	Attack in Farah, Afghanistan
India	2010	115	140	\$ 0.17	Unknown	Train attack in Jhargram, Midnapore, West Bengal, India
Pakistan	2009	120	200	\$ 0.17	Bombing/ explosion	Attack on a bazaar market in People's Mandi, Peshawar, North-West Frontier Province, Pakistan
Syria	2017	128	0	\$ 0.15	Hostage taking (Kidnapping)	Attack in Qaryatayn, Homs, Syria
Syria	2017	127	55	\$ 0.15	Bombing/ explosion	Bombing in Rashidin neighborhood, Aleppo, Syria
Pakistan	2010	106	115	\$ 0.14	Bombing/ explosion	Suicide bombing in Yakaghund village, Mohmand, Federally Administered Tribal areas, Pakistan
Cameroon	2015	144	0	\$ 0.14	Armed assault	Attack on buildings in Fotokol town, Cameroon
Kenya	2015	152	104	\$ 0.14	Hostage taking (Barricade incident)	Attack at Garissa University College in Garissa city, Garissa county, Kenya

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Afghanistan	2015	240	296	\$ 0.13	Armed assault	Attack on Kunduz city, Afghanistan
Yemen	2011	110	45	\$ 0.13	Bombing/ explosion	Attack on an ammunition factory in Ja'ar in Abyan, Yemen
South Sudan	2016	283	0	\$ 0.13	Armed assault	An attack in Pajut, Jonglei, South Sudan
Cameroon	2014	117	0	\$ 0.11	Bombing/ explosion	Attack in Am Chide town, Extreme-North region, Cameroon
Chad	2008	160	1001	\$ 0.11	Armed assault	Attack on the capital city of N'Djamena, in N'Djamena region, Chad
Uganda	2000	200	0	\$ 0.09	Unarmed assault	Poisoning attack in Kasese District of Uganda
Afghanistan	2016	154	120	\$ 0.08	Armed assault	Attack on Kunduz city, Kunduz, Afghanistan
Somalia	2017	588	316	\$ 0.08	Bombing/ explosion	A bomb detonated at Safari Hotel, Mogadishu, Somalia
Nepal	2002	140	0	\$ 0.08	Unknown	Attack on army and police posts in Nepal's Rolpa District
Niger	2015	230	9	\$ 0.07	Armed assault	Attacks on a military base and residential areas in Karamga, Lake Chad area, Diffa region, Niger
Congo – Kinshasa	2009	400	0	\$ 0.07	Facility/Infra-structure attack	Attack on residents in Tora and Libombi, near Tora, Orientale, Democratic Republic of the Congo
Afghanistan	2018	104	235	\$ 0.05	Bombing/ explosion	Bombing at a police checkpoint outside Jomhuryat hospital in Kabul, Afghanistan
Afghanistan	2001	150	0	\$ 0.05	Armed assault	An attack in Yakawlang town, Bamyān, Afghanistan
Afghanistan	2008	101	100	\$ 0.04	Bombing/ explosion	Bombing in the Bagh-e Pol area of Kandahar, Afghanistan

Extension of Table 3: (continued)

Country	Year	Killed	Wounded	Impact (billions)	Attack type	Summary
Central African Republic	2017	133	0	\$ 0.02	Hostage taking (Barricade incident)	Attack on civilians in Alindao, Basse-Kotto, Central African Republic
Somalia	2011	101	167	\$ 0.02	Bombing/explosion	Bombing in Mogadishu, Banaadir, Somalia
Central African Republic	2017	108	76	\$ 0.02	Hostage taking (Barricade incident)	Attack on a United Nations' base in Tokoyo neighbourhood, Bangassou, Mbomou, Central African Republic
Nigeria	2014	101	6	\$ 0.18	Armed assault	An attack on the Damaturu-Benishek-Maiduguri road in Borno state, Nigeria
Cameroon	2014	101	0	\$ 0.10	Bombing/explosion	Attack on the border town of Fotokol, Extreme-North region, Cameroon

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