

Modeling Civilian Casualties in Afghanistan from 2009 and 2017

Aissa Boudjella, Fazal Mazahari, Hamidullah Hamidy

Abstract: *In this investigation, the Afghan civilian casualties caused by both warring parties have been examined between 2009 and 2017. The casualties include both deaths and injuries. We focus on two different types of incidents, the types of attacks that took lives of non-combatants, and the civilian casualties caused by involved parties. We developed a linear and quadratic regression equation based on the least square method of estimation to analyze the number of casualties from 2009 to 2017. We fit linear and quadratic trends to time series starting from 2009 until 2017 to describe the casualty. The aim is to show how simple linear regression analysis can be used to forecast future death rate. The predicted results from (2017-2020) show that the civilian casualties by both warring parties will continue to increase. However, Afghan civilians will continue suffering more casualties caused by pro and anti-government and complex attacks including suicide attacks. The least estimated regression equation adequately describes relationship between civilian casualties and the time period with a high R-squared. The information, the number of death and injuries, maybe obtained from the extracted parameters such as a slope, y-intercept that are function of the type of casualties. This approach of modelling in a linear regression of civilian casualties simplifies significantly the analysis to help policy makers in comprehension of change in Afghanistan causality. The results can help develop appropriate strategies and assess the war and civilian casualties in managing operations and educating people for the future sustainability ethical piratical.*
Index Terms: *Civilian Casualties; Anti-Government Elements Groups (AGEs); attacks; warring parties.*

I. INTRODUCTION

The war in Afghanistan has been truly devastating. Considering the US and Afghan Governments as the major conflicting party; the Taliban, ISIS and other insurgent groups as another warring party, it has been continued miserable years that Afghans including civilians and Afghan armed forces are slaughtered tremendously making this war unending. What is apparent from this war is that Afghans are killed and injured in battle fields in the fights with the Taliban and ISIS, in the streets because of suicide and other complex attacks, and villages and their homes due to airstrikes of International Security Assistant Force and its strategic allied countries. Unlike the generalized calculations

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about the consequence of death of significant leaders of terroristic groups such as Osama bin Laden in 2011; the death of Mullah Omar in 2013; and the death of Haqqani in 2018, the war in Afghanistan did not decline; yet, it progressed by appointment of new leaders, reinforcement of their groups and perhaps revision of their strategies in the world. According to UNAMA annual reports (2010-2017), the number of civilians' deaths and injuries from 6,000 in 2009 has doubled and reached 12,000 in 2016 and above 10,000 in 2017.

It has been since October 2001 that Afghanistan hosted ISAF and its allied forces to defeat the Taliban and bring a welcoming peace, the winner and the loser of this game is still unknown to the world and as time passes, different elements appear and make this unending war more complicated than ever. For example, ISIS, the relatively new armed group, is a newly added element to the war of Afghanistan. Mainly operating in Nangarhar province, the eastern part of Afghanistan, ISIS targets civilians particularly Sheitti Muslim minorities, government and private institutions, civil workers, political authorities, and religious places, such as Shia shrines and Mosques. Since the inception of its recruitments in Afghanistan in 2014, ISIS launched its first attack in 2015 in Jalalabad city killing 33 people and since then has organized 60 different complex attacks in Afghanistan (Langari, 2018) and has taken the responsibility of 52% casualties caused by suicide bombings (as cited in The Guardian, 2018). Reports show that the United States armed forces although being hopeful to defeat ISIS at first, yet they have weakened hopes to fight them over in Afghanistan (NY Times).

Recently, media and the Afghan military forces reveal new dimensions of the war in Afghanistan, which makes it even more complicated than any America's war in the world. Since its military and strategic presence in Afghanistan, according to a New York Times report (Norland, Ngu & Abed, Sep, 2018), America has tried to mislead people and the world by the provisions of intentionally falsified information related to the progress and development of Afghanistan, the Taliban vs. Afghan forces advancements, and other information that intend to promote and generalize fake hopes. For example, when Ghazni city was attacked by the Taliban, according to the report, US Governments has not been realistic in reporting the war by over maximizing the presence of Afghan forces in the city; while, reports indicated that the Taliban took everywhere but few strategic military places in Ghazni (Norland, Ngu & Abed, 2018).

Similarly, the US Government digits contradict the findings of military analysts and media. USA claims that 44% of districts are controlled by the Taliban; however, the New York Times reports that they control over 61% of districts; Panda (2018), a Diplomat reporter states they control nearly half of the country; Sharifi and Adamou (2018), BBC reporters say they are active in more than 70% of the country. This is how the war in Afghanistan has become complicated leaving thousands of deaths and casualties every year.

II. METHODOLOGY/MATERIALS

The data on civilian casualties in Afghanistan was obtained from the annual report of UNAMA that was published on its website in December 2017. In this investigation, Microsoft Excel was used to carry out comparison between anti-government elements, pro-government forces and others as well as different types of attacks. For the analysis, the data are displayed in figures 1-as well as in percentage. Figures 1-6 below represent a total and percentages of the total civilian casualties, the parties involved, attribution to the warring parties, and types of attacks from one source. A graphical representation of the data from Tables1-3 is shown in Figures 1a, 2a, and 3a respectively. A linear regression analysis was used to develop equation showing how variables are related. This statistical technique involving one independent variable (time) and two dependent variables (deaths and injuries) for which the relationship between variables is approximated by a straight line based on the least-square method of estimation to forecast the value of these two dependent variables. For the analysis, slopes and y-intercepts are extracted from each graph and plotted in Figures 1b, 2b, and 3b.

The goal of this investigation was to establish the future of civilian casualties in Afghanistan’s security sector as well as underlying reasons for the trends. The types of each cause or party were fully assessed through graphical representations. Civilian casualties are also looked into depth.

Table 1: Civilian Deaths and Injuries: Source: UNAMA Annual Report 2017

Years	Deaths	Injured	Deaths + Injured
2009	2412	3557	5969
2010	2794	4368	7162
2011	3133	4709	7842
2012	2769	4821	7590
2013	2969	5669	8638
2014	3701	6834	10535
2015	3565	7469	11034
2016	3510	7924	11434
2017	3438	7015	10453

Table 2: Civilian Deaths & Injuries by Parties in Conflicts: Source: UNAMA Annual report 2017

Years	Anti-governmen t elements	Pro-governmen t forces	Others	Both
2009	1533	588	291	2412
2010	2041	430	323	2794
2011	2255	528	350	3133

2012	2338	324	107	2769
2013	2471	354	144	2969
2014	2677	610	414	3701
2015	2324	628	613	3565
2016	2138	905	467	3510
2017	2303	745	390	3438

Table 3: Civilian Deaths & Injuries, Suicide, and Complex Attacks: Source: UNAMA Report 2017

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Deaths	283	238	488	328	255	371	308	398	605
Injuries	896	749	116	118	981	121	153	156	169
Both	117	987	165	151	123	158	184	196	229

Table 4: Civilian Deaths & Injuries from Aerial Operation

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Deaths	388	171	262	125	122	104	149	250	295
Injuries	234	135	153	77	64	58	147	340	336
Total	622	306	415	202	186	162	296	590	631

III. RESULTS AND FINDINGS

The variations in percentage of civilian casualties of each warring party as well as types of attacks are illustrated in Figure 1a, 2a and 3a as bar chart, respectively. Figures 1a-3a show graphically the data presented in Table 1-3. The slopes of the linear regression of these casualties are shown in Fig. 1b, 2b and 3b respectively with high R squared.

The civilian death and injuries figures from 2009 to 2017 are illustrated in the Figure 1a. The numbers show that injuries have occurred more than the deaths. From 2009 to 2013, the difference between fatalities is 300 (sometimes 200), while between 2014 and 2017, fatalities have increased by 1000, and each year from 2014 to 2017, the difference has been around 100 to 200. On the other hand, numbers in injuries are more than deaths. Injuries from 2009 till 2017 are in an ascending form starting from approximately 3500 and ending with approximately 7000.

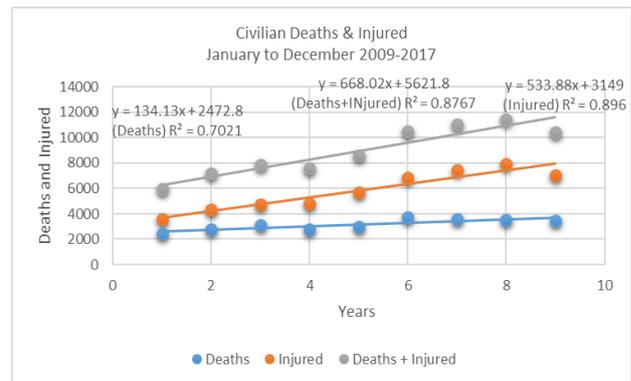


Fig 1a: Civilians deaths and injuries between 2009 and 2017



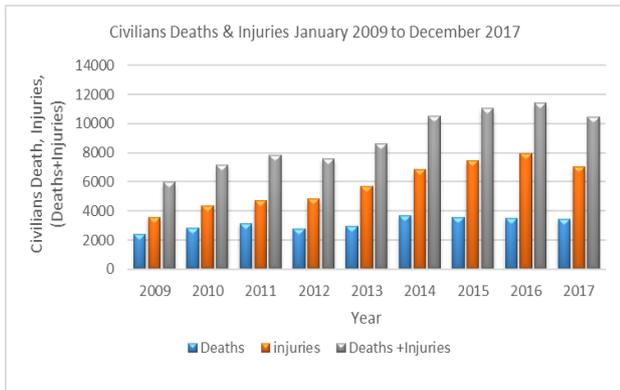


Fig 1b: The number of casualties of each year between 2009 and 2017, UNAMA Annual Report 2017

Fig 1b: the slope exhibits that deaths and injuries have a higher increase rate. Meanwhile, injuries are increasing rapidly, but not as rapid as both deaths and injuries. However, death numbers are not increasing at a higher rate

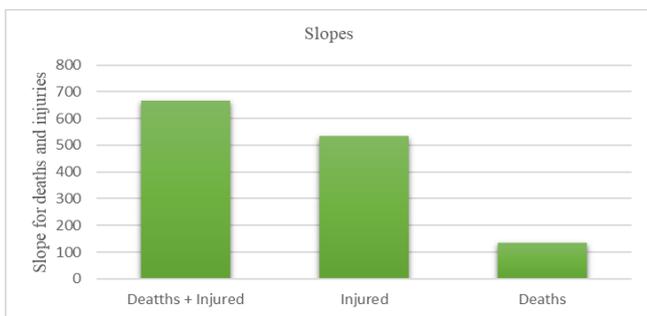


Fig 1c: Slopes for the deaths and injured caused between 2009 and 2017. The slopes are obtained from Figure 1a.

Fig 2a: the figure shows that Anti-Government Elements have caused more deaths and injuries than pro-government forces. The Anti-Government Elements' smallest number of casualties is in year 2009. Relatively, it increases by 500 approximately in 2010 and varies by around 100-300 more or less casualties and injuries till 2017. Meanwhile, the pro-government forces have caused considerably less casualties and injuries from 2009 till 2017. Their numbers have never exceeded 1000, and each year the variation between deaths and injuries caused by pro-government forces differs by a 100 to 200 except for the difference between 2015 and 2016 which is 300.

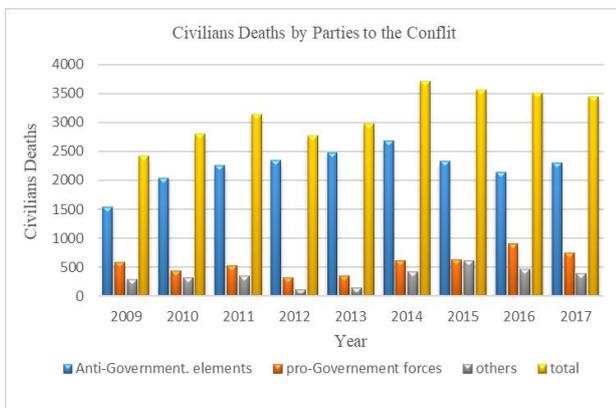


Fig 2a: Civilians Deaths by Parties to the Conflict

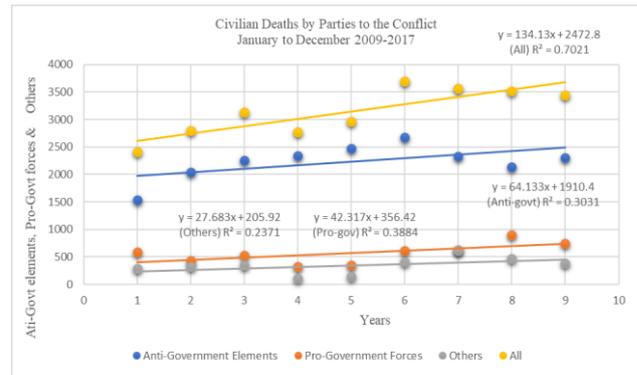


Fig 2b: The number of casualties caused by parties of the conflict between 2009 and 2017, UNAMA Annual Report 2017.

Fig 2b: the slope indicates that all anti-government elements, pro-government forces and others combined have been rapidly increasing throughout the years however, anti-government elements, pro-government forces and others have a slight difference between them with anti-government elements first, pro-government forces second, and others third.

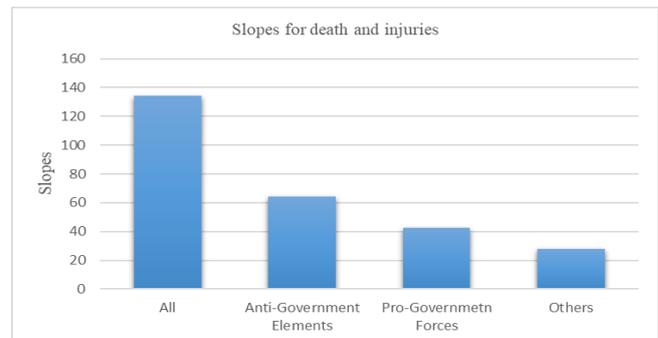


Fig 2b: Slopes for the deaths and injured by parties between 2009 and 2017. The slopes are obtained from Figure 2a.

Fig 3a: the complex attacks have left 250 to around 600 people dead from 2009 till 2017. It has had almost same numbers in 2009 and 2010. 2011 and 2012 have witnessed an increase by almost a 100. By 2013, death numbers decreased to around 250, but in 2014, 15, and 16, the numbers were 371, 308, and 398 respectively. In 2017, the numbers nearly doubled. Moreover, injuries caused by complex attacks range from 750 to around 1700. The differences between numbers are ranging from 100 to 300 at most. 2010 has the lowest numbers of injuries with 750 people injured and 2017, having 1690 people injured, is the highest.

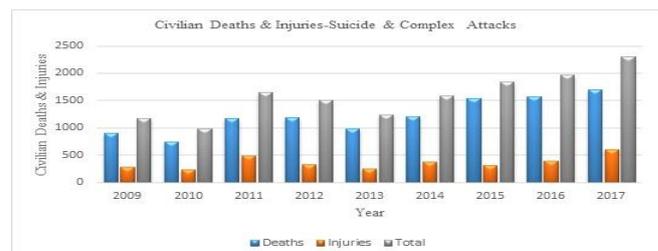


Fig 3a Civilian Deaths & Injuries-Suicide & Complex Attacks



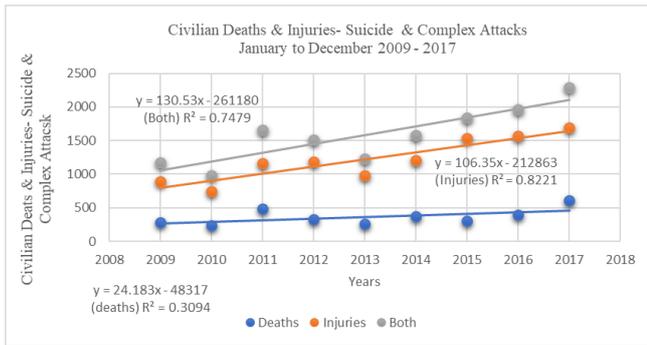


Fig 3b: The number of casualties caused by types of attacks between 2009 and 2017, UNAMA Annual Report 2017

Fig 3b: The slope shows that deaths do not have a higher increase rate, but injuries are very rapidly increasing in the years. However, both of them combined indicate a more rapid and higher increase rate. According to projected scenario, the number of casualties both deaths and injuries show a positive slope (Figure 1). This means that the number of casualties will increase continuously, which is perhaps due to the presence of different insurgent groups and the fighting between government security forces and these militants. Therefore, in order to avoid further casualties (.....) is the necessary step that the government should take.

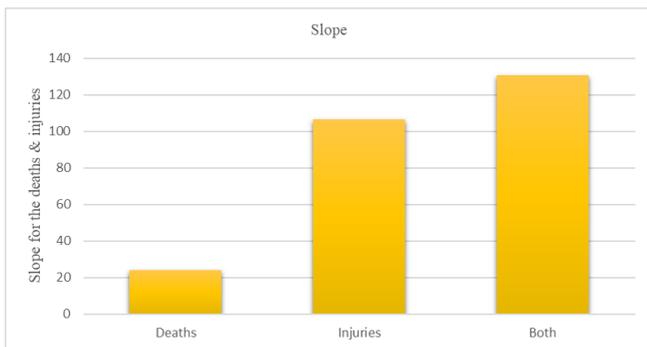


Fig 3c: Slope for the deaths and injured types of attacks between 2009 and 2017. Slopes obtained from Figure 3a

The civilian casualties in Figure 1a, 2a, and 3a shows that the civilian casualties continue to increase at different rates from 2009 to 2017. Civilian casualties as a result of pro and anti-government killings and complex attacks e.g. suicide attacks with high rate will play a big role in increase in civilian casualties and will continue to increase. Comparing Figure (2a) and (3a) the results show there is much concentration of insurgents on attacks against government forces. The result is that anti-government elements and pro-government forces caused more civilian deaths than complex attacks that are carried out mostly and only by insurgents. This may be because of insurgents' tendency towards face-to-face battle instead of sending suicide attackers.

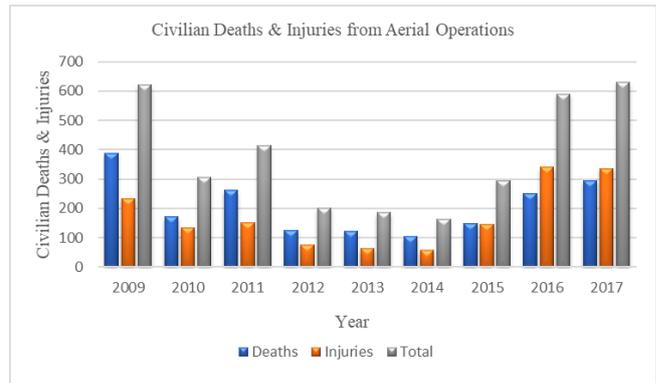


Fig 4a Civilian Deaths & Injuries from Aerial Operations

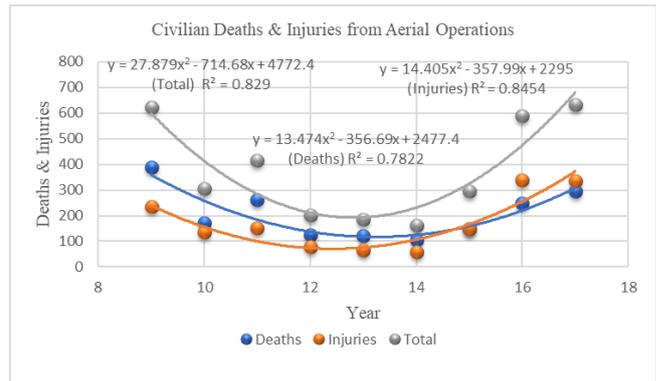


Fig 4b Civilian Deaths & Injuries from Aerial Operations

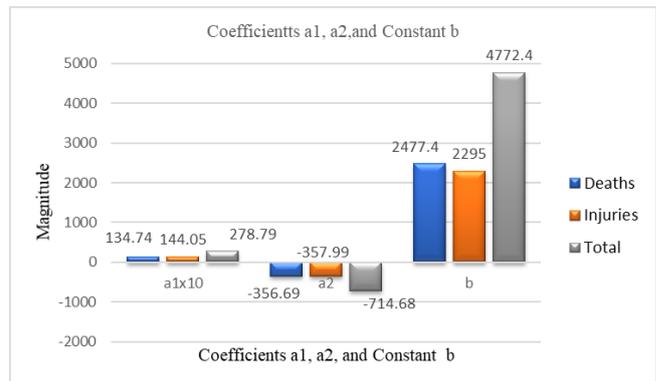


Fig 4c: Slope for Civilian Deaths & Injuries from Aerial Operations 2009 and 2017

Figure 4a show the bar chart of civilian & injuries deaths from aerial operations. The highest death was observed in 209, the lowest in 2014 and the increased in 2017. The 2016 and 2017 sho the highest number of injuries while 2014 indicates the lowest one. The total number of injuries and deaths was observed 2009 and 2017 where 2014 shows the lowest one. The date that fit the time series to describe the casualties cause by aerial operations maybe described by a quadratic function of degree two. The minimum number of deaths, and injuries was observed in 2014 with the highest numbers in 2009 and 2014.

IV. CONCLUSION

The paper concludes that the civilian deaths and injuries have an increasing positive trend between 2009 and 2017, except for the last year, which shows a decrease in the rate of



deaths and casualties. With a proportion of a relative increase in injuries, the rate in death and injuries slightly varies making death rates lower than injuries. The study also reveals that both death and injuries have dramatically increased while considering each separately, Afghans witnessed a lower rate of deaths and an increasing rate of injuries. It is important to note that a large proportion of deaths and injuries are caused by Anti-Government Elements; while the role of pro-government forces in civilian casualties and injuries—although not zero—comparatively remains low. Complex attacks in the recent years is responsible for larger amount of injuries than the number of deaths, yet casualties and injuries by complex attacks do not exceed the number of mortalities caused by both Anti-Government Elements and pro-government forces.

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