

## Endurance or Submission: How Terrorism Frame Households' Time Allocation?

MIRAJ UL HAQ, IFTIKHAR AHMAD, and ANNUM HUSSAIN

Terrorism cause psychological injury, placing an unsettling impact on human life. In Pakistan, the continuous stream of terrorism since 2009 induced fear, expectedly influencing households' behaviour about their economic decisions. In this context, the study empirically investigates the effects of terrorism on households' time allocation decisions in the pre-2009 and post-2009 periods to track their time allocation for business activities and leisure. For this study, 200 households are interviewed from district Peshawar of the KPK province in Pakistan, one of the worst-hit districts from terrorism.

Findings of the study reveal that in general, terrorism has posed a significant impact on households' time allocation patterns. Analysis explains that in the post-2009 period, increasing incidents of terrorism triggered fear in the people's minds. Consequently, time for business activities shrunk while the time for leisure increased. To be more exact, households preferred to stay at home and spend time on leisure activities (with no financial yield) rather than engaging in business activities.

*JEL Classification:* D91, R23, R28

*Keywords:* Terrorism, Fear, Violence, Time Allocation Pattern, Pakistan

### 1. INTRODUCTION

Terrorism is a global concern; however, Pakistan has been through a lot of it, mainly because of her role as a front-line ally of the United States in the “war against terrorism” in Afghanistan. After the US-led intervention in the wake of September 9/11, terrorism seriously affected the existing social and economic fabrics in Pakistan. Suicide bombings and terrorist attacks killed innumerable civilians and security personnel across Pakistan<sup>1</sup> and left the physical infrastructure shattered. This has resulted in huge socio-economic challenges that had never happened before, including social injustice, economic disparity, political instability, religious intolerance, and international conspiracies (Rasul and Iqbal, 2019). Terrorism has turned Pakistan into a harassed community by raiding the population and compelling the people to change their economic activities. Counter-terrorism operations against the activists in several districts<sup>2</sup>

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<sup>1</sup>Army Public School attack on December 16, 2014, is one of the noticeable terrorist events in human history that causes demises of 149 innocent people including 132 school children.

<sup>2</sup>Districts include Bunir, Lower Dir, Upper Dir, Malakand, Shangla, Swat; FATA are Bajawar, Mohmand, Khyber, Orakzai, Kurram, North Waziristan, and South Waziristan.

of the Khyber Pakhtunkhwa (KPK) province and all seven Federally Administered Tribal Areas (FATA) caused social and psychological sufferings to the individual life. More than three million people were displaced, which is considered one of the most extensive relocations ever in the history of humankind.<sup>3</sup>

The never-ending terrorism since 2009 (see Appendix-A1) in Pakistan caused a psychological injury, prompting unsettling influence in the psychological balance of the people. The continuous wave of terrorism paved the track for the joint progression of the menace of sapping despair and insecurity that have reshaped the behaviour of different economic units about their economic decisions. In Pakistan, terrorism and its consequences are not a sudden occurrence; however, the existing frame of studies on the subject is highly deficient and does not cover the matter in its entirety. Some efforts have been made to present the bigger picture of the issue, yet no attempt has been made to offer comprehensive exploration at the micro-level. The existing array of studies on the topic mainly covers causes and determinants of terrorism, Pakistan's performance in counter-terrorism operations, and the impact of terrorism on the macroeconomic performance of Pakistan. For instance, Looney (2004); Grare (2007); Asal et al. (2008); Schaffer (2008); Nasir and Rehman (2019); Khan (2014); Shabib et al. (2015) explored the determinants and causes of terrorism. Tellis (2008) examined the performance of Pakistan in the war against terrorism. Riedel (2008) explores the efforts of Pakistan in the war against terrorism. Some others, especially Khan (2011), examined the impact of the military operation in FATA and PATA<sup>4</sup> on Pakistan's economic performance. Similarly, Saeed and Syed (2017) examined the causal linkages between terrorism and the economic growth of Pakistan.

Beyond the causes, direct losses, and macroeconomic perception of terrorism, the consequential terror-posed prolonged fear of imagined dangers has repercussions for preferences, choices, and eventually for decisions of economic units. However, the available literature on the subject is highly insufficient and does not cover the repercussions of the consequential terrorist acts on the households' economic decision-making at full length. There has been little understanding of the economic impacts of the psychological trauma of casualties on economic agents and their families. Terrorism may cause higher spending on health, absenteeism at work, and reduction in labour productivity, which collectively diminish the welfare and life satisfaction that households may endure.

To fill this gap, this study intends to examine the effects of terrorism on households' time allocation patterns, capturing their change in preferences about time allocation. In this context, the study empirically investigates the effects of terrorism on time allocation decisions in the pre-2009 and post-2009 periods to seek their time

<sup>3</sup>Due to the unfolding crisis in different districts of the Malakand division of the KPK province, in April 2009, about 550,000 people were registered as Internally Displaced Persons (IDPs). In May 2009, the government launched a military operation against militants in district Swat causing the displacement of nearly 2.5 million people. In October 2009, military operation in FATA (Bajaur Agency, Mohmand Agency) started another wave of displacement as a result at the end of December 2009 around 250,000 people from Bajaur Agency and 180,000 from Mohmand Agency fled the area and migrated to different parts of the country. The third wave of displacement started in October 2009, as a result of the military operation against militants in South Waziristan that pushed around 293,000 people to displacement (Center for Research Security Studies, 2010; Amir-ud-Din, and Malik, 2016).

<sup>4</sup>Provincially Administered Tribal Areas.

allocation towards business activities and leisure time. The primary motivation behind the study is that the continuous stream of terrorism since 2009 induced fear, which triggers the behavioural change of economic units. Fear-based oppression raises costs of increased security measures, weakening the physical and mental human capacity that in turn affects the time allocation of individuals to business activities and leisure.

As fear is highly subjective, it cannot be measured easily; however, some innovative approaches attempt to value the loss in life stratification and welfare that households experience due to the fear that the acts of terrorism induce. The two approaches are Contingent Valuation and Hedonic Market approach that can be used to estimate the price of fear as indicated by Frey, Luechinger, and Stutzer (2007), and Frey, Benz and Stutzer (2004). Our study is subjective in nature, devoted to examining how the acts of terrorism result in stress and trauma (Psychology) of the economic unit and therefore affect its behaviour about time allocation. Hence, keeping in view the nature of the study, a perception-based survey is conducted to investigate how the acts of terrorism affected the economic units and consequently influenced their decision about time allocation. The study used primary data set obtained from the survey through a questionnaire collected from district Peshawar, KPK province of Pakistan.

Peshawar district is not only the most populous district of KPK province of Pakistan but it also happens to be the largest and capital city (Peshawar) of the province. A road and rail center near the famed Khyber Pass; Peshawar city is an important military and communications center, the historic terminus of the Grand Trunk Road of India, and the major depot for trade with Afghanistan. District Peshawar of KPK province is selected as a sample area. The following reasons may explain why. Firstly, frequent and continuous terrorist attacks have been witnessed since 2009 in district Peshawar; the one notable is the Army Public School terrorist attack on December 16, 2014. Secondly, being the capital city of Khyber Pakhtunkhwa province and located at the doorstep of Afghanistan, the ongoing war against terrorism affected the social and economic fabrics of the district Peshawar on many fronts. Thirdly, due to counter-terrorism operations against activists in several districts of the KPK province and FATA, most Internally Displaced Persons (IDPs) settled in district Peshawar, hence stand highly targeted area for terrorist activities. Under the rationale of these motives, we select district Peshawar as the study area to analyse the impact of terrorism on households' time allocation patterns.

In brief, one basic motivation to take on this study is the potential gap in the existing literature on the subject. The received literature does not cover the psychological trauma caused by terrorism on economic agent and their family. Since a result-oriented public policy requires knowledge at the micro-level, hence having analysis at the household level, we believe that our study feeds well into understanding the effects of terrorism on the state of life.

The rest of the paper is structured as follows. Section 2 presents a review of the existing studies on the subject in Pakistan and other countries. Section 3 presents the methodology for the study, which includes theoretical underpinning, empirical model, definition and construction of variables under consideration, and estimation technique. Section 4 presents data, sampling, and situational analysis of the study area (District Peshawar). Section 5 illustrates the estimated results and their interpretations. Finally, section 6 presents the concluding remarks extracted from the study findings.

## 2. INSIGHTS FROM THE LITERATURE

As the feeling of uncertainty, fear and risk aversion intensifies over time, the individuals get the real effect of terrorism (Becker and Rubinstein, 2011). Terrorist acts may initiate fear in one's mind while intensifying negative feelings and thus influencing economic conduct (Marshall et al., 2007; Holman et al., 2014; Rasul and Iqbal, 2019). Becker and Rubinstein (2011) analysed that media coverage of terrorist acts has been the major contributor to changing an individual's behaviour. Additionally, terrorism may increase stress, having spillover effect on both adult and children's health (Camacho, 2008; Pesko, 2014; Pesko and Baum, 2016).

Terrorism has an adverse impact on subjective well-being; an area where terrorism has been on the peak, its inhabitants are less happy than those living in a country with orderly political conditions. Frey & Stutzer (2003) introduce the concept of happiness and illustrate it with subjective well-being. This can contribute to a new understanding of utility in economics, in addition to the 'Economics of Happiness' concept, which has opened up new possibilities of understanding different models of behaviour. Kimball & Willis (2006) differentiate between happiness and utility, stating that utility is what people achieve and what they care about (learned about by their choices), whereas happiness is how they feel. Although both utility and happiness are different in meaning, collectively these show one's subjective well-being. Frey and Stutzer (2005) have argued that citizens strongly value the right to participate, even down to inferring a monetary value.

Thus, what theorist calls "procedural utility" does seem to exist that is, people obtain utility not only from the outcome but also from participating in the procedures that lead to it, e.g., socialising, leisure activities, or voting. Correspondingly, Frey, Luechinger, and Stutzer (2007) and Frey & Stutzer (2005) propose another approach in light of satisfaction in life and the data on subjective well-being. They provide a shred of empirical evidence by studying the individual living in Germany and states that terrorism leads to a considerable reduction in life satisfaction, suggesting that individuals incur large utility losses. In particular, numerous scholars agree that utility and wellbeing can be measured with some degree of accuracy (e.g., Kahneman *et al.*, 1999; Kahneman and Krueger, 2006).

Furthermore, several studies have reported that subjective well-being is sensitive to life's changing circumstances. Consistency tests uncover that happy individuals' smile often all amid social interactions, are evaluated as happy by loved ones and by their friends, express positive feelings more frequently, and are optimistic, social, extravert, and sleep well. However, a single terrorist attack could change it all. Thus, terrorism can trigger the effective feeling of fears in the individuals' minds, where fear is defined as how much subjective conviction about peril goes astray from objective assessments of risks. Along these lines, the dangerous impacts of fear on individuals' acts can help in clarifying individuals' "irrational" reactions to terrorism. This offers a more extensive way to deal with the economics and psychology of fear to represent the individuals' responses to terrorist acts. They additionally recognise that individuals modify or adjust in the said environment.

Pakistan is busy countering terrorism. Gupta (2011) explains how Southern and Western states of Pakistan were countering terrorism by using diverse truces and pacts

specifically made to counter it at the national level and at the regional or global level. Khan (2011) concludes that the participation of Pakistan in the war against terrorism and military operations in the nation has expanded militancy and intolerance to the degree that it had never been. Pakistan needs a balanced and conclusive policy towards the disposal of the danger of the terrorism hazard. Khan (2011) analyses the implication of military operations on individual life and states that such operations cause damage to the social and physiological conditions of the public, not only do they get relief from terrorists, but also socially and physiologically, they are living under the enduring fear of war. However, Frey (2006) suggested that to deal with terrorism, the government should eliminate the social and economic disparities that cause terrorist activities and, secondly, opt for a peace talk.

The review of the existing literature and knowledge uncovers the accessible empirical literature and helps understand the procedures that prompt different effects. Yet, little is thought about the structure and conduct of dread associated with the consequence. Exclusively constrained conclusions can be drawn about the effects and viability of safety efforts to decrease terrorism while evidence explaining the time allocation pattern is missing. In brief, it can be stated that before evaluating the impact of terrorism on the macro-economic level, micro-economic processes that determine the overall macro-economic impacts, should be considered. This study exploits the underlying procedure that affects the macroeconomic outcome i.e., households' time allocation pattern, that resulted in a change of preferences and subjective well-being.

### 3. METHODOLOGY

The methodology section comprises five subsections. Subsection 3.1 presents theoretical underpinning relating the effect of terrorism on the economic unit's behaviour. Section 3.2 presents the specification of the empirical model, 3.3 describes the definition and construction of variables. Subsection 3.4 presents an estimation technique to examine how acts of terrorism affect the decision of economic units about time allocation.

#### 3.1. Theoretical Underpinning

Humans are created with a nature that depends on various ecological layers around them for their survival, for instance, growth, satisfaction, comfort, and accomplishment. The ecological system theory developed by Bronfenbrenner (2005) looks at the process of human development, examining how human beings create a specific environment in which they survive. According to Bronfenbrenner (2005), the ecological system has four subsystems (ecological layers): micro-system, eco-system, exo-system, and macro-system. To some extent, in all these ecological layers, human is interdependent. However, the size of interdependency varies across these subsystems. For instance, the first ecological layer (microsystem) is very close to the child, the contained family (especially parents), school, and neighbourhood, whereas, macro-system is very broader that covers the overall pattern and capture the cultural and social context that human takes in. The interdependency of humans in all these ecological layers compelled it to allocate their time to different deeds to meet their immediate needs and social dealings needed. Humans allocate their time among different activities like passive leisure (sleeping), active leisure (personal activities, religious/spiritual activities, time for

family/society), and economic activities to keep up with these ecological layers. However, other things being equal, the allocating of time in a balanced way among these activities depends on the local environment in which humans endure.

The acts of terrorism induce fear, which negatively impacts the local environment. As a result, humans (in abstract form economic unit) change their behaviour mainly concerning time allocation. Fear in the reaction to terrorism is a psychological phenomenon that worries humans about a blend of possible intense horrendous mishaps, sooner or later. However, the fear intensity of terrorism varies from person to person depending on the degree of its vicinity detriment to which the demonstration has been submitted. In addition, fear intensity also depends on the fierceness of the occasion, coping capacity, and adapting styles of individuals. The vicinity detriment from terrorism minimises exposure of economic units to risk, referred to as ‘Constrained Behaviour’ by Greenberg, *et al.* (1992).

Consistent with Constrained Behaviour phenomena, the vicinity detriment due to terrorism generates fear-based oppression hence distresses the physical and mental capacity of humans, which has obvious consequences for the individual’s time allocation in a balanced way.

In this framework, the impact of terrorism on the state of life (time allocation) should be hypothesised as “under a specific economic, social, and demographic profile, the preferences of an economic unit about time allocation change with terrorism”.

### 3.2. Empirical Model

This section presents the empirical models in order to assess the impact of terrorism on household time allocation to leisure and economic activities empirically. To meet the research objectives, the empirical analysis is carried out by estimating four different empirical models examining the time allocation for leisure and business in the pre and post-2009 scenarios. The empirical analysis in this study builds upon Frey, Benz, and Stutzer (2004), aiming to understand the impact of different terrorism activities on a household’s time allocation pattern. To assess change in time allocation pattern, we use the proxy of time allocation to ‘leisure’ and ‘business activities’. Taking 2009 (the most intense terror hit year) as the base, Equation (1) analyses leisure time in pre and post-2009 periods. Similarly, Equation (2) is used to analyse the change in Business Activity in the pre and post-2009 period.

$$\begin{aligned} \text{TAL}_{ki} = & \beta_0 + \beta_1 \text{TI}_{\text{Seen}_i} + \beta_2 \text{B}_{\text{Hrd}_i} + \beta_3 \text{HH}_{\text{Afft}_i} + \beta_4 \text{EP}_{\text{Afft}_i} \\ & + \beta_5 \text{LOC}_{\text{Afft}_i} + \hat{\beta} X_i + \varepsilon_i \quad \dots \quad \dots \quad \dots \quad \dots \quad (1) \end{aligned}$$

$$\begin{aligned} \text{TAB}_{ki} = & \beta_0 + \beta_1 \text{TI}_{\text{Seen}_i} + \beta_2 \text{B}_{\text{Hrd}_i} + \beta_3 \text{HH}_{\text{Afft}_i} + \beta_4 \text{EP}_{\text{Afft}_i} \\ & + \beta_5 \text{LOC}_{\text{Afft}_i} + \hat{\beta} X_i + \varepsilon_i \quad \dots \quad \dots \quad \dots \quad \dots \quad (2) \end{aligned}$$

Where, the subscript  $i$  denotes cross-sectional unit, whereas the subscript  $k$  refers to pre and post 2009 scenarios, hence each equation captures two different scenarios.

### 3.3. Variables’ Definition and Construction

Since data is survey-based, hence most of the variables are self-constructed. In this subsection, detailed definitions and construction of variables and the methodology used for their construction are given.

### ***Dependent Variables***

As the study aims to investigate the impact of terrorism on the pattern of time allocation, the dependent variable is captured with time allocation to 'leisure' and 'business activities'. In this context, the study treats two variables as categorical for two different time periods. These categorical dependent variables are further explained below.

#### ***Time Allocation to Leisure (TAL<sub>i</sub>)***

Leisure broadly falls into two types, passive leisure (sleeping) and active leisure. As far as passive leisure is concerned it is a pre-requisite for life survival that a minimum of six hours of sleeping is essential (Yetish, et al. 2015). Active leisure falls into three different activities namely personal activities, religious/spiritual activities, and time for family/society (social activities). In this context, we constructed an index covering the above three activities to measure the total time that a household allocates to active leisure.<sup>5</sup> As we consider time allocations to active leisure only, the total available time for leisure is 18 hours. To measure how much a household allocates time to these three different activities out of the available 18 hours, we construct an index measuring the scale from 1 to 6.<sup>6</sup> Thus, by summing up the active leisure activities, the following index values of the household's active leisure time for two different periods pre and post 2009 are constructed.

$$TAL_i = \frac{\sum_{j=1}^3 A_j}{Total} * 100$$

Where TAL<sub>i</sub> denotes index of household's time allocate to active leisure,  $\sum_{j=1}^3 A_j$  is the sum of three active leisure activities that household allocate their time to.

#### ***Time Allocation to Business Activities (TAB<sub>i</sub>)***

Deducting six hours of passive leisure (sleeping) time form total available (24 hours), the maximum time that an individual allocates to business activities is 18 hours<sup>7</sup>. The overall business activity has three sub-business activities, namely time allocation to main business activity, time allocation to part-time activity, and time allocation to business travel. In order to measure how much a household allocates time to these three different business activities out of the available 18 hours, we constructed an index measuring the scale from 1 to 6<sup>8</sup>. Thus, by summing up these different business activities, the following index values of household's time allocation to business activities for two different periods, i.e., pre and post-2009, are constructed.

$$TAB_i = \frac{\sum_{j=1}^3 B_j}{Total} * 100$$

Where BAL<sub>i</sub> denotes index of household's time allocated to business activities,  $\sum_{j=1}^3 B_j$  is the sum of three business activities that household allocate their time.

<sup>5</sup>The available time for total leisure and active leisure is 24 and 18 hours respectively.

<sup>6</sup>Scale 1 stands for 1 hour allocated to active leisure, 2 stands for 2 hours and similarly scale 6 stands for 6 hours allocated to a given active leisure.

<sup>7</sup>Time meant for attending or promoting business activities.

<sup>8</sup>Scale 1 stands for 1 hour allocated to active leisure, 2 stands for 2 hours and similarly scale 6 stands for 6 hours allocated to active leisure.

### ***Independent Variables***

Among explanatory variables, terrorism is our variable of attention. In this context, to measure the intensity of terrorism, five attributes are used as proxy, namely Number of Terrorist Incidents Seen by Respondent ( $TI\_Seen_i$ ), Number of Blasts Respondent Heard ( $B\_Hrd_i$ ), Respondent's HH Affected by Terrorism ( $HH\_Afft_i$ ), HH Economically or Physically Affected ( $EP\_Afft_i$ ), and Locality affected by Terrorism ( $LOC\_Afft_i$ ). The first proxy Terrorist Incidents Seen by Respondent ( $TI\_Seen_i$ ) is measured with the scale from 0-5 (Scale 0 reflects not witnessed; 1 reflects 1-2 times; 2 reflects 3-5 times; 3 reflects 6-8 times; 4 reflects 9-12 times; while 5 reflects 13 and above times). Witnessing terror attack incidence has obvious psychological consequences that have a high probability of affecting respondents' time allocation. The higher the intensity (the greater the number of terrorist incidents seen) the greater would be the negative impact on time allocation. The second proxy of terrorism is the Number of Blasts Respondent Heard ( $B\_Hrd_i$ ). Like the first case, this proxy is measured with the scale from 0-5 (Scale 0 reflects not affected; 1 reflects 1-2 times; 2 reflects 3-5 times; 3 reflects 6-8 times; 4 reflects 9-12 times; while 5 reflects 13 and above times). The third proxy is the respondent's HH Affected by Terrorism ( $HH\_Afft_i$ ). This variable captures whether the respondents have borne any direct trauma and fear from terrorist attacks, which involved their family members. The variable takes values from 0-4 according to the severity of the situation (Scale 0 reflects not affected; 1 reflects slightly; 2 reflects to some extent; 3 reflects to a considerable extent; 4 reflects totally destroyed). The fourth measure is the economic and physical effects of terrorism on respondent's HH ( $EP\_Afft_i$ ). The variable takes values from 0-4 according to the severity of the situation (scale 0 reflects not affected; 1 reflects slightly; 2 reflects to some extent; 3 reflects to a considerable extent; 4 reflects 'totally destroyed'). The last measure is Locality affected by Terrorism ( $LOC\_Afft_i$ ). This variable helps us to understand whether the respondents have been indirectly affected by the terrorist attacks or not. Individuals living in the surroundings of threat-alert areas have undergone high physiological pressure, choking their time allocation. If the locality is affected by terrorism, its intensity is expected to decide the severity of the incidence on their time allocation. As incidence increases, it is expected to negatively affect the time allocation to both the activities i.e., Leisure and Business. The variable takes values from 0-4 according to the severity of the situation (scale 0 reflects not affected; 1 reflects slightly; 2 reflects to some extent; 3 reflects to a considerable extent; 4 reflects 'totally destroyed').

Along with the variable of interest (terrorism), we used a set of control variables considering their relevance and potential for affecting time allocation patterns in response to terrorism. For example, Household Size ( $HHS_i$ ) which measure is the total members of HH. This variable shapes the household decision about time allocation, i.e., whether to invest time in business activities or leisure time. If the HH size is large, it is easy to spare time both for leisure and business because of the less per capita engagements (Iqbal & Nawaz, 2017).

Among the explanatory variables, the second control variable is Education Status ( $EDU_i$ ) which plays an important role in shaping the time allocation. If the household is equipped with education, then they tend to have higher income, thereof, increase the allocation towards leisure activities and reduces business activities as they value family time more (Iqbal & Awan, 2015). The variable takes values from 0-8, 0 stands illiterate, and 8

stands the highest level (postgraduate). Household Income ( $INC_i$ ) is another control variable, which is measured with the total income of all members of HH. Numerous studies considered income as the key determinant of individual time allocation.

Community Decision ( $COM_i$ ), is captured with 'involvement in community-level decisions and responsibilities. This variable ranges from 0-3 (0 stands no involvement and 3 means high involvement). The underline hypothesis is that a HH having its members involved more in community decisions, is expected to allocate more time to leisure. On the contrary, if HH is less involved in community decisions, it will spare more time for business activities.

In addition, it is generally purported that there is relatively more social contact in the village than town/ city, therefore HHs are expected to spare more time to leisure than business in rural areas. Whereas, as in town/city there is relatively less social interaction, hence HHs are expected to spare more time to business activities. In this context, the Locality of Respondents ( $LOC_i$ ), is also used as a control variable (treating it as a dummy variable).

### 3.3. Estimation Technique

Keeping in view the nature of the data and model, the empirical analysis is carried out through the Simple Ordinary Least Squares (OLS) estimation technique to analyse the impact of terrorism on the household's Time allocation. The OLS regression technique is useful due to its simplicity and data efficiency. If the data carries the desired characteristics, OLS produces the best results.<sup>9</sup>

## 4. DATA AND SAMPLING

Under the rationale discussed above, we selected district Peshawar as a study area to analyse the impact of terrorism on the state of life (time allocation). The target population of this study was households in district Peshawar; hence, 200 households (both from rural and urban areas) were interviewed. Although the terrorism intensity varied by area, still the majority of the people came across specific incidences. The majority of the blasts and mishaps occurred in the market place and along the roadsides that people witnessed while traveling to offices or visiting markets. Hence one way or the other, the incidence was not restricted to specific areas. Therefore, we randomly selected different areas and adopted the simple random sampling technique for data collection from households (HHs). Still, the sample was equally distributed between rural and urban localities (see Table 1). A well-structured, pretested questionnaire was used to collect data.

Table 1

#### *Sample Areas*

S. No.	Urban Areas	Sampled HHs	Rural Areas	Sampled HHs
1	Hashtnagri	20	Chamkani	20
2	Tehkal Bala	20	Badbher	20
3	Warsak Road	20	Mashu Gaggar	20
4	Hayatabad (Phase-IV)	20	Regi	20
5	Abdara	20	Pawaka	20
		100		100

<sup>9</sup>See appendixes A2 and A3 for diagnostic tests.

#### 4.1. Situational Analysis of the Study Area

To analyse the impact of terrorism on households' time allocation patterns, a household survey was conducted in district Peshawar, Khyber Pakhtunkhwa, Pakistan. The survey was designed to evaluate the impacts of terrorism on time allocation patterns of households in pre-2009 and post-2009; the year when terrorism was at the peak. This section of the study presents a situational analysis of the study area to examine some basic characteristics of the unit of analysis (respondent) and the prevailing situation and intensity of terrorism in the sample area.

To avoid any biases in the results, it is important to evaluate the characteristics of the sample unit for its appropriateness, representativeness, and relevance to the subject matter. Keeping in view the sensitive nature of the study, respondents having age 20 or above were targeted for interviews, hence the age of the sample ranges between 22-60 years. The sample is also balanced as for as gender of the respondent is concern that out of 200 sample 122 (61 percent) were male and 78 (39 percent) were female. Moreover, out of 200 respondents, 54 percent of respondents were married, whereas 26 percent were unmarried and 19.5 percent widowed. Similarly, Table 2 presents the income profile of the respondent's household.

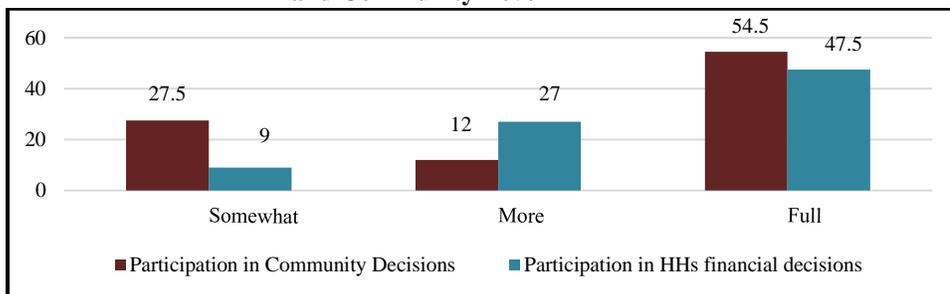
Table 2

*Household Income (in Rupees)*

	Mean	St. Div.	Min	Max
Household Income	39927	22936	11000	100000

Another attribute of the respondent is its involvement in decision-making at HH and community level. Two reasons may justify why? First, involvement in decision making shapes the respondent's time allocation pattern, and the basic hypothesis is that if an individual involves more in decision making, then they can allocate less time to business and more to leisure. Second, the decision decision-making involvement status of the respondent points towards the conformation and authenticity of the responses. Hence, we anticipate responsible behaviour from interviewees, and the responses reported can be trusted. In this context, the following Figure 1 demonstrates the involvement status of respondents in decision-making at HH and community levels. Data presented in the figure point towards the conformation and authenticity of the responses as the majority of the respondents reported being involved in decision-making at HH and community levels. Figure 2 reflects that our sample is more concentrated in the city area where the severity of the situation exists. Overall, this information provides evidence that the sample is balanced and representative.

**Fig. 1. Respondent's Involvement in Decision Making at HH and Community Level**



**Fig. 2. Locality of the Sampled Household in District Peshawar**

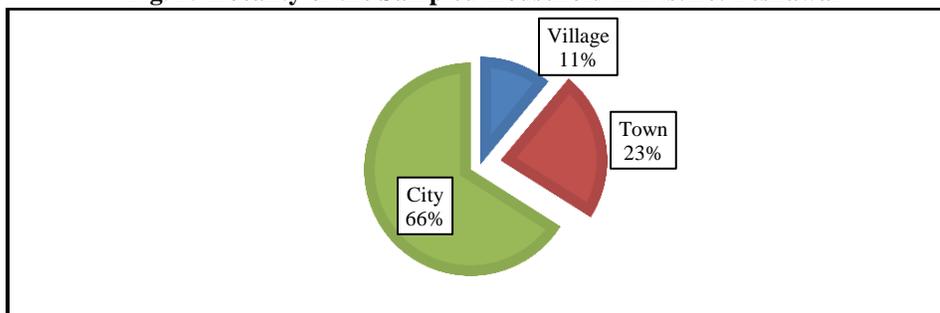
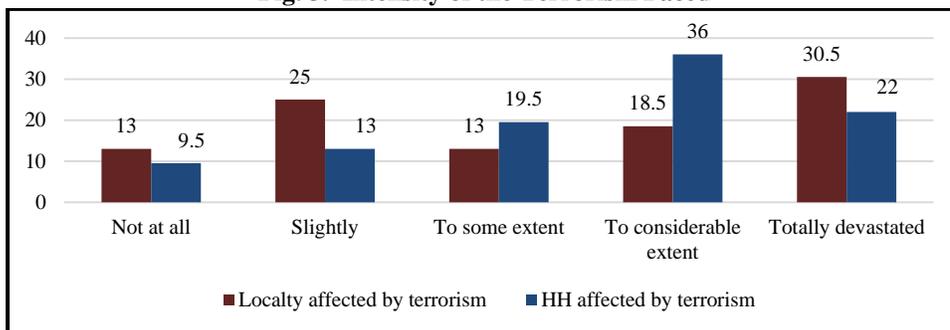


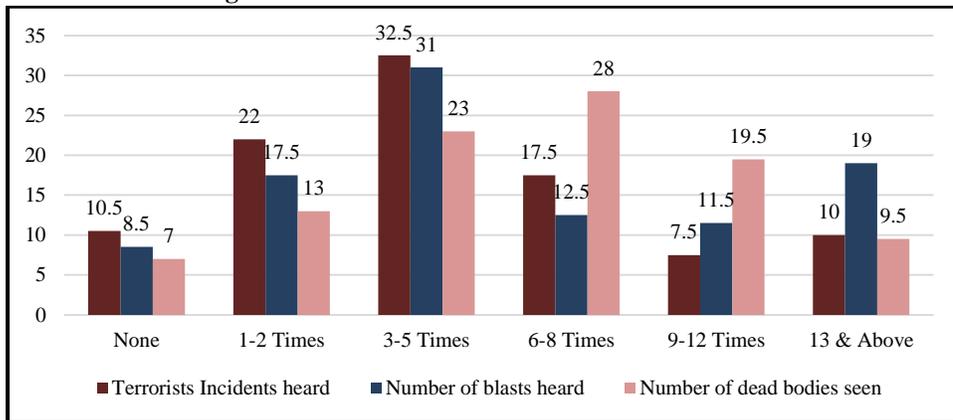
Figure 3 endorses the situation by presenting the status of localities affected by the terrorist attack. Around 30.5 percent of the respondent’s locality was totally devastated by terrorism. Similarly, 18.5 percent and 13 percent of the respondents’ areas were significantly affected by terrorist activities. However, 25 percent were slightly affected, while 13 percent of the households were safe from any adverse effects of terrorism activities. Hence, data reflects the extent of damage in the surveyed area, which is expected to trigger a serious change in the state of life.

**Fig. 3. Intensity of the Terrorism Faced**



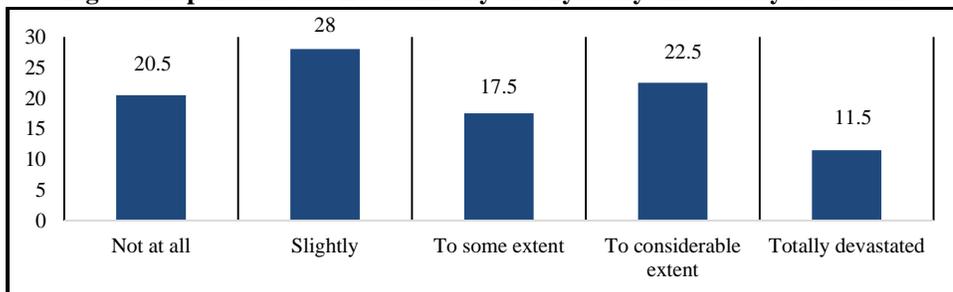
In addition to the respondent’s perspective regarding the area, the direct effect imposed on households was also inquired. Results indicate that continuous terrorist activities in the locality have jeopardised the household’s life. As shown in Figure 3, about 58 percent of respondents were significantly affected by the terrorism acts, depicting the unfathomable impact of terrorism in district Peshawar which is bound to influence an individual’s state of life.

If we further dig deep, the psychological effects of terrorist activities are as severe as the physical damage. While district Peshawar was in the wrath of terrorist attacks in 2009 and onwards, the number of incidents had violently increased in the city, and the people living in surrounding heard attacks nearly on a daily basis. This increased the sense of insecurity among people, inflicting fear, despite escaping the direct effect of any terrorist attack. Figure 4 shows that almost 90 percent of the respondents had heard the blasts, which is significant. The highest number of attacks heard is 3-5 times, reported by 31 percent of the respondents. According to the data, 10.5 percent of respondents never heard any blast.

**Fig. 4. Occasions Witnessed Related to Terrorism**

Similarly, another very important aftereffects of any terrorist attack are the immediate aftermath following the activity. These scenes impose long-lasting negative impacts on people who witnessed the proceedings following any attack, ultimately affecting their own psychological state and of those who listen to their discussions of the occasion. Owing to the highly terror-prone area, respondents of the survey witnessed various incidents and have seen the dead bodies. Such visuals trigger the fear in the respondent's mind and have the potential to seriously affect their state of life. Alarming, 28 percent of households have seen the dead bodies up to 6-8 times, while if we combine, overall, about 93 percent of the respondents have witnessed similar aftermath, which indicates the intensity of the situation (Figure 4).

Last but not least, almost 80 percent of the respondents reported to be economically or physically affected by the terrorist activities (Figure 5), which is alarming. One can imagine the direct psychological impact of such a situation and explain the extent of damage imposed by terrorism on society in Peshawar. Hence, it is not unexpected that such a situation will have impacted the individual's state of life.

**Fig. 5. Respondents are Economically or Physically Affected by Terrorism**

In brief, the higher the intensity of terrorism acts, the more affected people will be emotionally and economically. Figures above have indicated the extent of incidence, and the sections following further elucidate the consequence borne by the household from the terrorist activities analysing the household's time allocation before and after 2009.

## 5. RESULTS AND DISCUSSION

As explained earlier, the dependent variable is time allocation, which we capture through time allocated between leisure and business activities. Before estimating our model, first, we tested the existence of multicollinearity among explanatory variables. The result of Variance Inflation Function (VIF) shows that all of our explanatory variables have no problem of multicollinearity.<sup>10</sup> After performing basic diagnostic tests, the study's empirical findings are presented in Table 3.

Table 3 carries four columns where model 1 presents the first empirical model having the dependent variable is Time Allocation for Leisure in the Pre-2009 period. Similarly, model 2 captures the impact of terrorism on individual Time allocation for Leisure in the post-2009 scenario. Likewise, model 3 and 4 captures the effect of independent variables on time allocation for business activities in the pre-2009 and post-2009 scenario. Overall, the models estimated carry satisfactory diagnostics and F-test for each model; hence, it depicts the consistency of the models.

Table 3  
*Empirical Findings (Dependent Variable: Time Allocation)*

Variable	Abr.	Time Allocated to Leisure		Time Allocated to Business	
		Pre-2009 Model 1	Post-2009 Model 2	Pre-2009 Model 3	Post-2009 Model 4
Number of Terrorists Incidents Seen	TI_Seen <sub>i</sub>	0.0069	-0.0171*	0.0168	-0.0122
Number of Blasts Heard	B_Hrd <sub>i</sub>	0.0066	-0.0069	0.0421**	-0.0338**
HHs Affected by Terrorism	HH_Afft <sub>i</sub>	0.0280***	0.0006	-0.0224	-0.3050***
Family is Economically or Physically Affected by Terrorism	EP_Afft <sub>i</sub>	0.0163**	-0.0157	-0.38554***	-0.21638***
Extent of Terrorism in the Locality	LOC_Afft <sub>i</sub>	-0.0946***	-0.0049	0.2320***	-0.0625***
HH Size	HHS <sub>i</sub>	0.0765***	0.0912***	0.0068	-0.0037
Respondents Education	EDU <sub>i</sub>	-0.0468***	0.0091	-0.0159	-0.0312***
HH Income	INC <sub>i</sub>	-0.0326	-0.1709	-0.2928	0.4753
HH Involvement in Community Decisions	COM <sub>i</sub>	0.0199**	-0.2802***	-0.1213***	-0.0773***
HH Location-City	LOC <sub>c</sub>	0.3973***	-0.03725	0.1956***	0.3299***
HH Location-Village	LOC <sub>v</sub>	-0.0441	-0.10871**	0.2574**	-0.9292***
Constant	Con.	2.7036***	3.2488***	3.444***	4.442***
No. of Obs.		200	200	200	200
Rank		12	12	12	12
F Statistic		57.16	59.83	48.94	67.16
Prob._F		0.0000	0.0000	0.0000	0.0000
R <sup>2</sup>		0.77	0.78	0.74	0.79
R <sup>2</sup> _Adj.		0.76	0.76	0.73	0.79

Legend: \*p<0.1; \*\* p<0.05; \*\*\* p<0.01

### 5.1. Discussion

As evident, terrorism is a variable of interest in this study. In order to examine rigorously the effect of terrorism, different proxies of terrorism have been used as explanatory variables. In this subsection, the impact of these different measures of terrorism on the set of dependent variables is discussed one by one.

<sup>10</sup> Appendix A2.

**Extent of Terrorism in the Locality (LOC\_Afft<sub>i</sub>):** The first measure of terrorism is the extent of terrorism in the locality, even prior to the 'war against terror' in Pakistan, KPK used to remain vulnerable to various ethnic, religious, and tribal conflicts. Hence, the presence of such incidents in the locality is expected to have a heavy bearing on individuals' daily routine. According to our findings presented in Table 3, where the locality was prone to terror attacks even before 2009, it had negatively affected HHs time allocation to leisure (-0.095) which is highly statistically significant. Despite having the correct sign, such incidence has a statistically insignificant effect on time allocation to leisure in the post-2009 scenario.

The effect is more obvious in the event of time allocation to business. Prior to the 'war on terror' in Pakistan, local disputes failed to have any bearing on time allocation to business as the coefficient (0.232) is statistically significant and positive. However, once the incidence of terrorism changes in its nature, when the locality was perceived to be affected by terrorism, the HHs' time allocation to business activities was negatively affected (-0.062). Hence, evidence suggests that terrorism had negatively affected the productive use of time in the post-2009 period. The result favoured the results as explained by Downes-Le Guin and Hoffman, 1993; Sunstein, 2003; Viscusi and Zeckhauser, 2003; Becker & Rubinstein, 2004, suggesting that terrorism triggers the fear impact which changes individual decision about leisure time and business activity. As the terrorist activities intensify, the individual will increase their business activities. Whenever terrorists strike a locality, the targeted victims are the households, hence, have significant effects on households and change their time allocation. Our result is aligned with Sacco, et al. (2003) and Pyszczynski, et al. (2003), which states that to compensate for the feeling of insecurity, people make conservative decisions that are less risky.

**HHs Affected by Terrorism (HH\_Afft<sub>i</sub>):** To investigate further the intensity of terrorism on the household's time allocation pattern, we used HHs affected by terrorism as an explanatory variable. The rationale behind is if an immediate member of a HH gets affected in a terror attack, such an event is expected to have a heavy blow on their time allocation. Such an impact was captured through the said variable, which presents interesting results. Prior to intensified terrorism, if a HH member got affected by a violent attack, such an event did not hurt the time allocation to leisure in the pre-2009 period. Hence, people seemed to have dealt with it as an 'Act of God' and did not take it seriously. The results turn statistically insignificant for models 2 and 3, which leaves us with no choice but not to comment any further. Nevertheless, in the post-2009 period after the terrorism intensity increased, if a HH member was affected by terrorist activity, it has a significantly negative impact on time allocation to business (-0.305). Such a high coefficient indicates the high toll of terrorism on the household's time allocation and modifies their behaviour to productive use of their time.

**Number of Terrorist Incidents Seen (TI\_Seen<sub>i</sub>):** The intensity of terrorism may increase more if an individual has directly witnessed any terrorist incident. In this context number of terrorist incidents seen is used as an explanatory variable. Despite its significance, our analysis indicates only a small impact on time allocation for leisure in the post-2009 period, when such feelings have resulted in a negative effect. Overall, results indicate that people of the sample area (District Peshawar) showed resilience to terrorism on this front as per our findings.

**Number of Blasts Heard (B\_Hrd<sub>i</sub>):** The more the terrorist activities with individuals hearing the bomb blasts in their surroundings, the greater sense of fear triggers in the individual minds, and thus their decision towards time allocation changes. Our result signifies the impact of individual decisions regarding time allocation to business activities in the pre and post 2009 period (models 3 & 4) whereas, in the case of leisure activities (models 1 & 2), the results are statistically insignificant. In the pre-2009 period, the number of blasts heard did not hinder time allocation to business, instead, as per our results, people used to allocate more time to the business to offset any unforeseen events. On the other hand, once the terrorist activities intensified and people started to listen to bomb blasts more frequently, they reduced the time allocated to business activities, as evident from a statistically significant coefficient with a negative sign (-0.034). Our finding is aligned with Brück, and Wickström (2004), Frey, et al. (2007), and Stutzer and Frey (2010). These studies argued that individual's preferences changes as terrorism hit the country, and the cost of terrorism is paid by a diminishing trend in business activities. The outcome is fear which keeps the individual to spend more time at home in religious or family activities.

**Family is Economically or Physically Affected by Terrorism (EP\_Afft<sub>i</sub>):** Finally, the aftermath of terrorist activities involves the psychological and financial constraints faced by the families living in the affected areas. Our result indicates that for Model 1 terrorism has a statistically significant and positive impact on the household's time allocation, as shown in the table. As discussed before, such events, prior to intensification of terrorism appears to be dealt with as 'Act of God', and hence, more time was allocated to leisure without getting any psychological impact of getting affected in a violent attack. However, for the post-2009 period (Model 2) the results were statistically insignificant. Similarly, for time allocation to business activities (in Models 3 & 4), if a HH was affected economically or physically, it has negatively affected time allocation to business activities.

In addition to this, the subjective well-being fell after terrorism hit, and the individual preferences to spend more time towards leisure activities increased instead of economic activities. Hence, the individual is more sensitive to the attack, and the fear keeps them away from economic activities, favouring our argument that psychological factors such as fear significantly impact the household's time allocation as explained by the term 'the price of fear'. Frey and Lüchinger and Stutzer (2007) and Frey (2006) combined indicators of welfare (from the Euro Barometer) with three terror indicators. They analysed the impacts of terrorism on micro-economic happiness in France, the Republic of Ireland, and the UK. In all three countries, they concluded that terrorist attacks negatively affect the life satisfaction of individuals.

To investigate the impact of terrorism on the household's time allocation, we use a set of control variables. In this context, this subsection is devoted to presenting these control variables' impact on the set of dependent variables one by one.

**HH Size (HHS<sub>i</sub>):** Results presented in Table 3 show that in Model 1 & 2 (modeling time allocation to leisure) our first control variable enters significantly and with a positive sign, indicating a significant and positive relationship between the HH size and the time allocation for leisure. The possible justification may be that leisure time includes all the social, religious, and recreational activities, hence with an increase in HH size, people

can spare more time to take care of leisure activities instead of involving in other (business) activities. It is important to be noted that the coefficient has increased in the post-2009 scenario (0.091 from 0.076), which depicts that social bonding has increased with terrorism. In addition, this can be an indication that following terrorism hype household member prefers to spend more time in social activities or at home rather than engaging in economic activities. In contrast, in the case of Models 3 and 4, where the dependent variable is time allocation to business, the variable turns statistically insignificant, indicating that HH size does not help in determining time allocation to business activities.

**Respondents Education (EDU<sub>i</sub>):** Respondent education is another variable that may affect its decision about time allocation. In Model 1, prior to terrorism intensity, education resulted in the lesser time allocated to leisure (−0.047), which means that the more educated a person, the less prepared he/she would be to allocate his/her time to leisure. This may be due to the higher opportunity cost for leisure, that more educated people have relatively higher earning profiles and hence higher opportunity cost for leisure. However, the trend reverses in the post-2009 scenario, when the sign turns positive but statistically insignificant. On the contrary, in the pre-2009 period, education had no significant effect on time allocation to business activities, whereas in the post-2009 period with increased terror intensity, higher education reduces the time allocation to business (−0.031). The one possible justification is that sensitivity to terrorism increases with education hence they are more sensitive to the risks involved in going out for economic activities.

**HH Income (INC<sub>i</sub>):** The result presented in Table 3 shows that household income carries a positive and statistically insignificant effect on HH's time allocation to leisure and business activities. Though unexpected, the results still make sense in the wake of the issue under consideration. When an event involves risk of death, income seems misfit among the list of factors that impact the respective decisions pertaining to time allocation. In the pre-2009 period, there seem to be other factors (rather than income) that influence HH decision to allocation time. Similarly, in the post-2009 scenario, the risk to life is a stronger impetus than the prospects of income that affect decisions about time allocation.

**HH Involvement in Community Decisions (COM<sub>i</sub>):** Household involvement in community decisions enters all four variables significantly, however, does not hold a uniform sign across models. For instance, for the time allocation to leisure in the pre and post-2009 period (Model 1 & 2), HHs time allocation to leisure increased due to involvement in community decisions as they felt safer outside. Therefore, involvement in community decisions has a positive and significant impact on time allocation to leisure in the pre-2009 period. On the contrary, in the post-2009 period, time allocation to leisure is negatively affected by involvement in community decisions, with a relatively greater coefficient (−0.28). This can be associated with the fact that people might not feel safe outside due to greater exposure to negative vibes prevailing in the community in the wake of terror hikes. In Models 3 and 4, whereas the dependent variable is time allocation to business activities, in both cases, the variable holds a negative sign that is statistically significant. The following reasons may explain why? As the terrorism hit the sample area (District Peshawar) with more intensity, the fear of attack triggers in individual minds due to greater

exposure to negative feelings from the peers and community, hence, individual chooses to spend more time at home, family and less to business activities, as explained by Enders & Sandler (2005). They argued that as the attack hit the locality, the fear triggers the trust deficit in individuals that diminishes the economic activities.

**HH Location (LOC<sub>i</sub>):** Another very important determinant of time allocation to leisure and business activities is the location of the HH. Results indicate that people living in urban areas allocate more time to leisure in the pre-2009 period (0.397) compared to the post-2009 period when the coefficient turns insignificant. Hence, prior to terrorism, HHs used to enjoy their lives by allocating more time to leisure in city areas as compared to HHs located in small towns. Similarly, HHs located in city areas used to allocate more time to business activities as compared to people in town areas, in the pre-2009 period (0.196), which even further increased (0.329) in the post-2009 period argues that with an increase in terrorism people choose to work more to cover losses than to spend time on leisure activities.

On the contrary, HHs located in villages are used to spare less time to leisure both in the pre and post-2009 periods with a coefficient though higher in the post-2009 period (0.109). Whereas, in the pre-2009 era, HHs located in rural areas are used to spare more time to business (0.257) activities while the relationship reversed (-0.929) in the post-2009 period reflecting the extremely negative consequences of terrorism on the business environment in rural areas.

## 6. CONCLUSION AND POLICY IMPLICATIONS

There has been little understanding of the economic impacts of the psychological trauma of casualties on economic agent and their families. The phenomenon may not only result in higher spending on health, absenteeism from work, and reduction in labour productivity but can also diminish welfare and life satisfaction at the household level. In this connection, this study explores whether or not terrorism shapes the household's time allocation pattern. The basic hypothesis is "terrorism trigger fear in people's mind that affect their preferences about time allocation". In this context, the study empirically investigates the effects of terrorism on the household's time allocation decision in the pre and post-2009 periods to seek their time distribution between business activities and leisure time.

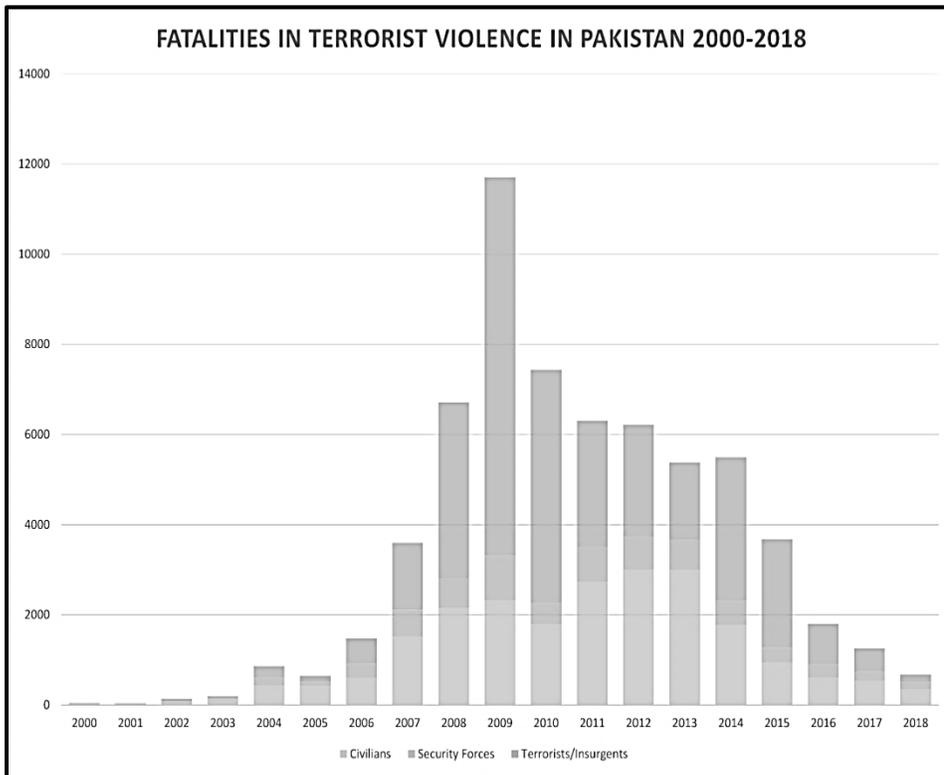
In general, the study's findings reveal that households' time allocation patterns have changed due to terrorism because people feel fear at workplace, consequently increasing leisure time while allocating less time to business activities. Touching the result thoroughly, as in model 4,<sup>11</sup> four out of five terrorism proxies are statistically significant and holds negative sign pointing toward the statement that individual prefers to stay at home and spend time on leisure activities rather than on business activities. In addition, the empirical evidence shows that proximity to 'terrorist attacks areas' of the sample district signifies its role in the decision-making of the people about time allocation. This indication moved towards our result that people living in areas closer to the terrorist attacks have experienced a significant change in time allocation patterns compared to those living far-off.

<sup>11</sup> Dependent variable is time allocated to business activities in post 2009 period.

We believe the findings of the study feed well into policy recommendations. The policymakers need to regularly monitor the situation and make every effort to keep society and people safe. Once the area is prone to terrorist attacks, it is the perception that hurts more than the actual happenings. As our analysis expose that even if the HHs have not been in contact with any terrorists' attack, still their time allocation gets affected due to 'hear-say'. Therefore, important policy measures should be put in place to inform the citizens of state's resolve and counter strategies to fight terrorism. This will give people hope and encouragement for a comeback. To conclude, the government's defense spending has important social implications attached to it, and a country's spending on defense should not just be taken as numeric figures only. Stronger defense improves the quality of life and yields tangible economic benefits.

Despite the hard work undertaken for this research, the following limitations need to be taken care of in the impending research on the subject. Firstly, this study was carried out in district Peshawar only. Conversely, the entire country is through a lot of disruption, as terrorist attacks resulted in deaths and devastation and disturbed the way of life in the whole country. Therefore, the sample area and size can be extended in future research. Secondly, the state of life is broader in scope, hence any future research can study some other important aspects like happiness, cultural activities and public's social preferences, etc. to capture the state of life at its full length.

#### APPENDIX-AI



Source: Wikipedia <<https://commons.wikimedia.org/w/index.php?curid=68554607>>, (Accessed on June 2, 2020).

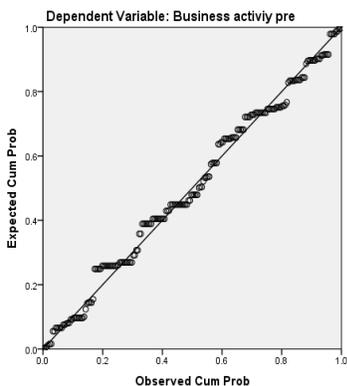
**APPENDIX A2**

**VIF Test Result**

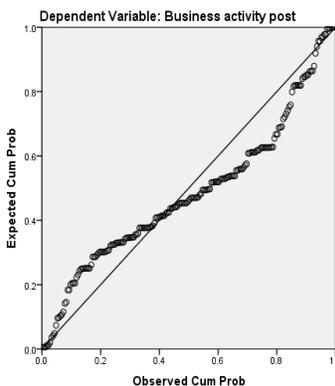
Variance Inflation Function			Variance Inflation Function-Uncentered		
Variable	VIF	1/VIF	Variable	VIF	1/VIF
Number of Terrorists Incidents Seen	1.11	0.90253	Number of Terrorists Incidents heard	3.81	0.26259
Number of Blasts heard	1.15	0.86704	Number of Blasts heard	4.26	0.23491
HHs affected by terrorism	1.42	0.70596	HHs affected by terrorism	7.15	0.13987
Family is economically or physically affected by terrorism	1.21	0.82873	Family is economically or physically affected by terrorism	3.38	0.29587
Extent of terrorism in the locality	2.2	0.45357	Extent of terrorism in the locality	7.7	0.12983
HH size	1.25	0.80157	HH size	6.26	0.15977
Respondents Education	1.26	0.79275	Respondents Education	4.67	0.21414
HH Income	1.15	0.87063	HH Income	1.19	0.83934
HH involvement in Community decisions	1.17	0.85264	HH involvement in Community decisions	6.4	0.15629
HH location-city	2.18	0.45863	HH location-city	6.41	0.15594
HH location-village	1.72	0.58092	HH location-village	1.93	0.51702
Mean VIF	1.44		Mean VIF	5.76	

**APPENDIX A3**

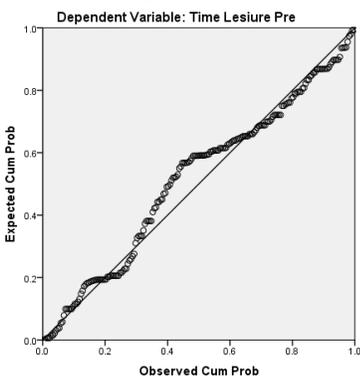
Normal P-P Plot of Regression Standardized Residual



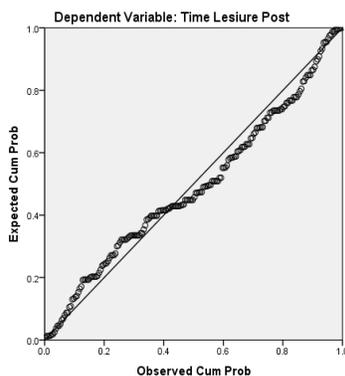
Normal P-P Plot of Regression Standardized Residual



Normal P-P Plot of Regression Standardized Residual



Normal P-P Plot of Regression Standardized Residual



## APPENDIX A4

Table A2

*Summary Statistics of Variables under Consideration*

Variable	Obs.	Mean	Std. Dev.	Min	Max
Time Allocated to Leisure (Pre-2009)	200	3.09	0.27	2.54	3.732
Time Allocated to Leisure (Post-2009)	200	2.95	0.37	2.16	3.819
Time Allocated to Business (Pre-2009)	200	3.25	0.65	1.74	4.924
Time Allocated to Business (Post-2009)	200	2.87	0.62	1.30	4.577
Number of Terrorists Incidents Seen	200	2.19	1.41	0	5
Number of Blasts Heard	200	2.58	1.58	0	5
HHs Affected by Terrorism	200	2.48	1.24	0	4
Family is Economically or Physically affected by Terrorism	200	1.76	1.32	0	4
Extent of Terrorism in the Locality	200	2.29	1.45	0	4
HH Size	200	4.43	2.21	1	11
Respondents Education	200	3.41	2.07	0	8
HH Income	200	0.01	0.04	7.36e-10	0.5748
HH Involvement in Community Decisions	200	2.15	1.02	0	3
HH Location-City	200	0.66	0.47	0	1
HH Location-Village	200	0.11	0.31	0	1

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