The role of natural hazards on the utilisation of maternal and child healthcare services in Afghanistan

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The role of natural hazards on the utilisation of maternal and child healthcare services in Afghanistan

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in International Health

by

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ABSTRACT

Introduction

The return of the Taliban to power in 2021 has raised concerns about the resilience of the Afghan healthcare system and maternal and child health mortality and morbidity. Afghanistan is prone to natural hazards, further exacerbating vulnerable populations. Assessing disruptions in maternal and pediatric health services is essential to address natural hazards and their expected increase resulting from climate change.

Objective

To analyse whether maternal and child health services were disrupted following natural hazards in Afghanistan in the month of the event and the two months after and provide recommendations for resilient health systems.

Methodology

This quantitative research undertakes a retrospective trend analysis through secondary analysis of monthly data from January 2019 until August 2021 and January 2022 until August 2022 from Humanitarian Data Exchange (HDX) and Health Management Information System (HMIS).

Results

The utilisation of maternal and pediatric health services was assessed at the district level and provinces with high-risk populations. To identify disruptions in maternal and pediatric health utilisation, different effects of increase or decrease were reported. These were generally not found to be statistically significant.

Conclusion

This study revealed that utilisation of maternal and pediatric healthcare services was not significantly disrupted by the event of a natural hazard in the month of the event, and the first and second month following the event. While health utilisation showed an increase or decrease, no strong associations were reported. Therefore, analysis at a facility level is recommended.

KEYWORDS: Natural hazards, maternal and child health, health utilisation, Afghanistan

WORD COUNT: 12.112

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LIST OF ABBREVIATIONS

AIC   Akaike Information Criterion

ANC   Antenatal care

BPHS   Basic Package of Health Services

CS   Caesarean section

DEL   Facility delivery

EPHS   Essential Package of Hospital Services

GM   Growth monitoring

HDX   Humanitarian Data Exchange

HMIS   Health Management Information Systems

IRR   Incidence Rate Ratio

MAT   Maternal health

NATO   North Alliance Treaty Organization

PED   Pediatric health/child health

PNC   Postnatal care

U5   Child Morbidity

WHO   World Health Organization

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Introduction

My background is as a Dermal Clinician, BSc. I've been working in the field since 2017. After traveling in low and middle-income countries and during skin related internships in Nepal, India, and Suriname, I developed an interest and passion for Global Health. This strong interest persuaded me to become the founder of the NGO 'Care4Nepal' in 2018. We set forth the main project Medical Rehabilitation Organization 'MeRO'. Our main objectives include improving (para)medical healthcare in Nepal, sponsoring MeRO, giving trainings to local healthcare personnel and volunteers, and helping international volunteers and interns.

After my decision to develop myself and study the MSc in International Health, the path of pursuing Global Health became broader and my interest shifted to projects with a larger impact. I aspire to be involved in strengthening the healthcare system in conflict areas. My interest is in the social determinants of health among the many cultures worldwide. After the Premaster Program of Health Sciences at the VU, I had the wish to be involved in quantitative research with large datasets. The opportunity to undertake research on health systems in Afghanistan was meant to be.

My drive to discover Afghanistan further came with this large value dataset. With this study about relationships between natural disasters and maternal and child health utilisation, two topics that are essential to public health in Afghanistan and worldwide are explored. I will contribute to the large scope of practice by conducting this research. I am determined to target complex problems from their source, which requires understanding of who are exposed and the association between the different determinants.

1. Background

1.1 Geographic country profile

The Islamic Emirate of Afghanistan is located in Central Asia extending approximately 652.000 square kilometres landlocked between Pakistan, Iran, China, Tajikistan, Uzbekistan, and Turkmenistan. (1,2) Topographically, the Hindu Kush mountains, which are part of the Himalayas, divide the country into the Central Highlands, the Southwestern Plateau, and the Northern Plains. Afghanistan has 34 provinces with 421 districts. (3) The climate in Afghanistan ranges from arid to semi-arid with warm and cold seasons and large differences in temperature depending on the altitude level. (4) The arid climate and mountainous landscapes makes Afghanistan highly prone to severe and reoccurring natural hazards, including earthquakes, landslides, (flash) floods, droughts, and avalanches. (4)

Figure 1 Afghanistan Provinces Map. (5)

1.2 Demography

The estimated population of Afghanistan is about 42 million inhabitants in 2023, with a population density of 65 people per square kilometre. (2) The population is distributed with 73% living in rural areas and 27% in urban areas. (6) The main religion in Afghanistan is Islam, with an estimated 99,7%

of the population practicing. The distribution of gender is 50.5% males and 49.5% females with a life expectancy of 59 years in males and 65 years in females. (6) The median age is 18 years old with 43% between 0-14 years of age, 54% between 15-64 years of age and 2% over 65 years of age. The birth rate estimate is at 36 per 1000 people and the death rate at 7 per 1000 people. (6) In comparison to the Netherlands estimated at 10 per 1000 people and the death rate at 10 per 1000 people. (7) The percentage of young people is relatively high in Afghanistan compared to the Netherlands. In 2021, Afghanistan ranked 17th on the Climate Risk Index of the most vulnerable countries. (8,9)

1.3 Economy, socio-economic status, education, and gender roles

Over the past decades, Afghanistan has faced much conflict and instability, which has impacted the socio-economic status of its population. Estimations of 2020 show that almost half of the population lives below the poverty line. Directly after the takeover of the Taliban in 2021, the economy collapse pushed the poverty level to approximately 85% of the population living below the poverty line (10–12). Afghanistan is amongst the ten countries with the lowest gender equality on the Global Human Development Index. This is primarily caused by inadequate reproductive health services, limited women's empowerment, and minimal participation in economic activities (12–14) Under the regime of the Taliban from 1996 to 2001, girls and women were denied their right to education. When the Taliban returned to power in August 2021, they proclaimed to respect the rights of girls and women and their right to education. Initially, the Taliban gave contradictory signals about whether education for women and girls would be permitted. Subsequently, however, all secondary education and higher education for girls and women and those working in non-governmental and humanitarian organizations was prohibited. However, the Taliban proclaimed that this rule did not apply to the health sector. Initially, the ban on education was a temporal measure. Since March 2023, girls and women cannot continue their secondary school or university, which makes Afghanistan the only country globally that forbids girls and women their right to education. Additionally, the Taliban enforces rules that women must be accompanied by a male escort and prevent women from entering parks, gyms, and other public places (14–16).

1.4 Health system and maternal and child health in Afghanistan

After the collapse of the Taliban in 2001, the health systems of Afghanistan were largely dysfunctional, with some of the worst statistics estimated worldwide (17) The infant mortality rate of 165 per 1000 live births and child mortality rate of 257 per 1000 live births was ranked as the fourth highest in the world in 2002 (17) The highest maternal mortality ratio ever was estimated at 1600 per 100.000 live births in 2002 (17) The accessibility to health services was limited to less than 10% of the population.

Therefore, the initiation of the Basic Package of Health Services (BPHS) began in 2003. The drafting of this new health system was primarily led by the World Health Organisation (WHO) with only a limited input from the Ministry of Public Health in Afghanistan (17) The focus lay on primary healthcare with a focus on community-based healthcare serviced by community health workers (CHW). These primary healthcare systems include various health facilities, including health posts, basic health centres, comprehensive health centres and district hospitals. Each of these facilities is sized according to the population they serve, including the selection of the number and type of healthcare workers, equipment required and essential drugs necessary to provide services. (17) The efforts of the BPHS facility resulted in a decline in maternal mortality ratio estimated at 620 per 100.000 live births in 2020 (6) The infant mortality rate declined to 45 deaths per 1000 live births in 2020, and under five years mortality reduced to 58 deaths per 1000 live births in 2020 (14)

The BPHS approach involves contracting external non-governmental organizations (NGOs) to deliver services in specific provinces or groups of districts, ensuring coverage of all provinces. The Ministry of Public Health was involved in the selection procedure of NGOs through a competitive bid process. Initially, the BPHS facilities entailed a performance-based system with a duration of 12-to-36-month contracts. The allocation of budgets is based on monitoring and evaluation with monthly data derived from Health Management Information Systems (HMIS). (17,18) Key components that the packages contain malaria care and basic reproductive health services. In 2015 mental health, disability care, and HIV control were added to the services as well as the integration of the financing system ensuring that healthcare services are available to all citizens (17)

The addition of the Essential Package of Hospital Services (EPHS) extended the systems in 2005. The hospital services are aimed at addressing more complex healthcare needs at the district, provincial and national levels with district, provincial and regional hospitals. In which the district hospitals function as the connector between BPHS and EPHS facilities. For the three categories of hospitals, medicine, surgery, paediatrics, and obstetrics and gynaecology are the four core clinical functions in each of these hospitals. Additionally, another group of hospitals is functional in Afghanistan, known as the referral centres for tertiary care and exist mainly in the capital Kabul. These hospitals are not part of the EPHS package, as they provide education and training for health workers and act as referral hospitals for provincial and regional hospitals. (17,19)

The full scope of practice of the BPHS package targets the healthcare needs of maternal and newborns, child health and immunisation, public nutrition, mental health, disability, and regular supply of essential drugs. (17) Based on the BPHS health systems in place, functional service delivery is

measured by the availability of services. The system contains health sub-centres, basic health centres, comprehensive health centres and district hospitals. (17) Several factors contribute to the establishing of service delivery for its population, such as the number of active health posts at the community-level, the total patient visits per month in health facilities and health posts, and the number of patients receiving health services in clinics and through outreach programs. (17) The health services of Afghanistan's Basic Package of Health include the following services (17):

Maternal and newborn health

- Antenatal care
- Delivery care
- Postpartum care
- Family planning
- Care of the newborn

Child health and immunisation

- Expanded program on immunisation (routine and outreach)
- Integrated management of childhood illnesses

Public nutrition

- Micronutrient supplementation
- Treatment of clinical malnutrition

Communicable diseases

- Control of tuberculosis
- Control of malaria

Mental health

- Community management of mental problems
- Health facility-based treatment of outpatients and inpatients

Disability

- Physiotherapy integrated into primary healthcare services
- Orthopaedic services expanded to the hospital level

Regular supply of essential drugs

- All essential drugs required for basic services

1.5 Conflict situation

Afghanistan's geopolitical position largely shaped its history. After 23 years of war, invasion, occupation and Taliban rule, the North Alliance Treaty Organization (NATO) allies entered Afghanistan in 2001 after the 9/11 terrorist attack on the United States. The military intervention known as 'Operation Enduring Freedom' to combat terrorism was launched by the United States, along with NATO and support from over 40 countries. (20–23) Subsequently, the United States' presence in Afghanistan made efforts, supported by the international community, to support reconstruction and the repatriation of Afghan refugees. An emphasis on rebuilding the education and health systems with the assistance of international aid was made. After 20 years of invasion, the United States and the Taliban signed an agreement on withdrawing international forces from Afghanistan. After the withdrawal of international forces from Afghanistan, the Taliban seized power and took control of the government on August 15, 2021. (20–23)

2. Problem statement

Afghanistan has already faced decades of conflicts impacting public healthcare services. Within months of the withdrawal of international forces, the Taliban took control of the government in August 2021. Even though international donors had invested for decades in resilient health systems, international donors declined to fund any services directly channelled through the new regime. Due to the reliance on external funds, the World Health Organization (WHO) stepped in to prevent a total health system collapse. Simultaneously, several countries imposed economic sanctions, which led to a financial crisis. In September 2021, the health systems were estimated to be running at only a fifth of the functional health system. Moreover, the Taliban prevented women from obtaining a higher education or working for non-governmental and humanitarian organizations. These restrictions limited the provided care by female health workers and influenced the quality and availability of maternal and child healthcare. During the COVID-19 pandemic, access to healthcare was even further restrained. (14,24–27)

Afghanistan is highly prone to various natural hazards including earthquakes, floods, landslides, droughts, avalanches, and heavy rainfalls, which challenges its population, infrastructure, health systems, and overall development. Natural hazards pose devastating effects on public health, exacerbating morbidity, mortality, and disability rates. (1,4). Regarding fatalities due to hazards, Afghanistan ranked the second highest among low-income countries in terms of fatalities, estimated between 1980 and 2015. Out of all fatalities in Afghanistan, approximately half were attributed to geophysical or weather-related events. (4) Several factors can amplify the impact of natural hazards,

such as decades of conflict, low socio-economic development, climate change, environmental degradation, rapid growth of population, and urbanization. (4,24,28). The devastating consequences of a natural hazard on health facilities include the disruption of healthcare services, health programs, loss of healthcare personnel, overburdening of health services and water supply and sewage systems, and destruction of healthcare facilities. (24,29) It is sometimes the case that natural hazards endanger people's lives in the healthcare facilities themselves. In addition, during a hazard, the roads leading to health facilities may become blocked, preventing people, including health personnel, from accessing healthcare facilities. This is particularly challenging for those living further away from the service centre, especially if transportation services are discontinued. (24,29)

The concerning low health statistics related to maternal, child and infant mortality in Afghanistan, which were estimated in 2002, improved following the initiation of the Basic Package of Health Services (BPHS) facilities. This trend worsened after the takeover of the Taliban in 2021. The increase in maternal, child and infant mortality can be attributed to insufficient funding, limited accessibility, inadequate availability of essential medicines and quality of health care. (14,15,29)

The current state of knowledge needs more quantitative research designs that provide concrete evidence on the utilisation of maternal and child health services following natural hazards. Assessing disruptions in health services is essential to address natural hazards and their expected increase resulting from climate change. This knowledge is necessary to tackle the devastatingly high rates of mother, child and infant mortality. To achieve this, it is essential to measure the resilience of maternal and child health services following natural hazards. Insights into how these risks compound each other, by including the determinants of health, can be used to develop a sustainable disaster control and prevention strategy. The knowledge gap lies in the explicit role of natural hazards in affecting the utilisation of maternal and pediatric health services and the extent to which maternal and pediatric health services are disrupted following an event. This study aims to contribute to the scientific proof by testing the hypothesis of whether a relationship between natural hazards and maternal and pediatric health service utilisation exists. To measure this a regression analysis using national data collected at a monthly timeframe is conducted. The results of the latter can be used to help define a strategy to help the Afghan health system be more resilient to these natural catastrophes.

3. Research objectives

This research aims to give insights into sustaining the healthcare system in Afghanistan. These insights are based on an analysis of the level of disruption of maternal and child healthcare services during and after a natural hazard from January 2019 to August 2021 and January 2022 to August 2022.

In order to structure this study, five research objectives were formulated:

1. Assess whether utilisation of maternal and child healthcare services was disrupted following a natural hazard

2. Assess whether the size of the hazard (in terms of damage and or casualties) affected the extent of disruption

3. Assess whether there are differences between different types of natural hazards and their impact on utilisation of maternal and child health services

4. Provide recommendations for maternal and child health services following a natural hazard to set policies and interventions to strengthen the public health care system in Afghanistan

5. Provide findings to serve as a starting point to follow up on how natural hazards impact health systems on a large scale for further in-depth research

3.1 Hypothesis

To determine whether natural hazards and the utilisation of maternal and child healthcare services are statistically significantly associated, two hypotheses are compared: The null hypothesis (H0) and the alternative hypothesis (H1).

H0 There is no association between the occurrence of natural hazards and the utilisation of maternal and child health services in Afghanistan in the month of the hazard or the two months following

H1 There is an association between the occurrence of natural hazards and the utilisation of maternal and child health services in Afghanistan in the month of the hazard or the two months following

4. Methodology

This chapter describes the methodology and analytical framework used to address the research objectives of this study.

4.1 Study design

This quantitative research undertaking is a retrospective trend analysis through secondary analysis of existing data sources. This study aims to determine whether a statistically significant association exists between natural hazards and the utilisation of maternal and child healthcare services. These insights are based on logarithmic-linear regression analysis to compare data on natural hazards and maternal and child health services utilisation.

4.2 Data sets and data management

In order to test the hypothesis, two existing datasets were aggregated. The first dataset consisted of data on the national level with natural hazards measures extracted from the Humanitarian Data Exchange (HDX). The registry collects data on natural disasters for the management and response of disasters, containing the total number of natural hazards: (flash) floods, heavy snowfalls, earthquakes, landslides/mudflows, and avalanches as well as morbidity and mortality. It contains data from January 2019 until August 2021, and January 2022 until August 2022 (30). The second database originates from the Afghanistan's HMIS. The HMIS contains the total number of services provided in Afghanistan by BPHS facilities (hospitals, health centres, and community outreach services) monthly, with data from January 2019 until August 2022 (18). All statistical analyses and data management were performed using Stata/SE 17 and Excel.

4.2.1 HDX dataset management and cleaning

As a first step, the HDX data was evaluated until August 2022. Then the dataset was cleaned, and errors and missing data entries were completed if possible and eliminated otherwise. Data points from September until December 2021 were missing, most likely due to the political situation in 2021. The data points contained the number of persons killed, persons injured, individuals affected, houses destroyed, houses damaged and families affected, in which each observation represents a natural hazard in a certain location at a certain time. The dataset of the 2068 observations underwent a series of transformations to transform data suitable for statistical analysis. 29 data points were recorded twice, detected as duplicates, and removed from the dataset to obtain a correct dataset. Ten data points contained no natural hazard event and were labelled as 'removed' and deleted from the dataset. Aggregate datasets require the process of restructuring. The natural hazards were

categorized and labelled with: (1) avalanche, (2) earthquake, (3) (flash) floods, (4) heavy snowfall, and (5) landslide/mudflow. One unique identifier was created for the province-district combination and requires an identical match with these similar data points in the HMIS dataset. The data points that occurred in the same month and uniquely identified provinces and districts were consolidated into one observation to create a consolidated view of each unique combination of district and province. In preparation for regression analysis, the dataset transformed from a long format to a wide format. This process entailed restructuring the data so that each natural hazard variable had its own column, and each district-month combination was associated with a corresponding value for each hazard. This restructuring enables an easier analysis and interpretation of the data. The resulting dataset now contains 1244 data points that capture the occurrence and impact of each natural hazard for each district in each month. The HDX data set could be merged through this restructuring process with the HMIS data set.

4.2.2   HMIS data set management and cleaning

Extracted HMIS data from January 2019 until September 2022 required data cleaning to improve data quality and to ensure that the dataset is accurate, complete, and reliable for analysis. This dataset with 99.406 data points, underwent various transformations. Each data point contained the number of antenatal care, postnatal care, institutional deliveries, growth monitoring visits, child morbidity care and caesarean section visits services provided for each health facility by month. The inconsistencies encountered in district names, such as alternative spellings, were corrected. The dataset required the translation of month and year variables from the Afghan calendar to the Georgian calendar. This was followed by the creation of one unique identifier of the province-district combination, to match the HDX dataset. To create a consolidated view of each unique combination of district and province, the data points that occurred in the same month and uniquely identified provinces and districts were consolidated into one observation. The resulting dataset then contained variables that capture the utilisation of maternal and child health indicators for each district in each month. Subsequently, datasets merged using the unique identifier of the created province-district, the year, and the month variables. The observations of September and October 2022 were dropped to meet HDX data. One data point in the province Kabul and the district Bagrami did not uniquely identify following the merge and this data point was deleted from the sample. The months September to December 2021 were purposely marked as missing to match the corresponding period of missing data in the HDX dataset. The resulting dataset now contains 18.860 data points.

4.3 Variables

The variables underwent a series of transformations to prepare for log-linear regression analysis. Variable_(1-5) consists of row totals of the variables: number of persons killed, persons injured, individuals affected, houses destroyed, houses damaged, and families affected for each hazard per month for the hazards: 1. avalanches, 2. earthquakes, 3. floods, 4. heavy snowfalls, and 5. landslides/mudflows and transformed to present on a binary scale (0-1). Lag variables_(1-5) enable the identification of temporal patterns over time. This lag variable represents the number of months since the occurrence of a particular event; 0 (no event), 1 (month of event), 2 (first month after event) and 3 (second month after event).

Variables used in this study that provide outcome measures are Province, District, Province_District, Month_year, Variable 1-5, (lag_(1-5), Persons_killed, Persons_injured, Families_affected, maternal health ANC, PNC, Delivery, CS, pediatric health, GM, U5, COVID and Taliban.

Variables	Description
Province	The 34 provinces of Afghanistan
District	The 410 districts of Afghanistan.
Province_District	Combination of province and district.
Month_year	The period from January 2019 until August 2021, and January 2022 until August 2022.
Variable 1-5	The number of events per natural hazard in the month and district from January 2019 until August 2021 and January 2022 until August 2022.
(lag_(1-5)	Categorical variable indicating for each time and district: 0 (no natural hazard), 1 (natural hazard in that month), 2 (first month after the natural hazard), 3 (second month after the natural hazard)
Persons_killed	the number of persons killed reported per natural hazard in the month and district from January 2019 until August 2021 and January 2022 until August 2022.
Persons_injured	The number of persons injured reported per natural hazard in the month and district from January 2019 until August 2021 and January 2022 until August 2022.

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Families_affected	The number of families affected (referring to displacement, orphanage and/or separated families seeking shelter elsewhere and/or disrupted livelihoods) reported per natural hazard in the month and district from January 2019 until August 2021 and January 2022 until August 2022.
Maternal health	The number of maternal health visits, encompasses indicators antenatal care, postnatal care, facility delivery, tetanus toxoid 2 vaccination and c-sections, reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
ANC	The number of antenatal care visits reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
PNC	The number of postnatal care visits reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
Delivery	The number of institutional delivery visits reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
CS	The number of Caesarean section visits reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
Pediatric health	The number of pediatric health visits, encompasses indicators pentavalent vaccination, growth monitoring and child morbidities, reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
GM	The number of growth monitoring visits for children under 2 years/their mother received Infant and Young Child Feeding (IYCF) counselling visits reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
U5	The number of Child Morbidity healthcare service visits reported by month and district from January 2019 until August 2021 and January 2022 until August 2022.
COVID	This occurrence of COVID-19 from January 2019 until August 2021 and January 2022 until August 2022.

Taliban   The occurrence of the Taliban from January 2019 until August 2021
                                 and January 2022 until August 2022.

4.4 Statistical analysis

In this section on statistical analysis, the description expounds on the statistical models and their application. To determine the affected population by natural hazard, the descriptive statistics were summarized in table 1. These descriptive statistics contain the numbers of districts affected, the people killed and injured, and the number of families affected each year.

In the exploring phase, the different linear regression models were tested to determine the best fit for the hypothesis testing with the dataset aggregated. However, to address the skewed right data distribution, several other models were tested to meet the assumption of normality in linear regression modelling. To determine the right model, the Akaike Information Criterion (AIC) was used to evaluate between different models. In general, when comparing multiple models, the one with the lowest AIC is considered the best-fitting model. Multiple models, such as the Poisson regression (AIC: 1.573.632), negative binomial regression (AIC: 277.206), and logarithmic-linear regression (AIC: 3027) were compared. Due to the lowest AIC score, Logarithmic-linear regression determines the best fit.

To conduct time trend regression analysis, the data was organized in a panel structure. In this case, the time sequence was determined by time in months to set the time panel, while the unique combination of province-districts sets the different entities within the panel. Outcome variables maternal health, antenatal care, postnatal care, facility delivery, caesarean sections, pediatric health, growth monitoring and child morbidities underwent logarithmic transformations. As a result of the logarithmic transformation, the outcomes of the analysis presented data on a log scale. Therefore, the results were exponentiated back to the original scale of the data. This process is basically the process of undoing a logarithmic transformation to interpret the reported data in a more intuitive way. The statistical significance of the results was assessed by evaluating the p-value, which was considered significant if it was less than 0.05.

After the statistical analysis, the base model was created to conduct the first analysis to determine whether natural hazards impacted the utilisation of maternal and child health services. A log-linear regression was determined on the outcome variables for maternal health services, antenatal care, postnatal care, facility delivery, tetanus toxoid 2 vaccination, caesarean sections, pediatric health services, growth monitoring and child morbidity. To account for potential interaction between the

role of COVID-19 and the Taliban, and the seasonal trends of natural hazards, their respective impacts on the utilisation of health services were considered and adjusted for in the analysis. (8,9,14,31)

After completing the first statistical model, a subsequent analysis was conducted on specific provinces. This model was identical to the first statistical model, with the only difference being that it was performed on selected provinces with populations highly prone to natural hazards. The selection of these provinces was based on the hazard risks profiles extracted from the World Bank. (4) Not all provinces are exposed to the same natural hazards. This analysis focuses on the provinces predisposed to avalanche, earthquake, (flash)flood and landslide/mudflow.

Applying the chosen methodology to test the stated hypothesis led to the determination of Equation 1. The multi-variable model represents the results of the analysis. The derived multi-variable model is referred to as Equation 1:

$$\textbf{\textit{IRR MAT}} = \exp(\beta 0 + \beta 1 * \textit{Time trend (month)} + \beta 2 * \textit{No event} + \beta 3$$
$$* \textit{Month of event} + \beta 4 * \textit{One month after event} + \beta 5$$
$$* \textit{Two months after event} + \beta 6 * \textit{COVID} + \beta 7 * \textit{Taliban} + \beta 8$$
$$* \textit{Time in month} + \varepsilon$$

$$\textbf{\textit{IRR PED}} = exp(\beta 0 + \beta 1 * \textit{Time trend (month)} + \beta 2 * \textit{No event} + \beta 3$$
$$* \textit{Month of event} + \beta 4 * \textit{One month after event} + \beta 5$$
$$* \textit{Two months after event} + \beta 6 * \textit{COVID} + \beta 7 * \textit{Taliban} + \beta 8$$
$$* \textit{Time in month} + \varepsilon$$

In Equation 1, the incidence rate ratio (IRR) represents the dependent outcome variable, in which we present maternal health and pediatric health. Additional analyses were conducted with maternal health indicators: antenatal care, postnatal care, delivery in facility and caesarean sections, and child health indicators: growth monitoring, under-5 morbidities. The exponentiation (exp) represents the transformation from the log scale – as applied in the log-linear regression – to the original scale for a clearer interpretation of the effects. The intercept (β0) represents the baseline score, while the coefficient (β1) represents the regression coefficient for the monthly time trend. The error or residual (ε) captures the unexplained variation in the dependent variable. Multiple independent time variables include coefficient β2, which is associated with no event. Coefficient β3 is related to the month of the event, coefficient β4 is associated with one month after the event. Coefficient β5 is associated with two months after the event. Additional independent variables corrected the model to prevent bias,

therefore coefficient β6 is associated with COVID, coefficient β7 is associated with Taliban, and coefficient β8 is associated with the time in months to correct for seasonality.

4.5 Ethical clearance

In the study, ethical clearance is considered. For secondary data analysis of existing data of HDX and HMIS, obtaining an ethical approval/waiver from the KIT Royal Tropical Institute Research Ethics Committee was not required. The primary data collection of HDX and HMIS involved no personal details. The main objectives were to collect monitoring and evaluation data on natural hazards and health utilisation.

5. Findings

Data from approximately 2400 BPHS facilities were used in statistical analysis from January 2019 until August 2021 and from January 2022 until August 2022. The first section presents the descriptive statistics of the affected population in mortality and morbidity, and the number of districts affected by natural hazards in Afghanistan. The second section presents the reported findings of the analysis on whether natural hazards can be associated with disruptions of maternal and pediatric health services. The third section presents an overview of the most frequent natural hazards at the provincial level.

5.1 Descriptive statistics of natural hazards in Afghanistan

This section outlines the results of the impact of natural hazards on the Afghan population in terms of affected districts, mortality, and morbidity. Table 1 shows the results of the descriptive statistics from January 2019 until August 2021 and from January 2022 until August 2022. The utilized data includes the indicators: number of districts affected, total people killed, people injured, and families affected by all five natural hazards: avalanche, earthquake, (flash) flood, heavy snowfall, and landslide/mudflow.

Exposure to natural hazards leads to various impacts on the population of Afghanistan. The number of affected families, fatalities and injuries compared to the affected districts differs per natural hazard, which suggests that natural hazards vary from year to year, depending on the place of occurrence and the severity of the event. The natural hazard flood appears to have the highest impact on the population, followed by earthquakes. The occurrence of earthquakes had a relatively high impact on the population, considering the total of districts affected (10) in comparison to (flash) floods (1.079). Other natural disasters such as avalanches, heavy snowfalls, and landslides/mudflows had

respectively lower percentages of affected districts with people killed and injured compared to (flash)floods and earthquakes.

Table 1 The total numbers of: districts affected, people killed, people injured, and families affected per year between January 2019 and August 2021 and January 2022 until August 2022 by the following natural hazards: avalanche, earthquake, flood, heavy snowfall, and landslide/mudflow.

Year	2019	2020	2021	2022	TOTAL
Avalanche					
# Districts affected	7	5	2	1	15
# Total killed	7	5	16	0	28
# Injured	1	0	11	0	12
# Families affected	154	131	27	22	334
Earthquake					
# Districts affected	1	0	0	9	10
# Total killed	0	0	0	382	382
# Injured	0	0	0	1300	1300
# Families Affected	1	0	0	15345	15346
Flood/ flash flood					
# Districts affected	292	336	108	343	1.079
# Total killed	136	192	119	205	652
# Injured	153	236	45	252	686
# Families affected	39595	11244	4099	15764	70702
Heavy snowfall					
# Districts affected	47	40	0	4	91
# Total killed	4	22	0	3	29
# Injured	9	3	0	14	26
# Families affected	4530	4123	0	202	8855
Landslide/mudflow					
# Districts affected	1	7	2	3	13
# Total killed	0	0	2	1	3
# Injured	2	15	0	3	20
# Families affected	1	790	23	27	841

5.1.1   Avalanches

Compared to other natural hazards, avalanches occur least frequently and affect fewer districts and families. In this study, a total of 334 families were affected by avalanches in Afghanistan, mostly in 2019 (154) and 2020 (131) and considerably less in 2021 (27) and 2022 (22). Avalanches affected 15 districts, mostly in the provinces of Badakhshan, Dykundi and Kabul. The affected districts show a declining trend in affected districts from 7 (2019) to 1 (2022). In contrast, 2021 had the highest fatalities (16) and the highest number of injuries (11).

5.1.2 Earthquakes

Earthquakes have the most devastating impact of injury, considering the low number of affected districts (10). Compared to other natural hazards, earthquakes show unpredictable trends, with a mild episode in 2019, no events in 2020 and 2021, and a destructive impact in 2022, counting for most people injured and the second-highest number of deaths. In this study, a total of 15.346 families were affected by earthquakes in Afghanistan, mostly in 2022 (15.345) and slightly less in 2019 (1). Earthquakes occur less in frequency. Nevertheless, they have a high impact when they do occur. The total reported fatalities (382) and people injured (1.300) all happened in 2022. Earthquakes affected 10 districts, mostly in the province of Kabul.

5.1.3 Flood/flash floods

Floods appear to be the most frequent event with respect to other natural hazards. They affect the highest number of families and districts. A total of 70702 families were affected by floods, of which more than half occurred in 2019 (39595) and considerably less in 2022 (15764), and 2020 (11244) and 2021 (4099). The event flood affected 1.079 districts, mostly in the province of Kabul. Floods resulted in the highest reported deaths (652) from all natural hazards.

5.1.4 Heavy snowfalls

Heavy snowfalls occur least frequently and affect fewer districts and families than other natural hazards. A total of 8855 families were affected by heavy snowfalls in Afghanistan, mostly in 2019 (4530) and 2020 (4123) and considerably less in 2022 (202). The reported data shows that 2021 had no event of heavy snowfall, which indicates seasonal trends which vary per year. Heavy snowfalls occur predominantly in the province of Badakhshan. Heavy snowfalls affected 91 districts in total, predominantly in 2019 (47) and 2020 (40), while considerably less in 2022 (4) and no events in 2021.

5.1.5 Landslides/mudflows

From the reported data in the considered periods, it becomes apparent that the event of landslide/mudflow is one of the natural hazards that occurs least frequently and affects fewer districts and families. A total of 841 families were affected by landslides/mudflows in Afghanistan, mostly in 2020 (790) and considerably less in 2022 (27) and 2021 (23) and 2019 (1). Landslides affected the second least districts (13) after earthquakes (10), mainly in Badakhshan, Daykundi, Ghor, and Bamyan provinces.

5.2 Associations between the utilisation maternal and pediatric health services and natural hazards

This section compares natural hazards and the utilisation of maternal and pediatric health services in time regression. The primary focus is the examination of the impact of natural hazards on maternal and pediatric health services during the month of the event, and in the immediate two months following the occurrence. In maternal health services, the health services encompass antenatal care, postnatal care, facility delivery, tetanus toxoid 2 vaccination and caesarean section. Pediatric health services entail pentavalent vaccination, growth monitoring and child morbidities services. The data points for antenatal services (ANC), prenatal service (PNC), facility delivery services (Del), caesarean sections (CS), growth monitoring (GM) and under-5 morbidities (U5) were individually taken into consideration. The model accounts for preventing potential biases caused by seasonality, the COVID-19 pandemic, and the take-over by the Taliban during the study period. For more detailed information, see the section statistics in the methods. For additional comprehensive results, see appendix B.

5.2.1 Time trend of maternal and pediatric health services
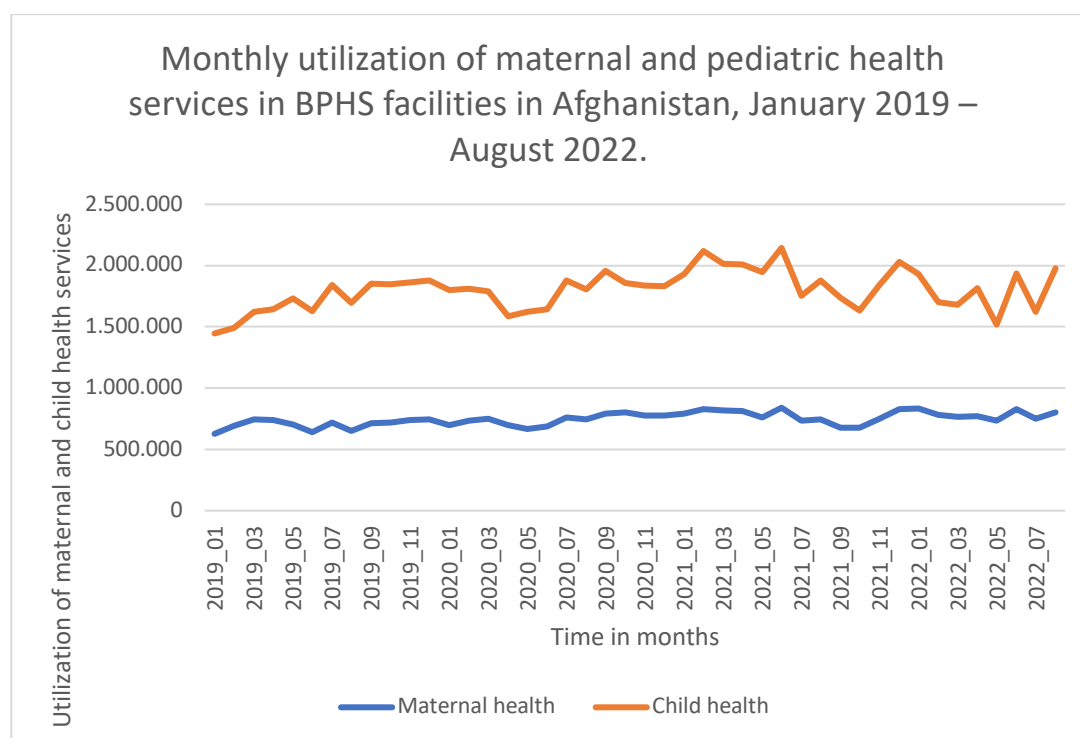
Figure 2 Monthly utilisation of maternal and pediatric health services in BPHS facilities in Afghanistan, January 2019 – August 2022.

Figure 2 shows the monthly trend in the utilisation of maternal and pediatric health services from January 2019 until August 2022, while there was a data gap in reported natural hazards between September and December 2021. Table 2 shows the time trend of maternal and pediatric health

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utilisation over time, without the disruption of the event of natural hazard. The time trends show the monthly increase or decrease in utilisation compared to the original time trend for the utilisation of maternal and pediatric health services. In this section, the Incidence Rate Ratio IRR establishes the interpretation of the time trend. The presented time trend is not yet correct by other variables or the logarithms distribution of the outcome's variables.

In summary, the time trend of the utilisation of maternal and pediatric health services shows a significant increase each month. Table 2 shows that utilisation of maternal healthcare services shows a slight significant increase with 5.91 (IRR: 5.91, 95%CI: $5.41 - 6.41$), pval<0.000) compared to the original trend. Table 2 shows that utilisation of pediatric healthcare services shows a slight significant increase with 10.71 (IRR: 10.71, 95%CI: $8.84 - 11.50$), pval<0.000) compared to the original trend. However, this study aims to evaluate the impact in the month of the event and the first and second months thereafter. For those interested, the time trends of the natural hazards in the corrected model of maternal and pediatric health services are provided in tables 3-12 per natural hazard.

Table 2 Preliminary results for time trends of maternal healthcare services (MAT) (antenatal care, postnatal care, tetanus toxoid 2 vaccination, delivery, and caesarean section), and pediatric healthcare services (PED) (growth monitoring, pentavalent vaccination, and under-5 morbidities). *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR MAT	CI MAT	IRR PED	CI PED
Basic time trend				
Intercept	1688.12***	[1537.08 − 1839.15]	4160.97***	[3838.21 − 4483.73]
Time trend (month)	5.91***	[5.41 − 6.41]	10.17***	[8.84 − 11.50]

5.2.2 Avalanche

Maternal health services

In summary, avalanches do not appear to disrupt maternal health services significantly.

Table 3 shows a decrease in the utilisation of maternal healthcare services in the month of an avalanche (IRR: 0.94, 95%CI: $0.82 - 1.07$). The decline in utilisation of maternal care services persisted in the month after the avalanche with a 5% decrease (IRR: 0.95, 95%CI: $0.83 - 1.08$) and in the two months following an avalanche with a 3% decrease (IRR: 0.97, 95%CI: $0.85 - 1.10$). However, these disruptions in health services were insignificant. The health services antenatal care, postnatal care, and caesarean section appear not to be significantly disrupted following an avalanche in the month of events as well as the two months following. In facility delivery services, no significant disruptions in the month of the event were reported (IRR: 1.15, 95%CI: $0.98 - 1.34$) as well as in the first month after the event (IRR: 0.99, 95%CI: $0.85 - 1.15$), while facility delivery services happen to disrupt in the two months following an avalanche significantly (IRR: 0.82, 95%CI: $0.70 - 0.95$), pval<0.05). This result

indicates that delivery services were significantly disrupted, with an 18% decrease in reported facility deliveries two months after an avalanche.

Table 3 Preliminary results for maternal healthcare services (MAT) and maternal health indicators: antenatal care (ANC), postnatal care (PNC), delivery (Del), and caesarean section (CS) for the natural hazard avalanche. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR MAT	CI MAT	IRR ANC	CI ANC	IRR CS	CI CS
Avalanche						
Intercept	1159.03***	[1074.28 - 1250.47]	383.90***	[356.33 - 413.59]	3.73***	[3.16 - 4.40]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.03]
Occurrence of events *No event (ref.)*						
Month of event	0.94	[0.82 - 1.07]	1.00	[0.87 - 1.15]	1.87	[0.97 - 3.61]
One month after event	0.95	[0.83 - 1.08]	0.95	[0.83 - 1.09]	0.73	[0.41 - 1.30]
Two months after event	0.97	[0.85 - 1.10]	0.95	[0.83 - 1.09]	1.04	[0.58 - 1.86]

Variable	IRR PNC	CI PNC	IRR Del	CI Del
Avalanche				
Intercept	198.80***	[183.69 - 215.16]	66.51***	[60.55 - 73.05]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
Occurrence of events *No event (ref.)*				
Month of event	1.00	[0.86 - 1.17]	1.15	[0.98 - 1.34]
One month after event	0.99	[0.85 - 1.15]	0.99	[0.85 - 1.15]
Two months after event	0.92	[0.79 - 1.07]	0.82*	[0.70 - 0.95]

<u>Pediatric health services</u>

Overall, we do not see a significant effect of avalanches on the utilisation of pediatric health services. Table 4 shows that we found a slight yet insignificant decrease of 3% in the utilisation of pediatric healthcare services in the month of an avalanche (IRR: 0.97, 95%CI: 0.84 – 1.12). The pediatric healthcare services continued to decrease in the month after the avalanche with an insignificant decrease of 8% (IRR: 0.92, 95%CI: 0.80 – 1.06). Following a 12% insignificant decrease in the two months following an avalanche (IRR: 0.88, 95%CI: 0.76 – 1.01). In growth monitoring, an insignificant disruption in the month of an avalanche indicates a decrease of 14% (IRR: 0.86, 95%CI: 0.68 – 1.09). Following a significantly steeper decrease in the month after the avalanche (IRR: 0.77, 95%CI: 0.61 – 0.97), pval<0.05), this suggests that growth monitoring services significantly disrupt with a 23% decrease following an avalanche. In the second month after growth monitoring services decreased insignificantly by 16% (IRR: 0.84, 95%CI: 0.67– 1.05). In child morbidity services, we found no significant disruptions.

Table 4 Preliminary results for pediatric health services (PED), and pediatric health indicators: grow monitoring (GM), and child morbidity services (U5) for the natural hazard avalanche. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR PED	CI PED	IRR GM	CI GM	IRR U5	CI U5
Avalanche						
Intercept	2797.44***	[2605.28 - 3003.77]	533.88***	[493.86 - 577.14]	2033.14***	[1891.68 - 2185.18]
Time trend (month)	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]
Occurrence of events						
No event (ref.)						
Month of event	0.97	[0.84 - 1.12]	0.86	[0.68 - 1.09]	0.96	[0.83 - 1.12]
One month after event	0.92	[0.80 - 1.06]	0.77*	[0.61 - 0.97]	0.92	[0.80 - 1.07]
Two months after event	0.88	[0.76 - 1.01]	0.84	[0.67 - 1.05]	0.87	[0.75 - 1.01]

5.2.3   Earthquake

<u>Maternal health services</u>

The results indicate that earthquakes do not significantly disrupt maternal health services. Table 5 reports an insignificant increase of 26% in maternal healthcare utilisation in the month of the event (IRR: 1.26, 95%CI: 0.95 – 1.66). This insignificant increase persisted in the first month following with a 20% increase (IRR: 1.20, 95%CI: 0.74 – 1.94). In the second month after the event maternal health services increased by 3% (IRR: 1.03, 95%CI: 0.64 – 1.67). In antenatal care utilisation, we found a steep increase during the months of an earthquake (IRR: 1.42, 95%CI: 1.06 – 1.90), pval<0.05). This suggests a significant disruption in antenatal care services with 42% in the month of an earthquake. In the month following an earthquake, an insignificant increase of 33% was reported (IRR: 1.33, 95%CI: 0.80 – 2.21) as well as in the second month after an earthquake, we reported a 12% increase (IRR: 1.12, 95%CI: 0.68 – 1.86). Furthermore, we found an increase in the number of reported facility deliveries in the month of an earthquake (IRR: 1.51, 95%CI: 1.09 – 2.08), pval<0.05). This suggests a steep significant increase of 51%. Following one month after the event with a 37% insignificant increase in utilisation (IRR: 1.37, 95%CI: 0.78 – 2.39), while the facility delivery services reported a 2% insignificant decrease two months after the event (IRR: 0.98, 95%CI: 0.56 – 1.72).

Table 5 Preliminary results for maternal healthcare services (MAT), and maternal health indicators: antenatal care (ANC), postnatal care (PNC), facility delivery (Del), and caesarean section (CS) for the natural hazard earthquake. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR MAT	CI MAT	IRR ANC	CI ANC	IRR CS	CI CS
Earthquake						
Intercept	1158.37***	[1073.40 - 1250.06]	383.78***	[356.11 - 413.60]	3.73***	[3.16 - 4.40]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.03]
Occurrence of events *No event (ref.)*						
Month of event	1.26	[0.95 - 1.66]	1.42*	[1.06 - 1.90]	#N/A	#N/A
One month after event	1.20	[0.74 - 1.94]	1.33	[0.80 - 2.21]	#N/A	#N/A
Two months after event	1.03	[0.64 - 1.67]	1.12	[0.68 - 1.86]	#N/A	#N/A

Variable	IRR PNC	CI PNC	IRR Del	CI Del
Earthquake				
Intercept	198.77***	[183.58 - 215.21]	66.53***	[60.51 - 73.16]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
Occurrence of events *No event (ref.)*				
Month of event	1.32	[0.96 - 1.81]	1.51*	[1.09 - 2.08]
One month after event	1.41	[0.81 - 2.46]	1.37	[0.78 - 2.39]
Two months after event	1.11	[0.64 - 1.93]	0.98	[0.56 - 1.72]

Pediatric health services

In conclusion, pediatric healthcare services appear not to be significantly affected following an earthquake. Table 6 shows that we found a slight not yet significant increase in the utilisation of pediatric healthcare services in the month of an earthquake (IRR: 1.01, 95%CI: 0.75 − 1.36). An insignificant increase of 13% (IRR: 1.13, 95%CI: 0.68 − 1.90) in the month after the earthquake was reported. Following a 9% insignificant increase two months after an earthquake (IRR: 1.09, 95%CI: 0.65 − 1.82). The health services growth monitoring and child morbidity reported no significant disruptions following an earthquake.

Table 6 Preliminary results for pediatric healthcare services (PED), and pediatric health indicators: growth monitoring (GM), and child morbidity services (U5) for the natural hazard earthquake. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR PED	CI PED	IRR GM	CI GM	IRR U5	CI U5
Earthquake						
Intercept	2796.27***	[2603.03 - 3003.85]	533.04***	[492.75 - 576.62]	2032.36***	[1890.26 - 2185.15]
Time trend (month)	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]
Occurrence of events *No event (ref.)*						
Month of event	1.01	[0.75 - 1.36]	1.27	[0.78 - 2.06]	0.92	[0.67 - 1.27]
One month after event	1.13	[0.68 - 1.90]	1.25	[0.54 - 2.88]	1.12	[0.64 - 1.93]
Two months after event	1.09	[0.65 - 1.82]	1.12	[0.48 - 2.57]	1.11	[0.64 - 1.91]

5.2.4 Flood/flash flood

Maternal health services

In summary, flash floods do not appear to disrupt maternal health services significantly. Table 7 shows that maternal health services remain stationary, not significant in the month of a flood (IRR: 1.00, 95%CI: 0.98 – 1.02). Following a very slight, not yet significant decrease in the month after the flood with a 1% decrease (IRR: 0.99, 95%CI: 0.97 – 1.02), and a 2% decrease in the two months following a flood (IRR: 0.98, 95%CI: 0.96 – 1.00). In the health services, caesarean section, postnatal care, and facility delivery care no disruptions were reported. In antenatal care, we found no significant disruptions in the month (IRR: 1.00, 95%CI: 0.98 – 1.02), which indicates that health services remain stationary. The following month shows an insignificant decrease of 1% (IRR: 0.99, 95%CI: 0.96 – 1.01), while two months following a flood show a significant reduction in utilisation (IRR: 0.96, 95%CI: 0.94 – 0.98), pval<0.001). This suggests that antenatal care services decreased significantly with 4% in the second month after a flood.

Table 7 Preliminary results for maternal healthcare services (MAT) and maternal health indicators Antenatal care (ANC), postnatal care (PNC), delivery (Del), and caesarean section (CS) for the natural hazard (flash)flood. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR MAT	CI MAT	IRR ANC	CI ANC	IRR CS	CI CS
Flood/flash flood						
Intercept	1161.29***	[1077.06 - 1252.12]	385.96***	[358.31 - 415.74]	3.71***	[3.15 - 4.37]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.03***	[1.02 - 1.03]
Occurrence of events No event (ref.)						
Month of event	1.00	[0.98 - 1.02]	1.00	[0.98 - 1.02]	0.97	[0.88 - 1.07]
One month after event	0.99	[0.97 - 1.02]	0.99	[0.96 - 1.01]	1.09	[0.98 - 1.21]
Two months after event	0.98	[0.96 - 1.00]	0.96***	[0.94 - 0.98]	1.00	[0.91 - 1.11]

Variable	IRR PNC	CI PNC	IRR Del	CI Del
Flood/flash flood				
Intercept	198.87***	[183.77 - 215.22]	66.62***	[60.58 - 73.25]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
Occurrence of events No event (ref.)				
Month of event	1.00	[0.98 - 1.02]	1.01	[0.98 - 1.03]
One month after event	1.00	[0.97 - 1.02]	0.99	[0.97 - 1.02]
Two months after event	1.00	[0.97 - 1.02]	0.99	[0.97 - 1.01]

Pediatric health services

In summary, we do not see a significant effect of floods on the utilisation of pediatric health services. Table 8 shows that we found a stationary not significant disruption in the utilisation of pediatric healthcare services in the month of a flood (IRR: 1.00, 95%CI: 0.98 – 1.03). Following a very slight not yet significant increase of 2% (IRR: 1.02, 95%CI: 0.99 – 1.04) in the month after the flood. Two months after the event, a very slight non-significant increase of 1% was reported (IRR: 1.01, 95%CI: 0.98 –

1.03). Growth monitoring service appears to be significantly affected in the month of the event with a 5% increase (IRR: 1.05, 95%CI: 1.02 – 1.09), pval<0.01) as well as one month following the event (IRR: 1.05, 95%CI: 1.01 – 1.09), pval<0.05). Growth monitoring services appear to be not significantly disrupted in utilisation (IRR: 1.01, 95%CI: 0.97 – 1.04) in the second month following the event. Therefore, the health services for child morbidity found no significant disruption.

Table 8 Preliminary results for pediatric healthcare services (PED) and pediatric health indicators grow monitoring (GM) and child morbidity services (U5) for the natural hazard (flash)flood. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR PED	CI PED	IRR GM	CI GM	IRR U5	CI U5
Flood/flash flood						
Intercept	2789.89***	[2602.42 - 2990.86]	528.99***	[489.29 - 571.90]	2027.51***	[1890.50 - 2174.44]
Time trend (month)	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]
Occurrence of events						
No event (ref.)						
Month of event	1.00	[0.98 - 1.03]	1.05**	[1.02 - 1.09]	1.00	[0.97 - 1.02]
One month after event	1.02	[0.99 - 1.04]	1.05*	[1.01 - 1.09]	1.02	[0.99 - 1.05]
Two months after event	1.01	[0.98 - 1.03]	1.01	[0.97 - 1.04]	1.01	[0.98 - 1.03]

5.2.5 Heavy snowfall

<u>Maternal health services</u>

Altogether, heavy snowfalls do not significantly disrupt maternal health services.

Table 9 shows that maternal health services did not significantly decrease in the month of heavy snowfall (IRR: 0.95, 95%CI: 0.91 – 1.01). Following a very slight yet not significant decrease in the month after the flash flood with a 3% decrease (IRR: 0.97, 95%CI: 0.92 – 1.03). The decline in utilisation persisted in the two months after the heavy snowfalls with a 2% decrease (IRR: 0.98, 95%CI: 0.93 – 1.04). In antenatal care, we found a significant reduction during the month of heavy snowfall (IRR: 0.93, 95%CI: 0.88 – 0.98), pval<0.01). This indicates a significant disruption in antenatal care services with a 7% decrease in the month of heavy snowfalls. Following an insignificant decrease of 6% in the first month after the event (IRR: 0.94, 95%CI: 0.89 – 1.00), and an insignificant decrease of 1% two months after the event (IRR: 0.99, 95%CI: 0.93 – 1.05). No significant disruption in utilisation was found for the health services postnatal care, facility delivery, and caesarean section.

Table 9 Preliminary results for maternal healthcare services (MAT) and maternal health indicators Antenatal care (ANC), postnatal care (PNC), delivery (Del), and caesarean section (CS) for the natural hazard heavy snowfall. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR MAT	CI MAT	IRR ANC	CI ANC	IRR CS	CI CS
Heavy snowfall						
Intercept	1159.79***	[1074.88 - 1251.40]	384.54***	[356.79 - 414.45]	3.73***	[3.16 - 4.41]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.03]
Occurrence of events						
No event (ref.)						
Month of event	0.95	[0.91 - 1.01]	0.93**	[0.88 - 0.98]	0.91	[0.71 - 1.16]
One month after event	0.97	[0.92 - 1.03]	0.94	[0.89 - 1.00]	1.11	[0.84 - 1.46]
Two months after event	0.98	[0.93 - 1.04]	0.99	[0.93 - 1.05]	0.94	[0.72 - 1.23]

Variable	IRR PNC	CI PNC	IRR Del	CI Del
Heavy snowfall				
Intercept	198.88***	[183.67 - 215.35]	66.56***	[60.54 - 73.17]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
Occurrence of events				
No event (ref.)				
Month of event	0.99	[0.93 - 1.05]	0.98	[0.92 - 1.04]
One month after event	0.96	[0.89 - 1.02]	1.00	[0.94 - 1.07]
Two months after event	1.02	[0.95 - 1.09]	1.03	[0.96 - 1.10]

Pediatric health services

In summary, heavy snowfalls do not appear to disrupt pediatric health utilisation significantly. Table 10 shows that we found no significant decrease in the utilisation of pediatric healthcare services in the month of heavy snowfall (IRR: 0.97, 95%CI: 0.91 – 1.02) and in the month following (IRR: 0.97, 95%CI: 0.91 – 1.03). This indicates a non-significant decrease in pediatric health utilisation of 3% in the month of the event and the first month following. In the two months following a heavy snowfall, no significant effects were reported in pediatric health services (IRR: 1.00, 95%CI: 0.94 – 1.07).

In growth monitoring health service, a non-significant decrease of 7% was reported in the month of the event (IRR: 0.93, 95%CI: 0.85 – 1.03), while the month following was significantly disrupted (IRR: 0.90, 95%CI: 0.81 – 1.00), pval <0.05. This indicates a significant decrease in growth monitoring services by 10%. Two months following the event a 4% insignificant increase was reported following the heavy snowfall (IRR: 1.04, 95%CI: 0.94 – 1.15). The child morbidity services did not suggest a significant disruption of services.

Table 10 Preliminary results for pediatric healthcare services (PED), and pediatric health indicators grow monitoring (GM), and child morbidity services (U5) for the natural hazard heavy snowfall. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR PED	CI PED	IRR GM	CI GM	IRR U5	CI U5
Heavy snowfall						
Intercept	2798.43***	[2604.78 - 3006.48]	534.04***	[493.74 - 577.63]	2032.69***	[1890.24 - 2185.87]
Time trend (month)	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]
Occurrence of events						
No event (ref.)						
Month of event	0.97	[0.91 - 1.02]	0.93	[0.85 - 1.03]	0.99	[0.93 - 1.05]
One month after event	0.97	[0.91 - 1.03]	0.90*	[0.81 - 1.00]	0.98	[0.92 - 1.04]
Two months after event	1.00	[0.94 - 1.07]	1.04	[0.94 - 1.15]	1.03	[0.96 - 1.10]

5.2.6 Landslide/mudflow

<u>Maternal health services</u>

In summary, landslides/mudflows do not appear to disrupt maternal health services significantly. Table 11 shows that maternal health services found no significant decrease of 11% in the month of a landslide/mudflow (IRR: 0.89, 95%CI: 0.77 – 1.03). The decrease in utilisation of maternal care services persisted in the month after the landslide/mudflow (IRR: 0.95, 95%CI: 0.81 – 1.10) and two months after the landslide/mudflow (IRR: 0.95, 95%CI: 0.82 – 1.11). This indicates a 5% decrease in pediatric health utilisation in the first and second months after the event. No significant disruptions were reported for the healthcare services antenatal care, postnatal care, facility delivery, and caesarean section.

Table 11 Preliminary results for maternal healthcare services (MAT) and maternal health indicators Antenatal care (ANC), postnatal care (PNC), delivery (Del), and caesarean section (CS) for the natural hazard landslide/mudflow. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR MAT	CI MAT	IRR ANC	CI ANC	IRR CS	CI CS
Landslide/mudflow						
Intercept	1158.69***	[1073.44 - 1250.71]	383.89***	[356.12 - 413.82]	3.73***	[3.16 - 4.41]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.03]
Occurrence of events						
No event (ref.)						
Month of event	0.89	[0.77 - 1.03]	0.93	[0.79 - 1.08]	1.01	[0.64 - 1.61]
One month after event	0.95	[0.81 - 1.10]	0.94	[0.80 - 1.10]	0.93	[0.56 - 1.54]
Two months after event	0.95	[0.82 - 1.11]	1.02	[0.86 - 1.19]	0.88	[0.53 - 1.46]

Variable	IRR PNC	CI PNC	IRR Del	CI Del
Landslide/mudflow				
Intercept	198.82***	[183.57 - 215.33]	66.56***	[60.52 - 73.19]
Time trend (month)	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
Occurrence of events				
No event (ref.)				
Month of event	0.93	[0.79 - 1.10]	0.88	[0.74 - 1.05]
One month after event	0.94	[0.78 - 1.11]	0.94	[0.78 - 1.13]
Two months after event	0.98	[0.82 - 1.17]	0.95	[0.78 - 1.14]

Pediatric health services

Altogether, landslides/mudflows do not significantly disrupt pediatric health utilisation in the month of the event and the first month after the event. However, table 12 shows a slight significant decrease in the utilisation of pediatric healthcare services in the month of a landslide/mudflow (IRR: 0.84, 95%CI: 0.72 – 0.98), pval<0.05) and in the month after (IRR: 0.84, 95%CI: 0.71 – 0.98), pval<0.05). This suggests that pediatric health services were significantly disrupted with a 16% decrease in utilisation in the month of event and the first month following. Two months after the event a non-significant increase of 2% was reported (IRR: 1.02, 95%CI: 0.86 – 1.20). In the service growth monitoring no significant differences were reported, while child morbidities service appears to disrupt in the month of a landslide/mudflow significantly (IRR: 0.83, 95%CI: 0.71 – 0.98), pval <0.05). This indicates a significant decrease in growth monitoring services with 17% in the month of the event. One month after the event the utilisation of growth monitoring decreased insignificantly with 13% (IRR: 0.87, 95%CI: 0.73 – 1.04). Following a 5% insignificant increase two months after the event (IRR: 1.05, 95%CI: 0.88 – 1.25).

Table 12 Preliminary results for pediatric healthcare services (PED) and pediatric health indicators grow monitoring (GM), and child morbidity services (U5) for the natural hazard landslide/mudflow. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	IRR PED	CI PED	IRR GM	CI GM	IRR U5	CI U5
Landslide/mudflow						
Intercept	2797.13***	[2603.50 - 3005.16]	533.26***	[492.90 - 576.92]	2032.85***	[1890.47 - 2185.95]
Time trend (month)	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]
Occurrence of events						
No event (ref.)						
Month of event	0.84*	[0.72 - 0.98]	0.89	[0.69 - 1.14]	0.83*	[0.71 - 0.98]
One month after event	0.84*	[0.71 - 0.98]	0.80	[0.61 - 1.04]	0.87	[0.73 - 1.04]
Two months after event	1.02	[0.86 - 1.20]	0.99	[0.76 - 1.29]	1.05	[0.88 - 1.25]

5.3 Influence of natural hazards at a province specific level for most frequent areas

This section outlines the analysis of natural hazards at a province specific level. The selection of provinces prone to natural hazards is based on the natural disaster risk profile of Afghanistan provided by the World Bank. This profile scopes the population living in provinces prone to hazards. The analysis was conducted of the provinces affected by natural hazards to the extent of availability of these data in the dataset. In this section, the natural hazard of heavy snowfall was excluded from the analysis because the disaster risk profile did not entail these natural hazards and its prevalence was relatively low in this sample. The province-specific analysis includes maternal healthcare that encompass antenatal care, postnatal care, facility delivery, tetanus toxoid 2 vaccination and caesarean sections, and pediatric health services that encompass pentavalent vaccination, growth monitoring, and child morbidities services. The model was formulated to account for seasonality, the COVID-19 pandemic,

and the take-over by the Taliban, aiming to prevent potential biases caused by these events during the study period. For more detailed information, see the section statistics in the methods. Additional comprehensive results, see appendix A.

5.3.1   Avalanches

The disastrous risk provinces Daykundi, Kabul and Badakhshan were taken into consideration on the scale of 350.000 people living in hazardous areas per province. Following the provinces Bamyan, Baghlan, Panjsher, Nuristan (Nooristan), Kunar and Charikar with 150.000 people living in areas prone to avalanches estimated per province. In the sample taken, the event of avalanche occurred in the provinces of Badakhshan, Daykundi, Panjsher and Ghor.

<u>Maternal health services</u>

In summary, maternal health services appear not to be significantly disrupted following an avalanche. In the province of Panjsher, table 13 reported an insignificant increase of 2% in maternal health services in the month of the event (IRR: 1.02, 95%CI: 0.64 – 1.62). Avalanches appear to disrupt maternal health services in the first month in the province Panjsher (IRR: 0.63, 95%CI: 0.39 – 1.00), pval <0.05). This indicates a steep significant decrease of 37% in maternal health utilisation one month after the event, while the second month following an avalanche reported no significant disruption (IRR: 1.09, 95%CI: 0.68 – 1.72). This indicates for 9% insignificant increase two months after the event. Table 13 shows a significant decrease in maternal health utilisation in the province Badakhshan. For maternal health, we found a significant reduction of 14% in the month of an avalanche (IRR: 0.86, 95%CI: 0.74 – 1.00), pval<0.05), following a non-significant decrease in the month after the event (IRR: 0.93, 95%CI: 0.80 – 1.08), suggests a 7% decrease in maternal health utilisation. The decrease in utilisation of maternal health persisted in the second month after the avalanche with a 15% significant decrease (IRR: 0.85, 95%CI: 0.73 – 0.99), pval<0.05). The provinces Ghor and Dykundi appears not to disrupt maternal health services significanly.

<u>Pediatric health services</u>

Altogether, pediatric health services appear not to be significantly disrupted following an avalanche. Table 13 shows that pediatric health services appear not to be disrupted in the provinces of Panjsher, Ghor and Dykundi. In the province of Badakhshan, a steeper significant decrease of 19% in the month of an avalanche was found (IRR: 0.81, 95%CI: 0.68 – 0.96), pval<0.05). The decrease in pediatric health utilisation persisted significantly with a 23% decrease one month after the avalanche (IRR: 0.77, 95%CI: 0.65 – 0.92), pval<0.01). Following a significant decline of 22% in the second month following the avalanche (IRR: 0.78, 95%CI: 0.66 – 0.94), pval<0.01).

Table 13 Preliminary results of maternal health (MAT) and pediatric health (PED) services for the natural hazard avalanche province specific. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	Province	IRR MAT	CI MAT	IRR PED	CI PED
Avalanche					
Intercept	Panjsher	373.05***	[278.89 - 499.01]	721.52***	[553.42 - 940.68]
Time trend (month)	Panjsher	1.00	[1.00 - 1.01]	1.01**	[1.00 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Panjsher	1.02	[0.64 - 1.62]	1.29	[0.78 - 2.12]
One month after event	Panjsher	0.63*	[0.39 - 1.00]	0.86	[0.52 - 1.42]
Two months after event	Panjsher	1.09	[0.68 - 1.72]	1.05	[0.64 - 1.72]
Avalanche					
Intercept	Ghor	1501.19***	[1181.07 - 1908.09]	4370.63***	[3388.49 - 5637.45]
Time trend (month)	Ghor	1.00	[1.00 - 1.00]	1.01**	[1.00 - 1.01]
Occurrence of events					
No event (ref.)					
Month of event	Ghor	1.00	[0.77 - 1.31]	1.31	[0.96 - 1.78]
One month after event	Ghor	0.79	[0.60 - 1.03]	1.18	[0.87 - 1.60]
Two months after event	Ghor	1.04	[0.79 - 1.35]	1.02	[0.75 - 1.39]
Avalanche					
Intercept	Dykundi	1125.04***	[863.33 - 1466.09]	2172.83***	[1643.67 - 2872.35]
Time trend (month)	Dykundi	1.00*	[0.99 - 1.00]	1.01***	[1.00 - 1.01]
Occurrence of events					
No event (ref.)					
Month of event	Dykundi	1.03	[0.89 - 1.19]	1.05	[0.90 - 1.22]
One month after event	Dykundi	1.07	[0.94 - 1.21]	1.02	[0.89 - 1.17]
Two months after event	Dykundi	1.03	[0.90 - 1.17]	0.89	[0.78 - 1.02]
Avalanche					
Intercept	Badakhshan	759.45***	[606.39 - 951.15]	1529.25***	[1208.05 - 1935.85]
Time trend (month)	Badakhshan	1.01***	[1.00 - 1.01]	1.01***	[1.01 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Badakhshan	0.86*	[0.74 - 1.00]	0.81*	[0.68 - 0.96]
One month after event	Badakhshan	0.93	[0.80 - 1.08]	0.77**	[0.65 - 0.92]
Two months after event	Badakhshan	0.85*	[0.73 - 0.99]	0.78**	[0.66 - 0.94]

5.3.2 Earthquakes

The disaster risk area prone to earthquakes was considered the province Kabul, measured on the scale of 4.500.000 people living in hazardous areas per province. Following with 1.500.000 people living in the provinces Balkh, Kandahar, Ghazni and Nangarhar prone to natural hazards estimated per province. In the sample taken, the event of earthquake was reported in the province of Nangarhar.

Maternal health services

In summary, we found no significant disruptions following an earthquake in maternal health utilisation on a provincial level. The available data allows us to analyse the province of Nangarhar, while Kabul reported the highest prevalence of earthquakes. Table 14 reports the maternal health services which appear not to be significantly disrupted in the province of Nangarhar.

Pediatric health services

In conclusion, we found no significant disruptions following an earthquake in pediatric health utilisation on a provincial level. The available data allows us to analyse the province of Nangarhar, while Kabul reported the highest prevalence of earthquakes. Table 14 reports the pediatric health services which appear not to be significantly disrupted in the province of Nangarhar.

Table 14 Preliminary results of maternal health (MAT) and pediatric health (PED) services for the natural hazard earthquake province specific. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	Province	IRR MAT	CI MAT	IRR PED	CI PED
Earthquake					
Intercept	Nangarhar	2297.96***	[1712.02 - 3084.43]	4167.09***	[3198.83 - 5428.43]
Time trend (month)	Nangarhar	1.01***	[1.01 - 1.02]	1.03***	[1.02 - 1.03]
Occurrence of events					
No event (ref.)					
Month of event	Nangarhar	1.01	[0.71 - 1.46]	1.02	[0.63 - 1.63]
One month after event	Nangarhar	1.21	[0.84 - 1.73]	1.07	[0.67 - 1.71]
Two months after event	Nangarhar	1.08	[0.75 - 1.55]	1.07	[0.67 - 1.71]

8.3.3 Floods/flash floods

The provinces highly prone to flash floods and floods were taken into consideration. The province Kabul is prone to floods estimated per province on a scale of 200.000 people living in hazardous regions. The provinces Hirat, Kunar, and Nangarhar estimated 65.000 people living in risk zones measured per province. In this study, floods were reported in the provinces of Nangarhar, Kunar, Hirat, and Kabul.

Maternal health services

In summary, maternal health services were not significantly disrupted in the provinces prone to floods. Table 15 shows a significant decrease in the province Nangarhar in the month of the event for maternal health services (IRR: 0.91, 95% CI: 0.87 – 0.95), p<0.001). This suggests a 9% significant decrease in maternal health utilisation in the month of the event. Following an insignificant reduction of 2% in the first and second month following (IRR: 0.98, 95% CI: 0.93 – 1.03). Furthermore, in the province Kunar a non-significant increase of 6% was reported in the month of a flood (IRR: 1.06, 95% CI: 1.00 – 1.11). The province Kunar reported a significant disruption in maternal health utilisation in the first month following a flood (IRR: 1.07, 95% CI: 1.01 – 1.13), p<0.05). This indicates a 7% increase in maternal health utilisation. Following an insignificant increase of 1% two months after the event (IRR: 1.01, 95% CI: 0.96 – 1.07). The province of Hirat and Kabul reported no significant differences following a flood.

Altogether, pediatric health services were not significantly disrupted in the provinces highly prone to floods. Table 15 shows a significant decrease in the province of Nangarhar in the month of the event for pediatric health services (IRR: 0.91, 95% CI: 0.86 – 0.95), p<0.001). This suggests a 9% significant decrease in maternal health utilisation in the month of the event. In the first month following the event, the services decreased insignificantly by 1% (IRR: 0.91, 95% CI: 0.86 – 0.95). Following an insignificant increase of 5% two months after the event (IRR: 1.05, 95% CI: 0.98 – 1.12). The provinces Kunar and Hirat were not significantly disrupted after the floods.

In the province of Kabul, the month of the event appears to be not significantly disrupted pediatric health services with 5% increase (IRR: 1.05, 95% CI: 0.92 – 1.19). Pediatric health utilisation appears to significantly increase in the first month after the event (IRR: 1.20, 95% CI: 1.04 – 1.37), p<0.05). This indicates an increase in pediatric health utilisation with 20%. To continue with a significant increase in the second month after the flood (IRR: 1.15, 95% CI: 1.00 – 1.31), p<0.05), this suggests a 15% increase in the utilisation of pediatric healthcare services.

Table 15 Preliminary results of maternal health (MAT) and pediatric health (PED) services for the natural hazard flood province specific. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	Province	IRR MAT	CI MAT	IRR PED	CI PED
Flood/flash flood					
Intercept	Nangarhar	2320.73***	[1781.22 - 3023.64]	4148.37***	[3298.14 - 5217.77]
Time trend (month)	Nangarhar	1.01***	[1.01 - 1.02]	1.03***	[1.03 - 1.03]
Occurrence of events					
No event (ref.)					
Month of event	Nangarhar	0.91***	[0.87 - 0.95]	0.91**	[0.86 - 0.97]
One month after event	Nangarhar	0.98	[0.93 - 1.03]	0.99	[0.93 - 1.06]
Two months after event	Nangarhar	0.98	[0.93 - 1.03]	1.05	[0.98 - 1.12]
Flood/flash flood					
Intercept	Kunar	718.69***	[550.40 - 938.43]	2865.66***	[2224.41 - 3691.76]
Time trend (month)	Kunar	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Kunar	1.06	[1.00 - 1.11]	1.00	[0.96 - 1.04]
One month after event	Kunar	1.07*	[1.01 - 1.13]	1.00	[0.95 - 1.04]
Two months after event	Kunar	1.01	[0.96 - 1.07]	0.98	[0.94 - 1.02]
Flood/flash flood					
Intercept	Hirat	1736.03***	[1414.21 - 2131.09]	3284.73***	[2675.06 - 4033.36]
Time trend (month)	Hirat	1.02***	[1.02 - 1.03]	1.04***	[1.03 - 1.04]
Occurrence of events					
No event (ref.)					
Month of event	Hirat	0.97	[0.91 - 1.04]	0.94	[0.88 - 1.00]
One month after event	Hirat	1.02	[0.94 - 1.09]	1.00	[0.93 - 1.08]
Two months after event	Hirat	1.00	[0.93 - 1.07]	0.97	[0.91 - 1.05]
Flood/flash flood					
Intercept	Kabul	987.17***	[673.87 - 1446.12]	2602.03***	[1796.48 - 3768.80]
Time trend (month)	Kabul	1.01***	[1.00 - 1.02]	1.02***	[1.01 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Kabul	1.04	[0.89 - 1.21]	1.05	[0.92 - 1.19]
One month after event	Kabul	1.09	[0.93 - 1.27]	1.20*	[1.04 - 1.37]
Two months after event	Kabul	1.15	[0.98 - 1.34]	1.15*	[1.00 - 1.31]

5.3.3   Landslide/mudflow

The provinces highly prone to landslides/mudflows are Badakhshan, Daykundi, Ghor, and Bamyan with 200.000 people living in hazardous areas estimated per province. In the provinces Faryab, Baghlan, and Kabul 150.000 people are at risk of landslides/mudflows estimated per province. The provinces Baghlan, Kabul, Faryab, Bamyan, and Badakshan reported the event of a landslide/mudflow in the study.

Maternal health services

In summary, on a provincial-specific level landslides/mudflows appear not to disrupt maternal health services. The maternal health services reported no significant disruption in the provinces of Baghlan, Kabul, Faryab, Bamyan, and Badakshan.

Pediatric health services

Table 16 shows that the province of Baghlan reported no disruption in maternal health services following a landslide/mudflow. The province of Kabul reported a steep significant decrease in pediatric health utilisation in the month of the event (IRR: 0.58, 95% CI: 0.36 – 0.95), p<0.05). Continuing an insignificant decrease following a landslide/mudflow (IRR: 0.88, 95% CI: 0.54 – 1.44) suggests an insignificant decrease of 12% in pediatric health service one month after the event. Following an insignificant reduction in pediatric health services two months after the event (IRR: 0.93, 95% CI: 0.57 – 1.52) indicates an insignificant decrease of 7% in the second month after a landslide/mudflow. The provinces of Faryab and Bamyan reported no significant differences in pediatric health services. Furthermore, the province of Badakhshan reported a non-significant decrease of 30% in pediatric health utilisation in the month of events (IRR: 0.58, 95% CI: 0.36 – 0.95). However, a significant steep decrease in pediatric health was reported following the event (IRR: 0.61, 95% CI: 0.40 – 0.94), p<0.05). This suggests a significant decrease of 39% in pediatric health utilisation in the month following a landslide/mudflow. Following an insignificant increase of 2% two months after the event (IRR: 1.02, 95% CI: 0.66 – 1.58).

Table 16 Preliminary results of maternal health (MAT) and pediatric health (PED) services for the natural hazard landslide/mudflow province specific. *pval<0.05, **pval<0.01, ***pval<0.001.

Variable	Province	IRR MAT	CI MAT	IRR PED	CI PED
Landslide/mudflow					
Intercept	Baghlan	1314.47***	[902.84 - 1913.76]	2788.88***	[2007.67 - 3874.07]
Time trend (month)	Baghlan	1.00**	[1.00 - 1.01]	1.01***	[1.00 - 1.01]
Occurrence of events					
No event (ref.)					
Month of event	Baghlan	1.08	[0.82 - 1.43]	0.92	[0.69 - 1.23]
One month after event	Baghlan	1.18	[0.89 - 1.56]	0.99	[0.74 - 1.33]
Two months after event	Baghlan	1.07	[0.81 - 1.42]	0.97	[0.72 - 1.30]
Landslide/mudflow	Kabul	999.55***	[662.32 - 1508.48]	2643.44***	[1769.99 - 3947.91]
Intercept					
Time trend (month)	Kabul	1.01**	[1.00 - 1.02]	1.02***	[1.01 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Kabul	0.61	[0.35 - 1.06]	0.58*	[0.36 - 0.95]
One month after event	Kabul	0.67	[0.39 - 1.16]	0.88	[0.54 - 1.44]
Two months after event	Kabul	0.88	[0.50 - 1.52]	0.93	[0.57 - 1.52]
Landslide/mudflow					
Intercept	Faryab	1406.06***	[968.22 - 2041.88]	3242.65***	[2306.23 - 4559.30]
Time trend (month)	Faryab	1.01***	[1.00 - 1.01]	1.02***	[1.01 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Faryab	0.75	[0.53 - 1.05]	0.92	[0.60 - 1.39]
One month after event	Faryab	0.81	[0.58 - 1.14]	0.85	[0.56 - 1.30]
Two months after event	Faryab	0.89	[0.63 - 1.25]	0.95	[0.62 - 1.44]
Landslide/mudflow					
Intercept	Bamyan	1022.13***	[681.51 - 1532.98]	2246.47***	[1569.46 - 3215.51]
Time trend (month)	Bamyan	1.01***	[1.01 - 1.02]	1.03***	[1.02 - 1.03]
Occurrence of events					
No event (ref.)					
Month of event	Bamyan	0.90	[0.75 - 1.08]	0.88	[0.66 - 1.18]
One month after event	Bamyan	1.04	[0.87 - 1.25]	0.87	[0.65 - 1.16]
Two months after event	Bamyan	0.96	[0.80 - 1.16]	0.96	[0.72 - 1.29]
Landslide/mudflow					
Intercept	Badakhshan	753.06***	[596.83 - 950.18]	1508.39***	[1187.86 - 1915.41]
Time trend (month)	Badakhshan	1.01***	[1.00 - 1.01]	1.02***	[1.01 - 1.02]
Occurrence of events					
No event (ref.)					
Month of event	Badakhshan	0.87	[0.60 - 1.25]	0.70	[0.45 - 1.08]
One month after event	Badakhshan	0.87	[0.61 - 1.26]	0.61*	[0.40 - 0.94]
Two months after event	Badakhshan	0.90	[0.62 - 1.29]	1.02	[0.66 - 1.58]

6. Discussion

Based on log-linear trend analysis, this study assessed whether utilisation of maternal and pediatric healthcare services experienced disruptions following a natural hazard. The study considered the extent of disruption by the time frame in the month of the event as well as the first and second months following. Also, the type of natural hazard was considered, in which the following hazards were observed: avalanche, earthquake, flood, heavy snowfall and landslide/mudflow. The data was extracted from HMIS and the HDX. The study considered a period from January 2019 until Augustus 2021 and January 2022 until Augustus 2022. The statistical analysis was conducted at a district level and in specific provinces highly prone to natural hazards. The findings proved that not enough evidence exists that natural hazards are significantly associated with the change in utilisation of maternal and pediatric health services in the month of the natural hazard occurring or in the two months following.

The absence of statistical differences in the findings may be attributed to several factors. It is important to consider that not all natural hazards adhere to a regular occurrence pattern. This could affect how the effects are reported due to limited statistical power. We expected to find an association in both rural and urban areas when examining province-specific areas with high-risk populations. In urban areas, the high density of population is expected to be affected following a natural hazard. On the other hand, remote areas are less densely populated with populations living further away from the health facilities. These populations already encounter difficulties in accessing healthcare, which Is further impeded due to poverty and inadequate health facilities. (32) The challenges primarily arise from the high costs associated with transportation and medicine. Furthermore, sociocultural obstacles exist for women who are sometimes not allowed to seek healthcare without the permission of their husband or without being accompanied by a male. (14,32) In this context provided, it is important to consider that these results might be not directly linked to the occurrence of a natural hazard. Other unmeasured factors in this study could be influencing the lack of statistical differences observed. Consequently, there is a potential for a type 1 error in this context.

In the event of avalanche, the conducted analysis at district level and province-specific analysis shows no statistical association between maternal and pediatric health utilisation. This may be caused by low occurrence of the event of avalanche, which needs more statistical power. In the dataset, avalanches were not distinguished in severity of duration of the event. Based on a prior study conducted in India, snow avalanches are recognized as a disaster that impact the surrounding areas, while glacier avalanches were not found to cause disruptions in infrastructure, development projects and regular

activities of the local population. (33) However, there is some evidence of a decrease in health utilisation to the contrary. This study reported disruptions in facility delivery service and monitoring visits in the second month following the event. Also, the province of Badakhshan and Pansjher reported statistical differences in utilisation of maternal and pediatric health. The plausible explanation for these disruptions could be indicated by the combination of a longer period of cold weather with heavy snowfall which may indicate that health facilities have lower accessibility due to road blockages, especially in mountainous areas. Consequently, the intensity of avalanches can increase in colder seasons due to an increase in the thickness of the glaciers resulting in higher speeds and duration of ice and snow departing from higher altitudes. (33)

Earthquakes appear to not significantly disrupt maternal and pediatric health utilisation. In the study period, there were less districts affected (10), while the fatalities and people injured were high compared to those of other natural hazards. Due to the low amount of data observations no statistically relevant conclusions could be drawn for the impact of an earthquake. A previous study showed that an earthquake in 2007 in Peru resulted in a decline of 30% in health utilisation, measured amongst the households who needed medical attention. The foremost factor was the financial aspect that prevented the affected population from use of health services. (34) In contrast, in the month of the earthquake a significant steep increase of antenatal care and facility delivery services was significantly associated to the occurrence of the earthquake. As previous suggest that the main purpose of seeking health immediately following the earthquake, is to address injuries. (29,35) However, the antenatal care and facility delivery services are not directly related to injuries. The reported results are not necessarily the direct result of a natural hazard. This association could be caused by something else we do not measure. Potentially these statistical increases are a result of type 1 error A type 1 error.

Floods were the most frequent natural hazards in this study, yet no significant disruption was reported. However, the event of floods resulted in a significant increase in growth monitoring services in the month of the event and the first month after. This increase in the month of the event may indicate that floods can disproportionately affect vulnerable populations, including children and drowning occurs frequently in these events. (29) In the dataset, floods and flash floods were not distinguished. Therefore, the duration and intensity of these events are unknown. Floods due to rivers can last for days or even weeks, while flash floods due to short but heavy rainfalls, for example, might have a very sudden destructive impact. Therefore, the impact may vary in the type of flood. (29) Hence, the outcomes on a provincial-specific level vary in impact in every province. The province of

Nangahar, shows a significant decrease in the month of the event for both maternal and pediatric health services. In contrast, the province of Kunar shows an increase one month following the event in maternal health, and the province of Kabul show an increase in pediatric health services in the first and second month following the event.

As heavy snowfalls are interlinked with the indirect cause of avalanches, no significant differences were reported for heavy snowfall. It suggests maternal and pediatric health utilisation was not disrupted after the heavy snowfall. In the study, the duration of snowfall is not taken into account. In contrast, the antenatal care significantly decreased in the event month and the growth monitoring visits decreased significantly in the first month after the heavy snowfall. The weather conditions as well as the continuation of snowfall should be considered. The utilisation of maternal and pediatric health services could be much higher in rural areas. The heavy snowfalls further compound the access to healthcare services. Particularly due to lack of transport, the poor roads, and blockages in the wintertime. (32)

Altogether, landslides/mudflows did not significantly disrupt the utilisation of maternal and pediatric health services. In this sample size, the reported number of events was considerably low and may lack statistical power. We found a significant decrease in pediatric service utilisation in the month of the event and the first month after the event in addition, health service under-5 morbidities significantly decreased in the month of the event. This could be due to road blockages because we know from the literature that natural hazards affect infrastructure. (24,36)   However, it is strange that these significant effects are not reported across all services. Moreover, in the provinces of Kabul and Badakhshan significant differences were found for utilisation of pediatric health services. In Kabul health utilisation significantly decreased in the month of the event and in the province of Badakhshan one month after the event. One previous event in Badakhshan in 2014 shows that emergency camps were provided. Therefore, humanitarian support could also be taken into consideration in the health utilisation. (36)

Prior research with a comparable emphasis on health utilisation is limited. Nonetheless, the outcomes of this study can be compared with diverse research approaches on health seeking behaviour and the barriers encountered in reaching health facilities. The study of Amin Hariri-Ardebili et al, 2022 (37), shows that the loss of resilience in health systems are associated with the functionality of health services. As a result of various factors, such as the initial condition of the system and health facilities as well as the recovery time of a system following a hazard. Similar research conducted in India with

a focus on postnatal care following natural hazards suggested that postnatal care services had lower coverages in areas prone to natural hazards such as floods, landslides, and earthquakes. (38) This study was limited to the assessment of each natural hazard individually and lacks outcomes on the impact of multiple natural hazards occurring simultaneously. The combination of natural disasters in 2022 of heavy rain, landslides, and earthquakes in Afghanistan suggests that the weak response of health systems resulted in high fatalities, injuries and households affected. (31)

A more comprehensive exploration into the lack of significant associations between natural hazards and utilisation include the direct effects arising from natural hazards. The health facilities could be impacted through the damage to health facilities, including the loss of power and the destruction of medical equipment. Also, the drug and supply chain could be interrupted. (29)

In the continuation of health services, the availability of human resources should be considered. Health workers could encounter difficulties in reaching health facilities, especially in areas hard to reach, such as along displacement routes in the country as well as cross-border routes. (39)

Additionally, the Afghan health services encounter lack of skilled healthcare staff. This is further exacerbated following the regime of the Taliban, resulting in the drop out of predominantly female staff and their trainings are prevented from further continuation. (29)

In addressing the health care needs of the populations served, this study lacks insight into the severity of cases nor whether patients were cured, lives saved or lost in the health facilities. Moreover, we do not know whether the health needs were met in the BPHS facilities or alternative health services were utilised. For instance, through humanitarian health camps, medical assistance of a family member or alternative healthcare such as traditional medicine. In fact, the latest estimates of 2020 show that approximately one-third of Afghan women gave birth without a skilled health attendant. (40)

To translate this to the broader context, we cannot entirely rely on the findings of this statistical analysis. The social determinants of health should be taken into consideration as underlaying factors that can amplify the impact of natural hazards on their populations. Previous studies indicated that low socio-economic development could potentially impact the accessibility to health. (4,24,28) As a result of financial resources the quality of the houses of the population should be considered. As poorly constructed houses could be prone to the severity of disruption on individual and household level. Strengthening this underlaying foundations within the communities itself could mitigate risks and prevent hazards turning into severe disasters.

External factors relevant to the study period were taken into consideration to prevent bias. One strength of this study was that the analytical model was corrected by considering confounding factors. We know from the literature that the Taliban's influence in Afghanistan and the third wave of COVID-19 exacerbated the already weakened healthcare system. (31) Furthermore, higher education was forbidden for women resulting in limited access to bachelor and master programs such as nursing programs (31). Moreover, the role of the Taliban could be interlinked with maternal and pediatric health services. (14,39) These influences may also affect the data collection within the health facilities. The additional pressure on health facilities and the sudden drop out of staff could indicate limited handover of work procedures. (14) Consequently, this could potentially lead to information bias in the dataset.

The sample size extracted from HDX and HMIS encompasses observations spread over four years. It should ensure mostly reliable results since natural hazards do not necessarily occur at and within that kind of interval. However, the natural hazards registered in the data occurred infrequently and varied in magnitude. Therefore, a larger period of several decades should perhaps be considered to ensure statistical significance of the outcomes. Nevertheless, the observed period gives a good indication as to what the effects of the respective hazards are. In this study, the results were measured at a district level, it is possible that one natural hazard may have impacted only a part of the district, including its health facilities. This situation could lead to underreporting of the effects, and although outcomes were reported, no statistical differences were observed due to limited statistical power. Conducting additional analysis at the facility level will increase the generalizability of the reported findings. More insights into the health facilities and the communities they serve will improve the study's representativeness. However, the data on natural hazards is only available at a district level yet, data collection on a lower level could be more suitable to perform a more robust analysis.

One reflection on the analytical framework was the use of a monthly time step size instead of a daily one. Consequences that cause a disruption for example, a week past the event, might be documented as effects within either the same or of the following month, depending on whether the hazard itself occurred in the beginning or the end of a month. Nevertheless, the chosen setup of these variables was suitable for the objectives of measuring the association between two determinants. However, for follow-up with larger-scale studies, research designs at a temporal (timeframe and duration) and spatial scale (identification of different patterns) could be more suitable for studying the effects of natural hazards on access to healthcare services. (8) This research was based on data between 2019-2022 and does not account for future risks.

7. Conclusion

This study compared natural hazards to the utilisation of maternal and pediatric healthcare service in the month of event, one month following the event and the two months following the event. The conducted analysis led to the rejection of the hypothesis stated. Surprisingly, our results supported hypothesis H0, indicating that there is no significant association between natural hazards and the utilisation of maternal and pediatric health service in the month of event, one month following the event and the two months following the event. The evidence was insufficient to support the existence of a strong relationship between the natural hazard and the utilisation of maternal and pediatric health services. Despite observing certain significant associations, the overall pattern in health utilisation did not show a consistent trend of disruption.

This study revealed that the size, type, duration, level of severity of the hazard poses different impacts on their populations and health systems. Overall, the event of avalanche, heavy snowfall, and landslide/mudflow caused the least impact on the Afghan population in terms of fatalities, injuries and families affected. Whereas earthquake posed respectively high impact on the populations affected considering its low number of events. The event of flood/flash floods had the highest occurrence, while these events were not distinguished in severity or duration. It showed that every event has a different impact and extent of disruption.

This research entails a large scope of practice; therefore, the hypothesis tested encompasses a large assumption. The research serves as a measuring tool to indicate how events over a period of approximately four years effected the utilisation of maternal and pediatric health services. In conclusion, the outcome supports that the effects of the occurring events seemed to not have a direct effect on utilisation of healthcare services. The effects reported at the district level as well as in high-risk provinces lacked insights into whether health facilities utilisation rates increased or decreased. To enhance conclusive and representative findings, carrying out this analysis using data at the facility level could further strengthen this research.

Altogether, this study supports the overall goals towards building resilient health systems. This analysis could be considered as a first step made to support these systems. The results set the starting point for identifying disruption in the health systems for maternal and pediatric health services following natural hazards.

8. Recommendations

Recommendations for further studies

This study focused on a small scope of practice on how natural hazards affect health systems. Climate change tends to increase natural hazards in occurrence as well as in severity, therefore further research is recommended in the field of natural hazards. (26)

1. This study reveals the impact at a district level with data available at the district level. It is recommended to conduct analysis on a lower level. To achieve this, data collection on a lower level within the districts is required. For instance, with such methods as GPS coordinates to measure the location of the natural hazard.

2. To cover the full scope of public health, it is recommended to conduct in-depth research into the scope of natural hazards. The consideration of climate-related hazard assessments at a temporal and spatial scale is suggested. The focus of the temporal scale analyses the timeframe and duration of the different time trends of events, while the spatial scale refers to the geographical extent or area and enhances insight into prone areas by identification of hotspots and patterns of different events. These assessments could contribute to knowledge on populations prone to hazards and predict future impacts of natural hazards to prevent disasters and mitigate risk.

3. The background research for this study found that assessments of multiple natural hazards occurring simultaneously could suggest a larger impact. Further in-depth research is recommended to test this statement.

Recommendations for the modification of the analytical framework

1. This study measured the impact at a district level as well as the province-specific areas of each natural hazard. It is recommended to extend this scope of practice to a lower level with facility-level analysis. Therefore, it is recommended to modify the analytical framework with one additional analysis at a facility level.

Recommendations for enhancing health systems' resilience against natural hazards

To prevent natural hazards from escalating into disasters, exclusively depending on statistical analysis is insufficient. In line with the full scope of practice in public health, the aim should lay on the underlaying causes and the factors enhancing its impact. To achieve adequate prevention and risk mitigation, it is crucial to consider the social context of the impacted areas.

1. Gaining awareness of populations that are more vulnerable to hazards or that already lack access to health care services can allow for more targeted efforts to strengthen the health care systems before and after natural hazards. To target these vulnerable populations, community healthcare workers that work directly with the population can be better supported.

2. Another effort targeting utilisation of healthcare systems is to further look into accessibility of health facilities. To ensure accessibility of patients and staff.

3. The background research for this study reveals high levels of gender inequality in this context. To foster inclusivity, a deeper understanding of the role of women in Afghanistan as well as female healthcare workers in the health facilities is recommended. To ensure inclusion of all stakeholders in the health systems, including female healthcare staff and community healthcare workers.

4. Addressing the interlinkages between various factors should be addressed to determine the continuation of health service. The drug and supply chain management, the damage of health facilities including the loss of power, and the possible damage to medical equipment. In case of damaged health facilities, it is essential to gain best practice methods constructing health facilities to withstand the effects of natural hazards. However, taking an integrative approach is essential.

5. To guarantee and retain health services, it is crucial to consider the financial aspect of the system in place. Depending on external aid poses a risk on the continuation of health services, especially when priorities of these funders change. In case of disaster emergencies, it is recommended the focus on reinforcing health systems, avoiding the creation of parallel health systems. The aim should be to provide equipment, supplies, medicines, and human resources through the established healthcare systems to prevent damage to the existing BPHS facilities.

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Appendix A – Preliminary data per province

Table 17 - Input data for Badakhshan

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.01	1	Badakhshan	1.01***	[1.00 - 1.01]	1.01***	[1.01 - 1.02]
1b.month		1	Badakhshan				
2.month	1.13	1	Badakhshan	1.07*	[1.02 - 1.13]	1.13***	[1.06 - 1.21]
3.month	1.09	1	Badakhshan	1.11***	[1.05 - 1.17]	1.09**	[1.02 - 1.17]
4.month	1.04	1	Badakhshan	1.09**	[1.04 - 1.16]	1.04	[0.98 - 1.11]
5.month	1.02	1	Badakhshan	1.05	[1.00 - 1.11]	1.02	[0.96 - 1.09]
6.month	1.04	1	Badakhshan	1.09**	[1.03 - 1.15]	1.04	[0.98 - 1.11]
7.month	1.06	1	Badakhshan	1.05	[0.99 - 1.11]	1.06	[0.99 - 1.13]
8.month	1.09	1	Badakhshan	1.01	[0.96 - 1.07]	1.09**	[1.03 - 1.16]
9.month	1.14	1	Badakhshan	1.10**	[1.03 - 1.16]	1.14***	[1.06 - 1.22]
10.month	0.99	1	Badakhshan	1.06	[1.00 - 1.12]	0.99	[0.92 - 1.06]
11.month	1.03	1	Badakhshan	1.05	[0.99 - 1.11]	1.03	[0.96 - 1.11]
12.month	1.03	1	Badakhshan	1.10**	[1.04 - 1.17]	1.03	[0.96 - 1.11]
0b.lag_1		1	Badakhshan				
1.lag_1	0.81	1	Badakhshan	0.86*	[0.74 - 1.00]	0.81*	[0.68 - 0.96]
2.lag_1	0.77	1	Badakhshan	0.93	[0.80 - 1.08]	0.77**	[0.65 - 0.92]
3.lag_1	0.78	1	Badakhshan	0.85*	[0.73 - 0.99]	0.78**	[0.66 - 0.94]
COVID	0.92	1	Badakhshan	0.96	[0.91 - 1.01]	0.92**	[0.87 - 0.98]
taliban	0.85	1	Badakhshan	1.02	[0.96 - 1.09]	0.85***	[0.79 - 0.92]
_cons	1529.25	1	Badakhshan	759.45***	[606.39 - 951.15]	1529.25***	[1208.05 - 1935.85]
month_year1	1.02	5	Badakhshan	1.01***	[1.00 - 1.01]	1.02***	[1.01 - 1.02]
1b.month		5	Badakhshan				
2.month	1.12	5	Badakhshan	1.07*	[1.01 - 1.13]	1.12***	[1.05 - 1.20]
3.month	1.08	5	Badakhshan	1.10***	[1.05 - 1.17]	1.08*	[1.01 - 1.16]
4.month	1.05	5	Badakhshan	1.10***	[1.04 - 1.16]	1.05	[0.98 - 1.12]
5.month	1.03	5	Badakhshan	1.06*	[1.00 - 1.12]	1.03	[0.97 - 1.10]
6.month	1.05	5	Badakhshan	1.10***	[1.04 - 1.16]	1.05	[0.98 - 1.12]
7.month	1.06	5	Badakhshan	1.05	[1.00 - 1.11]	1.06	[1.00 - 1.13]
8.month	1.10	5	Badakhshan	1.02	[0.97 - 1.07]	1.10**	[1.03 - 1.17]
9.month	1.14	5	Badakhshan	1.10**	[1.04 - 1.17]	1.14***	[1.06 - 1.23]
10.month	1.00	5	Badakhshan	1.06*	[1.00 - 1.13]	1.00	[0.93 - 1.07]
11.month	1.04	5	Badakhshan	1.05	[0.99 - 1.12]	1.04	[0.97 - 1.12]
12.month	1.04	5	Badakhshan	1.10**	[1.04 - 1.17]	1.04	[0.97 - 1.12]
0b.lag_5		5	Badakhshan				
1.lag_5	0.70	5	Badakhshan	0.87	[0.60 - 1.25]	0.70	[0.45 - 1.08]
2.lag_5	0.61	5	Badakhshan	0.87	[0.61 - 1.26]	0.61*	[0.40 - 0.94]
3.lag_5	1.02	5	Badakhshan	0.90	[0.62 - 1.29]	1.02	[0.66 - 1.58]
COVID	0.92	5	Badakhshan	0.96	[0.91 - 1.01]	0.92**	[0.86 - 0.97]
taliban	0.85	5	Badakhshan	1.02	[0.95 - 1.09]	0.85***	[0.78 - 0.92]
_cons	1508.39	5	Badakhshan	753.06***	[596.83 - 950.18]	1508.39***	[1187.86 - 1915.41]

Table 18 - Input data for Baghlan

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.01	1	Baghlan	1.00**	[1.00 - 1.01]	1.01***	[1.00 - 1.01]

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
1b.month		1	Baghlan				
2.month	0.97	1	Baghlan	1.08**	[1.02 - 1.14]	0.97	[0.92 - 1.03]
3.month	1.03	1	Baghlan	1.08**	[1.02 - 1.15]	1.03	[0.97 - 1.10]
4.month	1.01	1	Baghlan	1.05	[1.00 - 1.12]	1.01	[0.96 - 1.08]
5.month	0.97	1	Baghlan	0.89***	[0.84 - 0.95]	0.97	[0.91 - 1.03]
6.month	0.90	1	Baghlan	0.90***	[0.85 - 0.96]	0.90***	[0.85 - 0.95]
7.month	0.95	1	Baghlan	0.95	[0.90 - 1.01]	0.95	[0.89 - 1.00]
8.month	0.93	1	Baghlan	0.88***	[0.84 - 0.93]	0.93*	[0.88 - 0.98]
9.month	0.95	1	Baghlan	0.94	[0.89 - 1.00]	0.95	[0.89 - 1.02]
10.month	1.01	1	Baghlan	0.98	[0.92 - 1.04]	1.01	[0.94 - 1.07]
11.month	0.97	1	Baghlan	0.93*	[0.87 - 0.98]	0.97	[0.91 - 1.04]
12.month	1.01	1	Baghlan	1.02	[0.96 - 1.09]	1.01	[0.95 - 1.08]
0b.lag_1		1	Baghlan				
1o.lag_1		1	Baghlan				
2o.lag_1		1	Baghlan				
3o.lag_1		1	Baghlan				
COVID	1.07	1	Baghlan	1.15***	[1.09 - 1.21]	1.07*	[1.02 - 1.14]
taliban	0.94	1	Baghlan	0.99	[0.92 - 1.06]	0.94	[0.87 - 1.01]
_cons	2788.06	1	Baghlan	1314.89***	[913.62 - 1892.39]	2788.06***	[2028.97 - 3831.13]
month_year1	1.01	5	Baghlan	1.00**	[1.00 - 1.01]	1.01***	[1.00 - 1.01]
1b.month		5	Baghlan				
2.month	0.97	5	Baghlan	1.08**	[1.02 - 1.14]	0.97	[0.92 - 1.03]
3.month	1.03	5	Baghlan	1.08**	[1.02 - 1.15]	1.03	[0.97 - 1.10]
4.month	1.01	5	Baghlan	1.06	[1.00 - 1.12]	1.01	[0.95 - 1.07]
5.month	0.97	5	Baghlan	0.89***	[0.85 - 0.95]	0.97	[0.91 - 1.03]
6.month	0.90	5	Baghlan	0.90***	[0.86 - 0.96]	0.90***	[0.85 - 0.95]
7.month	0.95	5	Baghlan	0.95	[0.90 - 1.01]	0.95	[0.89 - 1.00]
8.month	0.93	5	Baghlan	0.88***	[0.84 - 0.93]	0.93*	[0.88 - 0.99]
9.month	0.95	5	Baghlan	0.94	[0.88 - 1.00]	0.95	[0.89 - 1.02]
10.month	1.01	5	Baghlan	0.97	[0.91 - 1.04]	1.01	[0.94 - 1.08]
11.month	0.97	5	Baghlan	0.93*	[0.87 - 0.99]	0.97	[0.91 - 1.04]
12.month	1.01	5	Baghlan	1.02	[0.96 - 1.09]	1.01	[0.94 - 1.08]
0b.lag_5		5	Baghlan				
1.lag_5	0.92	5	Baghlan	1.08	[0.82 - 1.43]	0.92	[0.69 - 1.23]
2.lag_5	0.99	5	Baghlan	1.18	[0.89 - 1.56]	0.99	[0.74 - 1.33]
3.lag_5	0.97	5	Baghlan	1.07	[0.81 - 1.42]	0.97	[0.72 - 1.30]
COVID	1.08	5	Baghlan	1.14***	[1.08 - 1.21]	1.08*	[1.02 - 1.14]
taliban	0.94	5	Baghlan	0.99	[0.92 - 1.06]	0.94	[0.87 - 1.01]
_cons	2788.88	5	Baghlan	1314.47***	[902.84 - 1913.76]	2788.88***	[2007.67 - 3874.07]

Table 19 - Input data for Balkh

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.01	2	Balkh	1.01***	[1.00 - 1.01]	1.01***	[1.01 - 1.01]
1b.month		2	Balkh				
2.month	1.12	2	Balkh	1.11***	[1.06 - 1.16]	1.12***	[1.06 - 1.18]
3.month	1.10	2	Balkh	1.05*	[1.00 - 1.10]	1.10**	[1.04 - 1.16]
4.month	1.04	2	Balkh	1.00	[0.95 - 1.04]	1.04	[0.99 - 1.10]
5.month	1.01	2	Balkh	0.91***	[0.87 - 0.95]	1.01	[0.96 - 1.07]
6.month	0.93	2	Balkh	0.87***	[0.84 - 0.92]	0.93*	[0.88 - 0.98]
7.month	0.92	2	Balkh	0.86***	[0.82 - 0.90]	0.92**	[0.87 - 0.97]

8.month	0.89	2	Balkh	0.83***	[0.80 - 0.87]	0.89***	[0.84 - 0.94]
9.month	0.94	2	Balkh	0.87***	[0.82 - 0.91]	0.94*	[0.88 - 1.00]
10.month	1.05	2	Balkh	0.97	[0.93 - 1.02]	1.05	[0.99 - 1.12]
11.month	1.05	2	Balkh	1.01	[0.96 - 1.06]	1.05	[0.99 - 1.12]
12.month	1.06	2	Balkh	1.11***	[1.05 - 1.17]	1.06	[1.00 - 1.13]
0b.lag_2		2	Balkh				
1o.lag_2		2	Balkh				
2o.lag_2		2	Balkh				
3o.lag_2		2	Balkh				
COVID	1.18	2	Balkh	1.24***	[1.19 - 1.29]	1.18***	[1.12 - 1.25]
taliban	1.01	2	Balkh	0.98	[0.93 - 1.04]	1.01	[0.95 - 1.09]
_cons	3635.35	2	Balkh	2514.86***	[1781.96 - 3549.19]	3635.35***	[2624.52 - 5035.51]

Table 20 - Input data for Bamyan

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.03	1	Bamyan	1.01***	[1.01 - 1.02]	1.03***	[1.02 - 1.03]
1b.month		1	Bamyan				
2.month	1.04	1	Bamyan	1.02	[0.95 - 1.09]	1.04	[0.93 - 1.16]
3.month	1.09	1	Bamyan	1.03	[0.96 - 1.11]	1.09	[0.97 - 1.22]
4.month	1.12	1	Bamyan	1.04	[0.97 - 1.11]	1.12*	[1.00 - 1.25]
5.month	1.17	1	Bamyan	1.12**	[1.04 - 1.20]	1.17**	[1.04 - 1.30]
6.month	1.25	1	Bamyan	1.12**	[1.04 - 1.20]	1.25***	[1.12 - 1.39]
7.month	1.19	1	Bamyan	1.06	[0.99 - 1.13]	1.19**	[1.06 - 1.32]
8.month	1.23	1	Bamyan	1.00	[0.94 - 1.07]	1.23***	[1.11 - 1.37]
9.month	1.32	1	Bamyan	1.12**	[1.04 - 1.21]	1.32***	[1.17 - 1.50]
10.month	1.13	1	Bamyan	1.10*	[1.02 - 1.19]	1.13*	[1.00 - 1.28]
11.month	1.10	1	Bamyan	1.05	[0.98 - 1.14]	1.10	[0.98 - 1.25]
12.month	1.12	1	Bamyan	1.09*	[1.01 - 1.17]	1.12	[0.99 - 1.27]
0b.lag_1		1	Bamyan				
1o.lag_1		1	Bamyan				
2o.lag_1		1	Bamyan				
3o.lag_1		1	Bamyan				
COVID	0.83	1	Bamyan	0.92*	[0.86 - 0.99]	0.83***	[0.75 - 0.93]
taliban	0.75	1	Bamyan	0.96	[0.88 - 1.04]	0.75***	[0.65 - 0.86]
_cons	2231.92	1	Bamyan	1022.74***	[695.13 - 1504.74]	2231.92***	[1577.14 - 3158.54]
month_year1	1.03	5	Bamyan	1.01***	[1.01 - 1.02]	1.03***	[1.02 - 1.03]
1b.month		5	Bamyan				
2.month	1.04	5	Bamyan	1.02	[0.96 - 1.10]	1.04	[0.93 - 1.16]
3.month	1.08	5	Bamyan	1.03	[0.96 - 1.11]	1.08	[0.96 - 1.21]
4.month	1.12	5	Bamyan	1.04	[0.97 - 1.12]	1.12	[1.00 - 1.25]
5.month	1.16	5	Bamyan	1.12**	[1.04 - 1.20]	1.16**	[1.04 - 1.30]
6.month	1.24	5	Bamyan	1.12**	[1.04 - 1.20]	1.24***	[1.11 - 1.39]
7.month	1.18	5	Bamyan	1.06	[0.99 - 1.13]	1.18**	[1.06 - 1.32]
8.month	1.23	5	Bamyan	1.00	[0.94 - 1.07]	1.23***	[1.10 - 1.37]
9.month	1.32	5	Bamyan	1.12**	[1.04 - 1.21]	1.32***	[1.16 - 1.49]
10.month	1.12	5	Bamyan	1.10*	[1.02 - 1.19]	1.12	[0.99 - 1.27]
11.month	1.10	5	Bamyan	1.06	[0.98 - 1.14]	1.10	[0.97 - 1.24]
12.month	1.13	5	Bamyan	1.10*	[1.01 - 1.19]	1.13	[0.99 - 1.28]
0b.lag_5		5	Bamyan				
1.lag_5	0.88	5	Bamyan	0.90	[0.75 - 1.08]	0.88	[0.66 - 1.18]

2.lag_5	0.87	5	Bamyan	1.04	[0.87 - 1.25]	0.87	[0.65 - 1.16]
3.lag_5	0.96	5	Bamyan	0.96	[0.80 - 1.16]	0.96	[0.72 - 1.29]
COVID	0.84	5	Bamyan	0.93*	[0.87 - 0.99]	0.84**	[0.76 - 0.94]
taliban	0.75	5	Bamyan	0.96	[0.88 - 1.05]	0.75***	[0.65 - 0.86]
_cons	2246.47	5	Bamyan	1022.13***	[681.51 - 1532.98]	2246.47***	[1569.46 - 3215.51]

Table 21 - Input data for Dykundi

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.01	1	Dykundi	1.00*	[0.99 - 1.00]	1.01***	[1.00 - 1.01]
1b.month		1	Dykundi				
2.month	1.09	1	Dykundi	1.04	[0.97 - 1.13]	1.09*	[1.00 - 1.18]
3.month	1.14	1	Dykundi	1.08	[0.99 - 1.16]	1.14**	[1.05 - 1.24]
4.month	1.03	1	Dykundi	0.99	[0.92 - 1.07]	1.03	[0.95 - 1.12]
5.month	1.09	1	Dykundi	1.02	[0.95 - 1.11]	1.09*	[1.00 - 1.18]
6.month	1.18	1	Dykundi	0.99	[0.92 - 1.07]	1.18***	[1.09 - 1.28]
7.month	1.07	1	Dykundi	1.02	[0.95 - 1.10]	1.07	[0.99 - 1.16]
8.month	1.03	1	Dykundi	0.95	[0.88 - 1.02]	1.03	[0.96 - 1.12]
9.month	1.08	1	Dykundi	1.00	[0.92 - 1.09]	1.08	[0.99 - 1.18]
10.month	1.14	1	Dykundi	1.02	[0.94 - 1.12]	1.14**	[1.04 - 1.24]
11.month	1.01	1	Dykundi	0.98	[0.90 - 1.07]	1.01	[0.93 - 1.11]
12.month	1.08	1	Dykundi	1.03	[0.95 - 1.12]	1.08	[0.99 - 1.18]
0b.lag_1		1	Dykundi				
1.lag_1	1.05	1	Dykundi	1.03	[0.89 - 1.19]	1.05	[0.90 - 1.22]
2.lag_1	1.02	1	Dykundi	1.07	[0.94 - 1.21]	1.02	[0.89 - 1.17]
3.lag_1	0.89	1	Dykundi	1.03	[0.90 - 1.17]	0.89	[0.78 - 1.02]
COVID	0.93	1	Dykundi	1.10**	[1.03 - 1.19]	0.93	[0.86 - 1.00]
taliban	0.84	1	Dykundi	0.93	[0.85 - 1.03]	0.84***	[0.76 - 0.93]
_cons	2172.83	1	Dykundi	1125.04***	[863.33 - 1466.09]	2172.83***	[1643.67 - 2872.35]
month_year1	1.01	5	Dykundi	1.00*	[0.99 - 1.00]	1.01***	[1.00 - 1.01]
1b.month		5	Dykundi				
2.month	1.07	5	Dykundi	1.04	[0.97 - 1.13]	1.07	[0.99 - 1.16]
3.month	1.13	5	Dykundi	1.07	[0.99 - 1.16]	1.13**	[1.04 - 1.22]
4.month	1.02	5	Dykundi	0.99	[0.92 - 1.07]	1.02	[0.94 - 1.11]
5.month	1.08	5	Dykundi	1.02	[0.95 - 1.10]	1.08	[1.00 - 1.17]
6.month	1.18	5	Dykundi	0.99	[0.92 - 1.07]	1.18***	[1.09 - 1.27]
7.month	1.06	5	Dykundi	1.02	[0.94 - 1.10]	1.06	[0.98 - 1.15]
8.month	1.03	5	Dykundi	0.94	[0.88 - 1.02]	1.03	[0.95 - 1.11]
9.month	1.07	5	Dykundi	1.00	[0.92 - 1.08]	1.07	[0.98 - 1.17]
10.month	1.13	5	Dykundi	1.02	[0.94 - 1.11]	1.13**	[1.04 - 1.24]
11.month	1.01	5	Dykundi	0.98	[0.90 - 1.06]	1.01	[0.92 - 1.10]
12.month	1.08	5	Dykundi	1.03	[0.94 - 1.12]	1.08	[0.99 - 1.18]
0b.lag_5		5	Dykundi				
1o.lag_5		5	Dykundi				
2o.lag_5		5	Dykundi				
3o.lag_5		5	Dykundi				
COVID	0.93	5	Dykundi	1.10**	[1.03 - 1.19]	0.93	[0.86 - 1.00]
taliban	0.84	5	Dykundi	0.93	[0.85 - 1.02]	0.84***	[0.76 - 0.93]
_cons	2180.97	5	Dykundi	1132.42***	[865.10 - 1482.34]	2180.97***	[1650.07 - 2882.68]

Table 22 - Input data for Faryab

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.02	5	Faryab	1.01***	[1.00 - 1.01]	1.02***	[1.01 - 1.02]
1b.month		5	Faryab				
2.month	0.96	5	Faryab	0.96	[0.89 - 1.02]	0.96	[0.89 - 1.05]
3.month	1.19	5	Faryab	1.06	[0.99 - 1.14]	1.19***	[1.10 - 1.30]
4.month	1.07	5	Faryab	1.03	[0.96 - 1.10]	1.07	[0.98 - 1.16]
5.month	1.11	5	Faryab	1.03	[0.96 - 1.10]	1.11*	[1.02 - 1.20]
6.month	1.10	5	Faryab	1.01	[0.94 - 1.08]	1.10*	[1.01 - 1.20]
7.month	1.06	5	Faryab	0.97	[0.91 - 1.04]	1.06	[0.97 - 1.15]
8.month	0.98	5	Faryab	0.99	[0.92 - 1.05]	0.98	[0.91 - 1.07]
9.month	1.10	5	Faryab	1.11**	[1.03 - 1.19]	1.10*	[1.00 - 1.21]
10.month	1.08	5	Faryab	1.02	[0.95 - 1.10]	1.08	[0.98 - 1.18]
11.month	1.05	5	Faryab	0.97	[0.90 - 1.05]	1.05	[0.95 - 1.15]
12.month	0.95	5	Faryab	0.98	[0.91 - 1.06]	0.95	[0.87 - 1.05]
0b.lag_5		5	Faryab				
1.lag_5	0.92	5	Faryab	0.75	[0.53 - 1.05]	0.92	[0.60 - 1.39]
2.lag_5	0.85	5	Faryab	0.81	[0.58 - 1.14]	0.85	[0.56 - 1.30]
3.lag_5	0.95	5	Faryab	0.89	[0.63 - 1.25]	0.95	[0.62 - 1.44]
COVID	0.72	5	Faryab	0.95	[0.89 - 1.01]	0.72***	[0.66 - 0.78]
taliban	0.99	5	Faryab	0.97	[0.89 - 1.06]	0.99	[0.89 - 1.10]
_cons	3242.65	5	Faryab	1406.06***	[968.22 - 2041.88]	3242.65***	[2306.23 - 4559.30]

Table 23 - Input data for Ghazni

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.02	2	Ghazni	1.01***	[1.00 - 1.01]	1.02***	[1.01 - 1.02]
1b.month		2	Ghazni				
2.month	1.05	2	Ghazni	1.07	[0.99 - 1.15]	1.05	[0.96 - 1.15]
3.month	0.96	2	Ghazni	1.01	[0.93 - 1.09]	0.96	[0.88 - 1.05]
4.month	0.96	2	Ghazni	0.98	[0.91 - 1.06]	0.96	[0.88 - 1.05]
5.month	1.11	2	Ghazni	0.94	[0.87 - 1.01]	1.11*	[1.01 - 1.21]
6.month	1.10	2	Ghazni	1.03	[0.96 - 1.11]	1.10*	[1.01 - 1.20]
7.month	0.99	2	Ghazni	1.02	[0.94 - 1.09]	0.99	[0.91 - 1.08]
8.month	1.20	2	Ghazni	1.04	[0.97 - 1.12]	1.20***	[1.10 - 1.31]
9.month	1.15	2	Ghazni	1.05	[0.97 - 1.14]	1.15**	[1.04 - 1.27]
10.month	1.10	2	Ghazni	1.07	[0.99 - 1.16]	1.10	[1.00 - 1.21]
11.month	1.10	2	Ghazni	1.11*	[1.03 - 1.21]	1.10	[1.00 - 1.21]
12.month	1.06	2	Ghazni	1.13**	[1.04 - 1.23]	1.06	[0.96 - 1.17]
0b.lag_2		2	Ghazni				
1o.lag_2		2	Ghazni				
2o.lag_2		2	Ghazni				
3o.lag_2		2	Ghazni				
COVID	1.10	2	Ghazni	1.01	[0.94 - 1.09]	1.10*	[1.01 - 1.19]
taliban	0.71	2	Ghazni	0.87**	[0.79 - 0.96]	0.71***	[0.64 - 0.79]
_cons	2498.70	2	Ghazni	1093.68***	[758.52 - 1576.95]	2498.70***	[1760.80 - 3545.85]

Table 24 - Input data for Ghor

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.01	1	Ghor	1.00	[1.00 - 1.00]	1.01**	[1.00 - 1.01]

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
1b.month		1	Ghor				
2.month	1.02	1	Ghor	1.03	[0.97 - 1.10]	1.02	[0.95 - 1.10]
3.month	1.01	1	Ghor	1.03	[0.97 - 1.10]	1.01	[0.94 - 1.09]
4.month	0.93	1	Ghor	0.98	[0.92 - 1.04]	0.93*	[0.86 - 1.00]
5.month	0.96	1	Ghor	1.02	[0.96 - 1.09]	0.96	[0.90 - 1.04]
6.month	0.99	1	Ghor	1.01	[0.95 - 1.07]	0.99	[0.92 - 1.07]
7.month	0.98	1	Ghor	1.01	[0.95 - 1.08]	0.98	[0.91 - 1.05]
8.month	1.07	1	Ghor	1.03	[0.97 - 1.09]	1.07	[1.00 - 1.15]
9.month	1.06	1	Ghor	1.05	[0.98 - 1.12]	1.06	[0.98 - 1.15]
10.month	1.04	1	Ghor	1.06	[0.99 - 1.14]	1.04	[0.96 - 1.13]
11.month	1.05	1	Ghor	1.10**	[1.02 - 1.18]	1.05	[0.97 - 1.14]
12.month	1.07	1	Ghor	1.10*	[1.02 - 1.17]	1.07	[0.98 - 1.16]
0b.lag_1		1	Ghor				
1.lag_1	1.31	1	Ghor	1.00	[0.77 - 1.31]	1.31	[0.96 - 1.78]
2.lag_1	1.18	1	Ghor	0.79	[0.60 - 1.03]	1.18	[0.87 - 1.60]
3.lag_1	1.02	1	Ghor	1.04	[0.79 - 1.35]	1.02	[0.75 - 1.39]
COVID	0.96	1	Ghor	1.03	[0.97 - 1.10]	0.96	[0.90 - 1.03]
taliban	0.82	1	Ghor	1.01	[0.93 - 1.09]	0.82***	[0.75 - 0.90]
_cons	4370.63	1	Ghor	1501.19***	[1181.07 - 1908.09]	4370.63***	[3388.49 - 5637.45]
month_year1	1.01	5	Ghor	1.00	[1.00 - 1.00]	1.01**	[1.00 - 1.01]
1b.month		5	Ghor				
2.month	1.02	5	Ghor	1.03	[0.97 - 1.09]	1.02	[0.95 - 1.09]
3.month	1.01	5	Ghor	1.04	[0.97 - 1.10]	1.01	[0.94 - 1.08]
4.month	0.92	5	Ghor	0.98	[0.92 - 1.04]	0.92*	[0.86 - 0.99]
5.month	0.96	5	Ghor	1.02	[0.96 - 1.09]	0.96	[0.89 - 1.03]
6.month	0.98	5	Ghor	1.01	[0.95 - 1.07]	0.98	[0.92 - 1.06]
7.month	0.97	5	Ghor	1.01	[0.95 - 1.08]	0.97	[0.91 - 1.05]
8.month	1.07	5	Ghor	1.03	[0.97 - 1.10]	1.07	[0.99 - 1.14]
9.month	1.05	5	Ghor	1.05	[0.98 - 1.12]	1.05	[0.97 - 1.14]
10.month	1.03	5	Ghor	1.06	[0.99 - 1.14]	1.03	[0.95 - 1.12]
11.month	1.04	5	Ghor	1.10**	[1.03 - 1.18]	1.04	[0.96 - 1.13]
12.month	1.06	5	Ghor	1.10**	[1.02 - 1.18]	1.06	[0.98 - 1.15]
0b.lag_5		5	Ghor				
1.lag_5	0.94	5	Ghor	1.24	[0.94 - 1.62]	0.94	[0.69 - 1.29]
2o.lag_5		5	Ghor				
3o.lag_5		5	Ghor				
COVID	0.96	5	Ghor	1.04	[0.98 - 1.10]	0.96	[0.89 - 1.02]
taliban	0.82	5	Ghor	1.00	[0.92 - 1.08]	0.82***	[0.75 - 0.90]
_cons	4395.40	5	Ghor	1500.62***	[1162.27 - 1937.47]	4395.40***	[3402.51 - 5678.02]

Table 25 - Input data for Hirat

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.04	3	Hirat	1.02***	[1.02 - 1.03]	1.04***	[1.03 - 1.04]
1b.month		3	Hirat				
2.month	1.05	3	Hirat	1.07	[1.00 - 1.15]	1.05	[0.97 - 1.13]
3.month	1.18	3	Hirat	1.10*	[1.02 - 1.18]	1.18***	[1.09 - 1.27]
4.month	1.07	3	Hirat	1.06	[0.98 - 1.14]	1.07	[0.99 - 1.15]
5.month	1.13	3	Hirat	0.99	[0.92 - 1.07]	1.13**	[1.05 - 1.23]
6.month	1.09	3	Hirat	0.92*	[0.86 - 0.99]	1.09*	[1.01 - 1.18]
7.month	1.10	3	Hirat	0.97	[0.90 - 1.04]	1.10**	[1.03 - 1.19]

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
8.month	1.18	3	Hirat	1.07	[1.00 - 1.15]	1.18***	[1.10 - 1.27]
9.month	1.18	3	Hirat	1.02	[0.95 - 1.11]	1.18***	[1.09 - 1.28]
10.month	1.18	3	Hirat	1.03	[0.95 - 1.11]	1.18***	[1.08 - 1.28]
11.month	1.17	3	Hirat	1.07	[0.99 - 1.16]	1.17***	[1.08 - 1.27]
12.month	1.11	3	Hirat	1.01	[0.93 - 1.09]	1.11*	[1.02 - 1.21]
0b.lag_3		3	Hirat				
1.lag_3	0.94	3	Hirat	0.97	[0.91 - 1.04]	0.94	[0.88 - 1.00]
2.lag_3	1.00	3	Hirat	1.02	[0.94 - 1.09]	1.00	[0.93 - 1.08]
3.lag_3	0.97	3	Hirat	1.00	[0.93 - 1.07]	0.97	[0.91 - 1.05]
COVID	0.75	3	Hirat	0.88***	[0.82 - 0.94]	0.75***	[0.70 - 0.80]
taliban	0.77	3	Hirat	0.81***	[0.74 - 0.89]	0.77***	[0.70 - 0.84]
_cons	3284.73	3	Hirat	1736.03***	[1414.21 - 2131.09]	3284.73***	[2675.06 - 4033.36]

Table 26 - Input data for Kabul

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.02	1	Kabul	1.01***	[1.00 - 1.02]	1.02***	[1.01 - 1.02]
1b.month		1	Kabul				
2.month	0.86	1	Kabul	0.96	[0.86 - 1.08]	0.86**	[0.78 - 0.95]
3.month	0.96	1	Kabul	1.03	[0.92 - 1.16]	0.96	[0.86 - 1.06]
4.month	0.88	1	Kabul	0.98	[0.87 - 1.10]	0.88*	[0.79 - 0.97]
5.month	0.88	1	Kabul	0.98	[0.88 - 1.10]	0.88*	[0.79 - 0.97]
6.month	0.91	1	Kabul	0.91	[0.81 - 1.02]	0.91	[0.82 - 1.01]
7.month	0.93	1	Kabul	0.95	[0.85 - 1.06]	0.93	[0.84 - 1.03]
8.month	0.97	1	Kabul	0.95	[0.85 - 1.06]	0.97	[0.88 - 1.07]
9.month	1.11	1	Kabul	1.06	[0.93 - 1.21]	1.11	[0.99 - 1.24]
10.month	1.06	1	Kabul	1.22**	[1.07 - 1.38]	1.06	[0.94 - 1.19]
11.month	0.96	1	Kabul	1.13	[1.00 - 1.29]	0.96	[0.86 - 1.08]
12.month	1.00	1	Kabul	1.12	[0.99 - 1.28]	1.00	[0.89 - 1.12]
0b.lag_1		1	Kabul				
1o.lag_1		1	Kabul				
2o.lag_1		1	Kabul				
3o.lag_1		1	Kabul				
COVID	0.74	1	Kabul	0.77***	[0.69 - 0.86]	0.74***	[0.67 - 0.82]
taliban	0.69	1	Kabul	0.87	[0.75 - 1.00]	0.69***	[0.61 - 0.78]
_cons	2635.11	1	Kabul	995.21***	[641.44 - 1544.09]	2635.11***	[1679.29 - 4134.97]
month_year1	1.02	2	Kabul	1.01***	[1.00 - 1.02]	1.02***	[1.01 - 1.02]
1b.month		2	Kabul				
2.month	0.86	2	Kabul	0.96	[0.86 - 1.08]	0.86**	[0.78 - 0.95]
3.month	0.96	2	Kabul	1.03	[0.92 - 1.16]	0.96	[0.86 - 1.06]
4.month	0.88	2	Kabul	0.98	[0.87 - 1.10]	0.88*	[0.79 - 0.97]
5.month	0.88	2	Kabul	0.98	[0.88 - 1.10]	0.88*	[0.79 - 0.97]
6.month	0.91	2	Kabul	0.91	[0.81 - 1.02]	0.91	[0.82 - 1.01]
7.month	0.93	2	Kabul	0.95	[0.85 - 1.06]	0.93	[0.84 - 1.03]
8.month	0.97	2	Kabul	0.95	[0.85 - 1.06]	0.97	[0.88 - 1.07]
9.month	1.11	2	Kabul	1.06	[0.93 - 1.21]	1.11	[0.99 - 1.24]
10.month	1.06	2	Kabul	1.22**	[1.07 - 1.38]	1.06	[0.94 - 1.19]
11.month	0.96	2	Kabul	1.13	[1.00 - 1.29]	0.96	[0.86 - 1.08]
12.month	1.00	2	Kabul	1.12	[0.99 - 1.28]	1.00	[0.89 - 1.12]
0b.lag_2		2	Kabul				
1o.lag_2		2	Kabul				

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
2o.lag_2		2	Kabul				
3o.lag_2		2	Kabul				
COVID	0.74	2	Kabul	0.77***	[0.69 - 0.86]	0.74***	[0.67 - 0.82]
taliban	0.69	2	Kabul	0.87	[0.75 - 1.00]	0.69***	[0.61 - 0.78]
_cons	2635.11	2	Kabul	995.21***	[641.44 - 1544.09]	2635.11***	[1679.29 - 4134.97]
month_year1	1.02	3	Kabul	1.01***	[1.00 - 1.02]	1.02***	[1.01 - 1.02]
1b.month		3	Kabul				
2.month	0.86	3	Kabul	0.96	[0.86 - 1.08]	0.86**	[0.78 - 0.95]
3.month	0.96	3	Kabul	1.03	[0.92 - 1.16]	0.96	[0.86 - 1.06]
4.month	0.86	3	Kabul	0.96	[0.85 - 1.09]	0.86**	[0.77 - 0.95]
5.month	0.84	3	Kabul	0.96	[0.85 - 1.08]	0.84**	[0.76 - 0.93]
6.month	0.89	3	Kabul	0.89*	[0.79 - 1.00]	0.89*	[0.80 - 0.98]
7.month	0.93	3	Kabul	0.94	[0.84 - 1.06]	0.93	[0.84 - 1.03]
8.month	0.97	3	Kabul	0.95	[0.85 - 1.06]	0.97	[0.88 - 1.08]
9.month	1.11	3	Kabul	1.06	[0.93 - 1.21]	1.11	[0.99 - 1.24]
10.month	1.06	3	Kabul	1.21**	[1.06 - 1.38]	1.06	[0.94 - 1.18]
11.month	0.96	3	Kabul	1.13	[1.00 - 1.29]	0.96	[0.86 - 1.08]
12.month	1.00	3	Kabul	1.12	[0.99 - 1.28]	1.00	[0.89 - 1.12]
0b.lag_3		3	Kabul				
1.lag_3	1.05	3	Kabul	1.04	[0.89 - 1.21]	1.05	[0.92 - 1.19]
2.lag_3	1.20	3	Kabul	1.09	[0.93 - 1.27]	1.20*	[1.04 - 1.37]
3.lag_3	1.15	3	Kabul	1.15	[0.98 - 1.34]	1.15*	[1.00 - 1.31]
COVID	0.74	3	Kabul	0.77***	[0.69 - 0.86]	0.74***	[0.67 - 0.82]
taliban	0.68	3	Kabul	0.86*	[0.75 - 1.00]	0.68***	[0.60 - 0.78]
_cons	2602.03	3	Kabul	987.17***	[673.87 - 1446.12]	2602.03***	[1796.48 - 3768.80]
month_year1	1.02	5	Kabul	1.01**	[1.00 - 1.02]	1.02***	[1.01 - 1.02]
1b.month		5	Kabul				
2.month	0.86	5	Kabul	0.96	[0.86 - 1.08]	0.86**	[0.78 - 0.95]
3.month	0.95	5	Kabul	1.03	[0.92 - 1.16]	0.95	[0.86 - 1.06]
4.month	0.89	5	Kabul	0.99	[0.88 - 1.11]	0.89*	[0.80 - 0.98]
5.month	0.88	5	Kabul	0.99	[0.88 - 1.11]	0.88*	[0.79 - 0.97]
6.month	0.91	5	Kabul	0.91	[0.81 - 1.02]	0.91	[0.82 - 1.01]
7.month	0.93	5	Kabul	0.95	[0.85 - 1.06]	0.93	[0.84 - 1.03]
8.month	0.97	5	Kabul	0.94	[0.84 - 1.06]	0.97	[0.88 - 1.07]
9.month	1.11	5	Kabul	1.06	[0.93 - 1.21]	1.11	[0.99 - 1.24]
10.month	1.06	5	Kabul	1.21**	[1.07 - 1.38]	1.06	[0.94 - 1.19]
11.month	0.96	5	Kabul	1.13	[1.00 - 1.29]	0.96	[0.86 - 1.08]
12.month	1.00	5	Kabul	1.13	[0.99 - 1.28]	1.00	[0.89 - 1.12]
0b.lag_5		5	Kabul				
1.lag_5	0.58	5	Kabul	0.61	[0.35 - 1.06]	0.58*	[0.36 - 0.95]
2.lag_5	0.88	5	Kabul	0.67	[0.39 - 1.16]	0.88	[0.54 - 1.44]
3.lag_5	0.93	5	Kabul	0.88	[0.50 - 1.52]	0.93	[0.57 - 1.52]
COVID	0.75	5	Kabul	0.78***	[0.70 - 0.87]	0.75***	[0.68 - 0.83]
taliban	0.69	5	Kabul	0.88	[0.76 - 1.01]	0.69***	[0.61 - 0.79]
_cons	2643.44	5	Kabul	999.55***	[662.32 - 1508.48]	2643.44***	[1769.99 - 3947.91]

Table 27 - Input data for Kandahar

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.02	2	Kandahar	1.01***	[1.01 - 1.02]	1.02***	[1.01 - 1.02]
1b.month		2	Kandahar				

2.month	1.24	2	Kandahar	1.16**	[1.05 - 1.27]	1.24***	[1.13 - 1.36]
3.month	1.21	2	Kandahar	1.30***	[1.18 - 1.44]	1.21***	[1.09 - 1.33]
4.month	1.15	2	Kandahar	1.25***	[1.13 - 1.37]	1.15**	[1.04 - 1.26]
5.month	1.13	2	Kandahar	1.24***	[1.12 - 1.37]	1.13*	[1.02 - 1.24]
6.month	1.15	2	Kandahar	1.20***	[1.09 - 1.32]	1.15**	[1.05 - 1.27]
7.month	1.12	2	Kandahar	1.25***	[1.14 - 1.38]	1.12*	[1.01 - 1.23]
8.month	1.12	2	Kandahar	1.16**	[1.05 - 1.27]	1.12*	[1.02 - 1.23]
9.month	1.12	2	Kandahar	1.18**	[1.06 - 1.32]	1.12*	[1.01 - 1.25]
10.month	1.15	2	Kandahar	1.20**	[1.07 - 1.33]	1.15*	[1.03 - 1.27]
11.month	1.04	2	Kandahar	1.10	[0.99 - 1.23]	1.04	[0.94 - 1.16]
12.month	1.09	2	Kandahar	1.10	[0.99 - 1.23]	1.09	[0.98 - 1.22]
0b.lag_2		2	Kandahar				
1o.lag_2		2	Kandahar				
2o.lag_2		2	Kandahar				
3o.lag_2		2	Kandahar				
COVID	0.88	2	Kandahar	0.83***	[0.75 - 0.91]	0.88**	[0.80 - 0.96]
taliban	0.96	2	Kandahar	1.11	[0.99 - 1.26]	0.96	[0.85 - 1.08]
_cons	3246.30	2	Kandahar	1136.71***	[769.12 - 1679.97]	3246.30***	[2282.60 - 4616.88]

Table 28 - Input data for Kunar

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.02	1	Kunar	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.02]
1b.month		1	Kunar				
2.month	0.98	1	Kunar	1.09*	[1.01 - 1.17]	0.98	[0.92 - 1.04]
3.month	1.07	1	Kunar	1.15***	[1.06 - 1.24]	1.07*	[1.01 - 1.14]
4.month	0.95	1	Kunar	1.09*	[1.01 - 1.18]	0.95	[0.89 - 1.01]
5.month	0.91	1	Kunar	1.04	[0.97 - 1.12]	0.91**	[0.85 - 0.96]
6.month	0.94	1	Kunar	1.07	[0.99 - 1.15]	0.94*	[0.88 - 0.99]
7.month	1.00	1	Kunar	1.07	[0.99 - 1.15]	1.00	[0.94 - 1.06]
8.month	0.95	1	Kunar	0.89**	[0.83 - 0.96]	0.95	[0.90 - 1.01]
9.month	1.14	1	Kunar	1.10*	[1.02 - 1.20]	1.14***	[1.06 - 1.22]
10.month	1.00	1	Kunar	1.05	[0.97 - 1.14]	1.00	[0.93 - 1.07]
11.month	1.01	1	Kunar	1.00	[0.92 - 1.09]	1.01	[0.94 - 1.08]
12.month	0.95	1	Kunar	1.01	[0.93 - 1.10]	0.95	[0.89 - 1.01]
0b.lag_1		1	Kunar				
1o.lag_1		1	Kunar				
2o.lag_1		1	Kunar				
3o.lag_1		1	Kunar				
COVID	0.76	1	Kunar	0.86***	[0.80 - 0.93]	0.76***	[0.72 - 0.81]
taliban	0.89	1	Kunar	1.11*	[1.02 - 1.22]	0.89**	[0.83 - 0.96]
_cons	2855.21	1	Kunar	743.15***	[579.46 - 953.07]	2855.21***	[2242.04 - 3636.08]
month_year1	1.02	3	Kunar	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.02]
1b.month		3	Kunar				
2.month	0.99	3	Kunar	1.10*	[1.02 - 1.19]	0.99	[0.93 - 1.05]
3.month	1.07	3	Kunar	1.13**	[1.04 - 1.22]	1.07*	[1.00 - 1.14]
4.month	0.95	3	Kunar	1.07	[0.99 - 1.15]	0.95	[0.89 - 1.01]
5.month	0.91	3	Kunar	1.02	[0.95 - 1.10]	0.91**	[0.85 - 0.97]
6.month	0.94	3	Kunar	1.06	[0.98 - 1.14]	0.94	[0.89 - 1.00]
7.month	1.01	3	Kunar	1.07	[1.00 - 1.15]	1.01	[0.95 - 1.07]
8.month	0.96	3	Kunar	0.90**	[0.84 - 0.97]	0.96	[0.90 - 1.01]

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
9.month	1.14	3	Kunar	1.09*	[1.01 - 1.19]	1.14***	[1.06 - 1.21]
10.month	1.00	3	Kunar	1.06	[0.97 - 1.15]	1.00	[0.94 - 1.07]
11.month	1.01	3	Kunar	1.02	[0.94 - 1.11]	1.01	[0.94 - 1.08]
12.month	0.95	3	Kunar	1.02	[0.94 - 1.10]	0.95	[0.88 - 1.01]
0b.lag_3		3	Kunar				
1.lag_3	1.00	3	Kunar	1.06	[1.00 - 1.11]	1.00	[0.96 - 1.04]
2.lag_3	1.00	3	Kunar	1.07*	[1.01 - 1.13]	1.00	[0.95 - 1.04]
3.lag_3	0.98	3	Kunar	1.01	[0.96 - 1.07]	0.98	[0.94 - 1.02]
COVID	0.77	3	Kunar	0.85***	[0.79 - 0.91]	0.77***	[0.72 - 0.81]
taliban	0.89	3	Kunar	1.10	[1.00 - 1.21]	0.89**	[0.82 - 0.96]
_cons	2865.66	3	Kunar	718.69***	[550.40 - 938.43]	2865.66***	[2224.41 - 3691.76]

Table 29 - Input data for Nangarhar

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.03	2	Nangarhar	1.01***	[1.01 - 1.02]	1.03***	[1.02 - 1.03]
1b.month		2	Nangarhar				
2.month	1.11	2	Nangarhar	1.05	[0.99 - 1.11]	1.11**	[1.03 - 1.20]
3.month	1.23	2	Nangarhar	1.13***	[1.07 - 1.20]	1.23***	[1.13 - 1.33]
4.month	1.12	2	Nangarhar	1.09**	[1.03 - 1.16]	1.12**	[1.03 - 1.21]
5.month	1.15	2	Nangarhar	1.05	[0.99 - 1.11]	1.15***	[1.07 - 1.25]
6.month	1.04	2	Nangarhar	1.02	[0.96 - 1.08]	1.04	[0.96 - 1.13]
7.month	1.01	2	Nangarhar	1.06*	[1.00 - 1.13]	1.01	[0.93 - 1.09]
8.month	1.01	2	Nangarhar	1.00	[0.94 - 1.06]	1.01	[0.94 - 1.09]
9.month	1.11	2	Nangarhar	1.07*	[1.00 - 1.14]	1.11*	[1.02 - 1.21]
10.month	1.02	2	Nangarhar	1.03	[0.97 - 1.11]	1.02	[0.93 - 1.11]
11.month	1.10	2	Nangarhar	1.05	[0.98 - 1.13]	1.10*	[1.01 - 1.20]
12.month	1.04	2	Nangarhar	1.01	[0.95 - 1.08]	1.04	[0.95 - 1.13]
0b.lag_2		2	Nangarhar				
1.lag_2	1.02	2	Nangarhar	1.01	[0.71 - 1.46]	1.02	[0.63 - 1.63]
2.lag_2	1.07	2	Nangarhar	1.21	[0.84 - 1.73]	1.07	[0.67 - 1.71]
3.lag_2	1.07	2	Nangarhar	1.08	[0.75 - 1.55]	1.07	[0.67 - 1.71]
COVID	0.70	2	Nangarhar	0.90***	[0.85 - 0.95]	0.70***	[0.65 - 0.76]
taliban	0.91	2	Nangarhar	0.97	[0.90 - 1.04]	0.91	[0.83 - 1.00]
_cons	4167.09	2	Nangarhar	2297.96***	[1712.02 - 3084.43]	4167.09***	[3198.83 - 5428.43]
month_year1	1.03	3	Nangarhar	1.01***	[1.01 - 1.02]	1.03***	[1.03 - 1.03]
1b.month		3	Nangarhar				
2.month	1.12	3	Nangarhar	1.06	[1.00 - 1.12]	1.12**	[1.04 - 1.21]
3.month	1.28	3	Nangarhar	1.18***	[1.10 - 1.25]	1.28***	[1.18 - 1.40]
4.month	1.14	3	Nangarhar	1.13***	[1.06 - 1.20]	1.14**	[1.05 - 1.24]
5.month	1.14	3	Nangarhar	1.05	[0.99 - 1.12]	1.14**	[1.05 - 1.24]
6.month	1.02	3	Nangarhar	1.01	[0.95 - 1.08]	1.02	[0.94 - 1.11]
7.month	1.01	3	Nangarhar	1.06	[1.00 - 1.13]	1.01	[0.94 - 1.10]
8.month	1.00	3	Nangarhar	0.98	[0.93 - 1.04]	1.00	[0.93 - 1.08]
9.month	1.11	3	Nangarhar	1.06	[1.00 - 1.14]	1.11*	[1.02 - 1.21]
10.month	1.02	3	Nangarhar	1.03	[0.96 - 1.10]	1.02	[0.93 - 1.11]
11.month	1.10	3	Nangarhar	1.04	[0.98 - 1.12]	1.10*	[1.00 - 1.20]
12.month	1.02	3	Nangarhar	1.00	[0.94 - 1.07]	1.02	[0.94 - 1.12]
0b.lag_3		3	Nangarhar				
1.lag_3	0.91	3	Nangarhar	0.91***	[0.87 - 0.95]	0.91**	[0.86 - 0.97]
2.lag_3	0.99	3	Nangarhar	0.98	[0.93 - 1.03]	0.99	[0.93 - 1.06]

3.lag_3	1.05	3	Nangarhar	0.98	[0.93 - 1.03]	1.05	[0.98 - 1.12]
COVID	0.68	3	Nangarhar	0.88***	[0.83 - 0.93]	0.68***	[0.63 - 0.73]
taliban	0.94	3	Nangarhar	1.00	[0.93 - 1.08]	0.94	[0.85 - 1.04]
_cons	4148.37	3	Nangarhar	2320.73***	[1781.22 - 3023.64]	4148.37***	[3298.14 - 5217.77]

Table 30 - Input data for Nooristan

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	0.99	1	Nooristan	1.02*	[1.00 - 1.03]	0.99	[0.98 - 1.00]
1b.month		1	Nooristan				
2.month	1.13	1	Nooristan	1.23	[0.96 - 1.57]	1.13	[0.97 - 1.32]
3.month	1.04	1	Nooristan	1.32*	[1.03 - 1.70]	1.04	[0.88 - 1.22]
4.month	0.99	1	Nooristan	1.32*	[1.02 - 1.69]	0.99	[0.84 - 1.16]
5.month	0.80	1	Nooristan	0.88	[0.68 - 1.13]	0.80**	[0.68 - 0.94]
6.month	0.99	1	Nooristan	1.18	[0.92 - 1.52]	0.99	[0.85 - 1.16]
7.month	1.21	1	Nooristan	1.29	[0.98 - 1.70]	1.21*	[1.02 - 1.45]
8.month	1.10	1	Nooristan	1.23	[0.93 - 1.61]	1.10	[0.92 - 1.30]
9.month	1.13	1	Nooristan	1.36*	[1.03 - 1.79]	1.13	[0.95 - 1.34]
10.month	1.03	1	Nooristan	1.20	[0.92 - 1.58]	1.03	[0.86 - 1.23]
11.month	1.08	1	Nooristan	1.25	[0.95 - 1.65]	1.08	[0.91 - 1.29]
12.month	0.96	1	Nooristan	1.23	[0.93 - 1.62]	0.96	[0.81 - 1.15]
0b.lag_1		1	Nooristan				
1o.lag_1		1	Nooristan				
2o.lag_1		1	Nooristan				
3o.lag_1		1	Nooristan				
COVID	1.08	1	Nooristan	0.95	[0.75 - 1.20]	1.08	[0.93 - 1.25]
taliban	1.34	1	Nooristan	1.01	[0.68 - 1.51]	1.34*	[1.04 - 1.72]
_cons	1745.48	1	Nooristan	354.93***	[235.81 - 534.21]	1745.48***	[1245.37 - 2446.43]

Table 31 - Input data for Panjsher

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.01	1	Panjsher	1.00	[1.00 - 1.01]	1.01**	[1.00 - 1.02]
1b.month		1	Panjsher				
2.month	1.10	1	Panjsher	1.01	[0.89 - 1.15]	1.10	[0.96 - 1.26]
3.month	1.09	1	Panjsher	1.05	[0.92 - 1.20]	1.09	[0.95 - 1.25]
4.month	1.02	1	Panjsher	0.97	[0.85 - 1.11]	1.02	[0.88 - 1.17]
5.month	0.91	1	Panjsher	0.73***	[0.64 - 0.84]	0.91	[0.79 - 1.04]
6.month	0.99	1	Panjsher	0.96	[0.84 - 1.09]	0.99	[0.86 - 1.14]
7.month	1.13	1	Panjsher	1.01	[0.88 - 1.15]	1.13	[0.98 - 1.30]
8.month	1.14	1	Panjsher	1.00	[0.87 - 1.16]	1.14	[0.98 - 1.33]
9.month	1.05	1	Panjsher	1.07	[0.93 - 1.24]	1.05	[0.90 - 1.22]
10.month	0.88	1	Panjsher	0.95	[0.82 - 1.10]	0.88	[0.76 - 1.03]
11.month	0.92	1	Panjsher	0.91	[0.79 - 1.05]	0.92	[0.79 - 1.07]
12.month	1.03	1	Panjsher	1.04	[0.90 - 1.20]	1.03	[0.89 - 1.21]
0b.lag_1		1	Panjsher				
1.lag_1	1.29	1	Panjsher	1.02	[0.64 - 1.62]	1.29	[0.78 - 2.12]
2.lag_1	0.86	1	Panjsher	0.63*	[0.39 - 1.00]	0.86	[0.52 - 1.42]
3.lag_1	1.05	1	Panjsher	1.09	[0.68 - 1.72]	1.05	[0.64 - 1.72]
COVID	0.91	1	Panjsher	0.96	[0.85 - 1.09]	0.91	[0.80 - 1.04]
taliban	0.60	1	Panjsher	0.54***	[0.44 - 0.67]	0.60***	[0.48 - 0.75]
_cons	721.52	1	Panjsher	373.05***	[278.89 - 499.01]	721.52***	[553.42 - 940.68]

Table 32 - Input data for Parwan

Variable	Coefficient	Hazard	Province	IRR MAT	CI MAT	IRR PED	CI PED
month_year1	1.02	1	Parwan	1.01***	[1.00 - 1.01]	1.02***	[1.01 - 1.02]
1b.month		1	Parwan				
2.month	0.97	1	Parwan	0.98	[0.92 - 1.06]	0.97	[0.89 - 1.04]
3.month	0.87	1	Parwan	1.02	[0.94 - 1.09]	0.87***	[0.80 - 0.94]
4.month	0.76	1	Parwan	0.94	[0.87 - 1.01]	0.76***	[0.71 - 0.83]
5.month	0.73	1	Parwan	0.84***	[0.78 - 0.91]	0.73***	[0.68 - 0.79]
6.month	0.79	1	Parwan	0.89**	[0.83 - 0.96]	0.79***	[0.73 - 0.86]
7.month	0.85	1	Parwan	0.89**	[0.82 - 0.95]	0.85***	[0.79 - 0.92]
8.month	0.89	1	Parwan	0.92*	[0.85 - 0.98]	0.89**	[0.82 - 0.96]
9.month	0.87	1	Parwan	0.96	[0.89 - 1.04]	0.87**	[0.80 - 0.95]
10.month	0.78	1	Parwan	0.91*	[0.84 - 0.98]	0.78***	[0.72 - 0.86]
11.month	0.75	1	Parwan	0.89**	[0.82 - 0.97]	0.75***	[0.69 - 0.82]
12.month	0.82	1	Parwan	0.98	[0.91 - 1.07]	0.82***	[0.75 - 0.89]
0b.lag_1		1	Parwan				
1o.lag_1		1	Parwan				
2o.lag_1		1	Parwan				
3o.lag_1		1	Parwan				
COVID	0.80	1	Parwan	0.87***	[0.81 - 0.93]	0.80***	[0.75 - 0.87]
taliban	0.82	1	Parwan	0.87**	[0.80 - 0.96]	0.82***	[0.74 - 0.90]
_cons	2147.76	1	Parwan	996.31***	[715.07 - 1388.16]	2147.76***	[1433.64 - 3217.59]

Appendix B – Input data per Hazard

Table 33 - Input data for avalanches

var	hazard	IRR ANC	CI ANC	IRR PNC	CI PNC	IRR del	CI del	IRR GM	CI GM	IRR U5	CI U5	IRR CS	CI CS	IRR MAT	CI MAT	IRR PED	CI PED
0b.lag_1	1																
1.lag_1	1	1.00	[0.87 - 1.15]	1.00	[0.86 - 1.17]	1.15	[0.98 - 1.34]	0.86	[0.68 - 1.09]	0.96	[0.83 - 1.12]	1.87	[0.97 - 3.61]	0.94	[0.82 - 1.07]	0.97	[0.84 - 1.12]
10.month	1	1.04**	[1.01 - 1.06]	1.01	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.24***	[1.20 - 1.29]	1.02	[0.99 - 1.04]	1.09	[0.99 - 1.20]	1.06***	[1.04 - 1.08]	1.06***	[1.04 - 1.09]
11.month	1	1.03*	[1.00 - 1.05]	1.02	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.22***	[1.18 - 1.27]	1.01	[0.98 - 1.03]	1.01	[0.92 - 1.11]	1.05***	[1.03 - 1.07]	1.06***	[1.03 - 1.08]
12.month	1	1.05***	[1.02 - 1.07]	1.02	[1.00 - 1.05]	0.99	[0.97 - 1.02]	1.21***	[1.17 - 1.26]	1.00	[0.98 - 1.03]	1.01	[0.92 - 1.12]	1.06***	[1.03 - 1.08]	1.05***	[1.03 - 1.08]
1b.month	1																
2.lag_1	1	0.95	[0.83 - 1.09]	0.99	[0.85 - 1.15]	0.99	[0.85 - 1.15]	0.77*	[0.61 - 0.97]	0.92	[0.80 - 1.07]	0.73	[0.41 - 1.30]	0.95	[0.83 - 1.08]	0.92	[0.80 - 1.06]
2.month	1	1.02*	[1.00 - 1.04]	1.05***	[1.02 - 1.07]	1.03*	[1.01 - 1.05]	1.09***	[1.06 - 1.13]	1.02	[0.99 - 1.04]	1.12*	[1.02 - 1.22]	1.04***	[1.02 - 1.06]	1.03**	[1.01 - 1.05]
3.lag_1	1	0.95	[0.83 - 1.09]	0.92	[0.79 - 1.07]	0.82*	[0.70 - 0.95]	0.84	[0.67 - 1.05]	0.87	[0.75 - 1.01]	1.04	[0.58 - 1.86]	0.97	[0.85 - 1.10]	0.88	[0.76 - 1.01]
3.month	1	1.04***	[1.02 - 1.06]	1.09***	[1.07 - 1.11]	1.05***	[1.03 - 1.07]	1.21***	[1.17 - 1.25]	1.02	[1.00 - 1.04]	1.12*	[1.03 - 1.23]	1.08***	[1.06 - 1.10]	1.07***	[1.04 - 1.09]
4.month	1	1.01	[0.99 - 1.03]	1.07***	[1.05 - 1.10]	1.06***	[1.04 - 1.09]	1.18***	[1.14 - 1.22]	0.97**	[0.95 - 0.99]	1.17***	[1.07 - 1.28]	1.06***	[1.04 - 1.08]	1.02*	[1.00 - 1.04]
5.month	1	0.97**	[0.95 - 0.99]	1.08***	[1.06 - 1.10]	1.07***	[1.05 - 1.10]	1.16***	[1.12 - 1.20]	0.97*	[0.95 - 0.99]	1.14**	[1.04 - 1.24]	0.99	[0.97 - 1.01]	1.02	[1.00 - 1.04]
6.month	1	1.00	[0.98 - 1.02]	1.04***	[1.01 - 1.06]	1.00	[0.98 - 1.02]	1.19***	[1.15 - 1.23]	1.00	[0.98 - 1.02]	0.96	[0.88 - 1.05]	1.02	[1.00 - 1.03]	1.05***	[1.02 - 1.07]
7.month	1	1.02*	[1.00 - 1.04]	1.02*	[1.00 - 1.04]	0.98*	[0.96 - 1.00]	1.16***	[1.12 - 1.20]	1.00	[0.98 - 1.03]	1.00	[0.91 - 1.09]	1.03**	[1.01 - 1.05]	1.04***	[1.02 - 1.06]
8.month	1	0.99	[0.97 - 1.01]	1.01	[0.99 - 1.03]	0.98	[0.96 - 1.01]	1.20***	[1.16 - 1.24]	1.01	[0.99 - 1.03]	1.12**	[1.03 - 1.22]	0.99	[0.98 - 1.01]	1.05***	[1.03 - 1.07]
9.month	1	1.07***	[1.04 - 1.09]	1.05***	[1.02 - 1.07]	0.99	[0.97 - 1.02]	1.30***	[1.25 - 1.34]	1.08***	[1.05 - 1.10]	1.05	[0.96 - 1.16]	1.07***	[1.04 - 1.09]	1.12***	[1.10 - 1.15]
COVID	1	0.94***	[0.92 - 0.96]	0.94***	[0.92 - 0.96]	0.97**	[0.95 - 0.99]	0.84***	[0.81 - 0.87]	0.90***	[0.88 - 0.92]	0.85***	[0.79 - 0.93]	0.96***	[0.94 - 0.98]	0.89***	[0.88 - 0.91]
_cons	1	383.90***	[356.33 - 413.59]	198.80***	[183.69 - 215.16]	66.51***	[60.55 - 73.05]	533.88***	[493.86 - 577.14]	2033.14***	[1891.68 - 2185.18]	3.73***	[3.16 - 4.40]	1159.03***	[1074.28 - 1250.47]	2797.44***	[2605.28 - 3003.77]
month_year1	1	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]	1.02***	[1.02 - 1.03]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
taliban	1	1.01	[0.98 - 1.03]	0.98	[0.95 - 1.00]	0.94***	[0.92 - 0.97]	0.80***	[0.76 - 0.83]	0.94***	[0.92 - 0.97]	0.74***	[0.67 - 0.83]	1.00	[0.98 - 1.03]	0.91***	[0.89 - 0.93]

Table 34 - Input data for earthquakes

var	hazard	IRR ANC	CI ANC	IRR PNC	CI PNC	IRR del	CI del	IRR GM	CI GM	IRR U5	CI U5	IRR CS	CI CS	IRR MAT	CI MAT	IRR PED	CI PED
0b.lag_2	2																
0o.lag_2	2																
1.lag_2	2	1.42*	[1.06 - 1.90]	1.32	[0.96 - 1.81]	1.51*	[1.09 - 2.08]	1.27	[0.78 - 2.06]	0.92	[0.67 - 1.27]			1.26	[0.95 - 1.66]	1.01	[0.75 - 1.36]
10.month	2	1.03**	[1.01 - 1.06]	1.01	[0.99 - 1.04]	0.97*	[0.95 - 0.99]	1.24***	[1.20 - 1.29]	1.02	[0.99 - 1.04]	1.09	[0.99 - 1.20]	1.06***	[1.04 - 1.08]	1.06***	[1.04 - 1.09]
11.month	2	1.03*	[1.00 - 1.05]	1.02	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.22***	[1.18 - 1.27]	1.01	[0.98 - 1.03]	1.01	[0.92 - 1.11]	1.05***	[1.03 - 1.07]	1.06***	[1.03 - 1.08]
12.month	2	1.05***	[1.03 - 1.07]	1.02	[1.00 - 1.05]	0.99	[0.97 - 1.02]	1.22***	[1.17 - 1.26]	1.00	[0.98 - 1.03]	1.02	[0.93 - 1.13]	1.06***	[1.04 - 1.08]	1.05***	[1.03 - 1.08]
1b.month	2																
2.lag_2	2	1.33	[0.80 - 2.21]	1.41	[0.81 - 2.46]	1.37	[0.78 - 2.39]	1.25	[0.54 - 2.88]	1.12	[0.64 - 1.93]			1.20	[0.74 - 1.94]	1.13	[0.68 - 1.90]
2.month	2	1.02*	[1.00 - 1.04]	1.05***	[1.02 - 1.07]	1.03*	[1.01 - 1.05]	1.09***	[1.06 - 1.13]	1.01	[0.99 - 1.04]	1.12*	[1.02 - 1.22]	1.04***	[1.02 - 1.06]	1.03**	[1.01 - 1.05]
3.lag_2	2	1.12	[0.68 - 1.86]	1.11	[0.64 - 1.93]	0.98	[0.56 - 1.72]	1.12	[0.48 - 2.57]	1.11	[0.64 - 1.91]			1.03	[0.64 - 1.67]	1.09	[0.65 - 1.82]
3.month	2	1.04***	[1.02 - 1.06]	1.09***	[1.07 - 1.11]	1.05***	[1.03 - 1.07]	1.21***	[1.17 - 1.25]	1.02	[1.00 - 1.04]	1.12*	[1.03 - 1.23]	1.08***	[1.06 - 1.10]	1.06***	[1.04 - 1.09]
4.month	2	1.01	[0.99 - 1.03]	1.07***	[1.05 - 1.10]	1.06***	[1.04 - 1.08]	1.18***	[1.14 - 1.22]	0.97**	[0.95 - 0.99]	1.17**	[1.07 - 1.28]	1.06***	[1.04 - 1.08]	1.02*	[1.00 - 1.04]
5.month	2	0.97**	[0.95 - 0.99]	1.08***	[1.06 - 1.10]	1.07***	[1.05 - 1.10]	1.16***	[1.12 - 1.20]	0.97*	[0.95 - 0.99]	1.14**	[1.04 - 1.24]	0.99	[0.97 - 1.01]	1.02	[1.00 - 1.04]
6.month	2	1.00	[0.98 - 1.02]	1.04***	[1.01 - 1.06]	1.00	[0.98 - 1.02]	1.19***	[1.15 - 1.23]	1.00	[0.98 - 1.02]	0.96	[0.88 - 1.05]	1.02	[1.00 - 1.03]	1.05***	[1.02 - 1.07]
7.month	2	1.02*	[1.00 - 1.04]	1.02*	[1.00 - 1.04]	0.98*	[0.96 - 1.00]	1.16***	[1.13 - 1.20]	1.01	[0.98 - 1.03]	1.00	[0.91 - 1.09]	1.03**	[1.01 - 1.05]	1.04***	[1.02 - 1.06]
8.month	2	0.99	[0.97 - 1.01]	1.01	[0.99 - 1.03]	0.98	[0.96 - 1.01]	1.20***	[1.17 - 1.24]	1.01	[0.99 - 1.03]	1.12**	[1.03 - 1.22]	0.99	[0.98 - 1.01]	1.05***	[1.03 - 1.07]
9.month	2	1.07***	[1.04 - 1.09]	1.05***	[1.02 - 1.07]	0.99	[0.97 - 1.02]	1.30***	[1.25 - 1.35]	1.08***	[1.05 - 1.10]	1.05	[0.96 - 1.16]	1.07***	[1.04 - 1.09]	1.12***	[1.10 - 1.15]
COVID	2	0.94***	[0.92 - 0.96]	0.94***	[0.92 - 0.96]	0.97**	[0.95 - 0.99]	0.84***	[0.81 - 0.87]	0.90***	[0.88 - 0.92]	0.85**	[0.79 - 0.93]	0.96***	[0.94 - 0.98]	0.89***	[0.88 - 0.91]
_cons	2	383.78***	[356.11 - 413.60]	198.77***	[183.58 - 215.21]	66.53***	[60.51 - 73.16]	533.04***	[492.75 - 576.62]	2032.36***	[1890.26 - 2185.15]	3.73**	[3.16 - 4.40]	1158.37***	[1073.40 - 1250.06]	2796.27***	[2603.03 - 3003.85]
month_year1	2	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]	1.02**	[1.02 - 1.03]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
taliban	2	1.01	[0.98 - 1.03]	0.98	[0.95 - 1.00]	0.94***	[0.92 - 0.97]	0.80***	[0.76 - 0.83]	0.94***	[0.92 - 0.97]	0.75**	[0.67 - 0.83]	1.00	[0.98 - 1.03]	0.91***	[0.88 - 0.93]

Table 35 - Input data for (flash) floods

var	hazard	IRR ANC	CI ANC	IRR PNC	CI PNC	IRR del	CI del	IRR GM	CI GM	IRR U5	CI U5	IRR CS	CI CS	IRR MAT	CI MAT	IRR PED	CI PED
0b.lag_3	3																
1.lag_3	3	1.00	[0.98 - 1.02]	1.00	[0.98 - 1.02]	1.01	[0.98 - 1.03]	1.05**	[1.02 - 1.09]	1.00	[0.97 - 1.02]	0.97	[0.88 - 1.07]	1.00	[0.98 - 1.02]	1.00	[0.98 - 1.03]
10.month	3	1.04**	[1.01 - 1.06]	1.01	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.24***	[1.20 - 1.29]	1.02	[0.99 - 1.04]	1.09	[0.99 - 1.20]	1.06***	[1.04 - 1.08]	1.07***	[1.04 - 1.09]
11.month	3	1.03*	[1.00 - 1.05]	1.02	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.22***	[1.18 - 1.27]	1.01	[0.98 - 1.03]	1.01	[0.92 - 1.12]	1.05***	[1.03 - 1.07]	1.06***	[1.04 - 1.08]
12.month	3	1.05***	[1.02 - 1.07]	1.02	[1.00 - 1.05]	0.99	[0.97 - 1.02]	1.22***	[1.17 - 1.26]	1.00	[0.98 - 1.03]	1.02	[0.93 - 1.13]	1.06***	[1.03 - 1.08]	1.05***	[1.03 - 1.08]
1b.month	3																
2.lag_3	3	0.99	[0.96 - 1.01]	1.00	[0.97 - 1.02]	0.99	[0.97 - 1.02]	1.05*	[1.01 - 1.09]	1.02	[0.99 - 1.05]	1.09	[0.98 - 1.21]	0.99	[0.97 - 1.02]	1.02	[0.99 - 1.04]
2.month	3	1.02*	[1.00 - 1.04]	1.05***	[1.02 - 1.07]	1.03*	[1.01 - 1.05]	1.09***	[1.06 - 1.13]	1.02	[0.99 - 1.04]	1.12*	[1.03 - 1.22]	1.04***	[1.02 - 1.06]	1.03**	[1.01 - 1.05]
3.lag_3	3	0.96***	[0.94 - 0.98]	1.00	[0.97 - 1.02]	0.99	[0.97 - 1.01]	1.01	[0.97 - 1.04]	1.01	[0.98 - 1.03]	1.00	[0.91 - 1.11]	0.98	[0.96 - 1.00]	1.01	[0.98 - 1.03]
3.month	3	1.03**	[1.01 - 1.05]	1.09***	[1.07 - 1.11]	1.05***	[1.02 - 1.07]	1.21***	[1.17 - 1.25]	1.02	[1.00 - 1.04]	1.13**	[1.03 - 1.24]	1.08***	[1.06 - 1.10]	1.07***	[1.04 - 1.09]
4.month	3	1.01	[0.99 - 1.03]	1.07***	[1.05 - 1.10]	1.06***	[1.04 - 1.08]	1.17***	[1.13 - 1.21]	0.97**	[0.95 - 0.99]	1.17**	[1.07 - 1.28]	1.06***	[1.04 - 1.08]	1.02*	[1.00 - 1.04]
5.month	3	0.97*	[0.96 - 0.99]	1.08***	[1.06 - 1.10]	1.07***	[1.05 - 1.10]	1.15***	[1.12 - 1.19]	0.97*	[0.95 - 0.99]	1.13**	[1.04 - 1.24]	0.99	[0.97 - 1.01]	1.02	[1.00 - 1.04]
6.month	3	1.00	[0.99 - 1.03]	1.04***	[1.01 - 1.06]	1.00	[0.98 - 1.02]	1.19***	[1.15 - 1.23]	1.00	[0.98 - 1.02]	0.95	[0.87 - 1.04]	1.02	[1.00 - 1.04]	1.04***	[1.02 - 1.07]
7.month	3	1.02*	[1.00 - 1.04]	1.02*	[1.00 - 1.04]	0.98*	[0.96 - 1.00]	1.16***	[1.13 - 1.20]	1.01	[0.98 - 1.03]	1.00	[0.92 - 1.09]	1.03**	[1.01 - 1.05]	1.04***	[1.02 - 1.06]
8.month	3	0.99	[0.97 - 1.01]	1.01	[0.99 - 1.03]	0.98	[0.96 - 1.00]	1.20***	[1.17 - 1.24]	1.01	[0.99 - 1.03]	1.12**	[1.03 - 1.22]	0.99	[0.97 - 1.01]	1.05***	[1.03 - 1.07]
9.month	3	1.06***	[1.04 - 1.09]	1.05***	[1.02 - 1.07]	0.99	[0.97 - 1.02]	1.30***	[1.25 - 1.35]	1.08***	[1.05 - 1.10]	1.06	[0.96 - 1.16]	1.07***	[1.04 - 1.09]	1.12***	[1.10 - 1.15]
COVID	3	0.95***	[0.93 - 0.96]	0.94***	[0.92 - 0.96]	0.97*	[0.95 - 0.99]	0.83***	[0.81 - 0.86]	0.90***	[0.88 - 0.92]	0.85**	[0.78 - 0.93]	0.96***	[0.95 - 0.98]	0.89***	[0.87 - 0.91]
_cons	3	385.96***	[358.31 - 415.74]	198.87***	[183.77 - 215.22]	66.62***	[60.58 - 73.25]	528.99***	[489.29 - 571.90]	2027.51***	[1890.50 - 2174.44]	3.71**	[3.15 - 4.37]	1161.29***	[1077.06 - 1252.12]	2789.89***	[2602.42 - 2990.86]
month_year1	3	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]	1.03**	[1.02 - 1.03]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
taliban	3	1.01	[0.99 - 1.04]	0.98	[0.95 - 1.00]	0.94***	[0.92 - 0.97]	0.79***	[0.76 - 0.82]	0.94***	[0.91 - 0.97]	0.75**	[0.67 - 0.83]	1.00	[0.98 - 1.03]	0.91***	[0.88 - 0.93]

Table 36 - Input data for heavy snowfalls

var	hazard	IRR ANC	CI ANC	IRR PNC	CI PNC	IRR del	CI del	IRR GM	CI GM	IRR U5	CI U5	IRR CS	CI CS	IRR MAT	CI MAT	IRR PED	CI PED
0b.lag_4	4																
1.lag_4	4	0.93**	[0.88 - 0.98]	0.99	[0.93 - 1.05]	0.98	[0.92 - 1.04]	0.93	[0.85 - 1.03]	0.99	[0.93 - 1.05]	0.91	[0.71 - 1.16]	0.95	[0.91 - 1.01]	0.97	[0.91 - 1.02]
10.month	4	1.03**	[1.01 - 1.06]	1.01	[0.99 - 1.04]	0.97*	[0.95 - 0.99]	1.24***	[1.20 - 1.29]	1.02	[0.99 - 1.04]	1.09	[0.99 - 1.20]	1.06***	[1.04 - 1.08]	1.06***	[1.04 - 1.09]
11.month	4	1.03*	[1.00 - 1.05]	1.02	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.22***	[1.18 - 1.27]	1.01	[0.98 - 1.03]	1.01	[0.92 - 1.11]	1.05***	[1.03 - 1.07]	1.06***	[1.03 - 1.08]
12.month	4	1.05***	[1.02 - 1.07]	1.02	[1.00 - 1.05]	0.99	[0.97 - 1.02]	1.21***	[1.17 - 1.26]	1.00	[0.98 - 1.03]	1.02	[0.93 - 1.13]	1.06***	[1.03 - 1.08]	1.05***	[1.03 - 1.08]
1b.month	4																
2.lag_4	4	0.94	[0.89 - 1.00]	0.96	[0.89 - 1.02]	1.00	[0.94 - 1.07]	0.90*	[0.81 - 1.00]	0.98	[0.92 - 1.04]	1.11	[0.84 - 1.46]	0.97	[0.92 - 1.03]	0.97	[0.91 - 1.03]
2.month	4	1.02*	[1.00 - 1.04]	1.05***	[1.02 - 1.07]	1.03*	[1.01 - 1.05]	1.09***	[1.06 - 1.13]	1.01	[0.99 - 1.04]	1.12*	[1.02 - 1.22]	1.04***	[1.02 - 1.06]	1.03**	[1.01 - 1.05]
3.lag_4	4	0.99	[0.93 - 1.05]	1.02	[0.95 - 1.09]	1.03	[0.96 - 1.10]	1.04	[0.94 - 1.15]	1.03	[0.96 - 1.10]	0.94	[0.72 - 1.23]	0.98	[0.93 - 1.04]	1.00	[0.94 - 1.07]
3.month	4	1.04***	[1.02 - 1.06]	1.09***	[1.07 - 1.12]	1.05***	[1.03 - 1.07]	1.21***	[1.17 - 1.25]	1.02	[1.00 - 1.04]	1.12*	[1.03 - 1.23]	1.08***	[1.06 - 1.10]	1.07***	[1.04 - 1.09]
4.month	4	1.01	[0.99 - 1.03]	1.07***	[1.05 - 1.10]	1.06***	[1.04 - 1.08]	1.17***	[1.14 - 1.21]	0.97**	[0.95 - 0.99]	1.17**	[1.07 - 1.28]	1.06***	[1.04 - 1.08]	1.02*	[1.00 - 1.04]
5.month	4	0.97**	[0.95 - 0.99]	1.08***	[1.06 - 1.10]	1.07***	[1.05 - 1.10]	1.16***	[1.12 - 1.20]	0.97*	[0.95 - 0.99]	1.14**	[1.04 - 1.24]	0.99	[0.97 - 1.01]	1.02	[1.00 - 1.04]
6.month	4	1.00	[0.98 - 1.02]	1.04**	[1.01 - 1.06]	1.00	[0.97 - 1.02]	1.19***	[1.15 - 1.23]	1.00	[0.98 - 1.02]	0.96	[0.88 - 1.05]	1.02	[1.00 - 1.03]	1.05***	[1.02 - 1.07]
7.month	4	1.02	[1.00 - 1.04]	1.02*	[1.00 - 1.04]	0.98*	[0.96 - 1.00]	1.16***	[1.12 - 1.20]	1.00	[0.98 - 1.03]	1.00	[0.92 - 1.09]	1.03**	[1.01 - 1.05]	1.04***	[1.02 - 1.06]
8.month	4	0.99	[0.97 - 1.01]	1.01	[0.99 - 1.03]	0.98	[0.96 - 1.00]	1.20***	[1.16 - 1.24]	1.01	[0.99 - 1.03]	1.12**	[1.03 - 1.22]	0.99	[0.97 - 1.01]	1.05***	[1.03 - 1.07]
9.month	4	1.06***	[1.04 - 1.09]	1.05***	[1.02 - 1.07]	0.99	[0.97 - 1.02]	1.30***	[1.25 - 1.34]	1.08***	[1.05 - 1.10]	1.05	[0.96 - 1.16]	1.07***	[1.04 - 1.09]	1.12***	[1.10 - 1.15]
COVID	4	0.94***	[0.92 - 0.96]	0.94***	[0.92 - 0.96]	0.97**	[0.95 - 0.99]	0.84***	[0.81 - 0.86]	0.90***	[0.88 - 0.92]	0.85**	[0.79 - 0.93]	0.96***	[0.94 - 0.98]	0.89***	[0.88 - 0.91]
_cons	4	384.54***	[356.79 - 414.45]	198.88***	[183.67 - 215.35]	66.56***	[60.54 - 73.17]	534.04***	[493.74 - 577.63]	2032.69***	[1890.24 - 2185.87]	3.73**	[3.16 - 4.41]	1159.79***	[1074.88 - 1251.40]	2798.43***	[2604.78 - 3006.48]
month_year1	4	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]	1.02**	[1.02 - 1.03]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
taliban	4	1.01	[0.99 - 1.04]	0.98	[0.95 - 1.00]	0.94***	[0.92 - 0.97]	0.80***	[0.76 - 0.83]	0.94***	[0.91 - 0.97]	0.75**	[0.67 - 0.83]	1.00	[0.98 - 1.03]	0.91***	[0.89 - 0.93]

Table 37 - Input data for landslides/mudflows

var	hazard	IRR ANC	CI ANC	IRR PNC	CI PNC	IRR del	CI del	IRR GM	CI GM	IRR U5	CI U5	IRR CS	CI CS	IRR MAT	CI MAT	IRR PED	CI PED
0b.lag_5	5																
1.lag_5	5	0.93	[0.79 - 1.08]	0.93	[0.79 - 1.10]	0.88	[0.74 - 1.05]	0.89	[0.69 - 1.14]	0.83*	[0.71 - 0.98]	1.01	[0.64 - 1.61]	0.89	[0.77 - 1.03]	0.84*	[0.72 - 0.98]
10.month	5	1.03**	[1.01 - 1.06]	1.01	[0.99 - 1.04]	0.97*	[0.95 - 0.99]	1.24***	[1.20 - 1.29]	1.02	[0.99 - 1.04]	1.09	[0.99 - 1.20]	1.06***	[1.04 - 1.08]	1.06***	[1.04 - 1.09]
11.month	5	1.03*	[1.00 - 1.05]	1.02	[0.99 - 1.04]	0.97*	[0.95 - 1.00]	1.22***	[1.18 - 1.27]	1.01	[0.98 - 1.03]	1.01	[0.92 - 1.11]	1.05***	[1.03 - 1.07]	1.06***	[1.03 - 1.08]
12.month	5	1.05***	[1.02 - 1.07]	1.02	[1.00 - 1.05]	0.99	[0.97 - 1.02]	1.22***	[1.17 - 1.26]	1.00	[0.98 - 1.03]	1.02	[0.93 - 1.12]	1.06***	[1.03 - 1.08]	1.05***	[1.03 - 1.08]
1b.month	5																
2.lag_5	5	0.94	[0.80 - 1.10]	0.94	[0.78 - 1.11]	0.94	[0.78 - 1.13]	0.80	[0.61 - 1.04]	0.87	[0.73 - 1.04]	0.93	[0.56 - 1.54]	0.95	[0.81 - 1.10]	0.84*	[0.71 - 0.98]
2.month	5	1.02*	[1.00 - 1.04]	1.05***	[1.02 - 1.07]	1.03*	[1.01 - 1.05]	1.09***	[1.06 - 1.13]	1.01	[0.99 - 1.04]	1.12*	[1.02 - 1.22]	1.04***	[1.02 - 1.06]	1.03**	[1.01 - 1.05]
3.lag_5	5	1.02	[0.86 - 1.19]	0.98	[0.82 - 1.17]	0.95	[0.78 - 1.14]	0.99	[0.76 - 1.29]	1.05	[0.88 - 1.25]	0.88	[0.53 - 1.46]	0.95	[0.82 - 1.11]	1.02	[0.86 - 1.20]
3.month	5	1.04***	[1.02 - 1.06]	1.09***	[1.07 - 1.11]	1.05***	[1.03 - 1.07]	1.21***	[1.17 - 1.25]	1.02	[1.00 - 1.04]	1.12*	[1.03 - 1.23]	1.08***	[1.06 - 1.10]	1.06***	[1.04 - 1.09]
4.month	5	1.01	[0.99 - 1.03]	1.07***	[1.05 - 1.10]	1.06***	[1.04 - 1.08]	1.18***	[1.14 - 1.22]	0.97**	[0.95 - 0.99]	1.17***	[1.07 - 1.28]	1.06***	[1.04 - 1.08]	1.02*	[1.00 - 1.04]
5.month	5	0.97**	[0.95 - 0.99]	1.08***	[1.06 - 1.10]	1.07***	[1.05 - 1.10]	1.16***	[1.12 - 1.20]	0.97*	[0.95 - 1.00]	1.14**	[1.04 - 1.24]	0.99	[0.97 - 1.01]	1.02	[1.00 - 1.04]
6.month	5	1.00	[0.98 - 1.02]	1.04***	[1.01 - 1.06]	1.00	[0.98 - 1.02]	1.19***	[1.15 - 1.23]	1.00	[0.98 - 1.02]	0.96	[0.88 - 1.05]	1.02	[1.00 - 1.03]	1.05***	[1.02 - 1.07]
7.month	5	1.02*	[1.00 - 1.04]	1.02*	[1.00 - 1.04]	0.98*	[0.96 - 1.00]	1.16***	[1.13 - 1.20]	1.00	[0.98 - 1.03]	1.00	[0.91 - 1.09]	1.03**	[1.01 - 1.05]	1.04***	[1.02 - 1.06]
8.month	5	0.99	[0.97 - 1.01]	1.01	[0.99 - 1.03]	0.98	[0.96 - 1.00]	1.20***	[1.16 - 1.24]	1.01	[0.99 - 1.03]	1.12**	[1.03 - 1.22]	0.99	[0.98 - 1.01]	1.05***	[1.03 - 1.07]
9.month	5	1.07***	[1.04 - 1.09]	1.05***	[1.02 - 1.07]	0.99	[0.97 - 1.02]	1.30***	[1.25 - 1.35]	1.08***	[1.05 - 1.10]	1.05	[0.96 - 1.16]	1.07***	[1.04 - 1.09]	1.12***	[1.10 - 1.15]
COVID	5	0.94***	[0.92 - 0.96]	0.94***	[0.92 - 0.96]	0.97**	[0.95 - 0.99]	0.84***	[0.81 - 0.87]	0.90***	[0.88 - 0.92]	0.86**	[0.79 - 0.93]	0.96***	[0.94 - 0.98]	0.89***	[0.88 - 0.91]
_cons	5	383.89***	[356.12 - 413.82]	198.82***	[183.57 - 215.33]	66.56***	[60.52 - 73.19]	533.26***	[492.90 - 576.92]	2032.85***	[1890.47 - 2185.95]	3.73***	[3.16 - 4.41]	1158.69***	[1073.44 - 1250.71]	2797.13***	[2603.50 - 3005.16]
month_year1	5	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]	1.03***	[1.03 - 1.03]	1.01***	[1.01 - 1.01]	1.02**	[1.02 - 1.03]	1.01***	[1.01 - 1.01]	1.01***	[1.01 - 1.01]
taliban	5	1.01	[0.98 - 1.03]	0.98	[0.95 - 1.00]	0.94***	[0.92 - 0.97]	0.80***	[0.76 - 0.83]	0.94***	[0.92 - 0.97]	0.75**	[0.67 - 0.83]	1.00	[0.98 - 1.03]	0.91***	[0.88 - 0.93]