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## **A decade long Maoist insurgency and the loss of child health in Nepal**

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## **A decade long Maoist insurgency and the loss of child health in Nepal**

### **Abstract**

This paper studies the impact of Nepal's 1996-2006 Maoist insurgency on the nutritional status of the children. We employ the difference-in-difference model. The proxy for conflict intensity is killings per thousand population. Our study uses the instrument variable approach to address the endogeneity issue. The finding of our study is that the marginal increase in killing per thousand population decreases height-for-age (HAZ) of the children by 0.335. The loss in child health was significant among the indigenous community and Dalit caste. We find a decrease in HAZ by 0.499 in female children.

Keywords: Maoist, insurgency, Nepal, child, nutritional status, ethnicity, gender.

## **Introduction**

The Maoist insurgency in Nepal started in February 1996 and ended in November 2006. This decade-long Maoist insurgency was a conflict between the state and the communist party. According to the report of the Informal Sector Service Centre (INSEC), during the insurgency, 13,236 people were killed, 785 people had a disability, and 1006 people disappeared. The determinants of this violent conflict are associated with poverty, unequal distribution of land, and the geography (mountainous terrain and forest coverage) of the location (Hatlebakk 2009; Nepal, Bohara, and Gawande 2007; Do and Iyer 2010; Joshi and Mason 2010). The historical marginalization of communities based on caste and ethnicity also explains the variation in conflict across the regions in Nepal (Murshed and Gates 2005).

The objective of this study is to analyze the impact of the insurgency on the nutritional status of children. In our study, we use Nepal Demographic and Health Survey (NDHS) datasets. The data on conflict is from Informal Sector Service Centre (INSEC). We employ a difference-in-differences (DID) econometric model. In our DID model, killing per 1000 population is the variable that is the proxy for conflict intensity in a subregion. We have the issue of endogeneity with the conflict variable. To address this issue, we use instrument variable (IV) approach. The IV for our identification strategy is the distance of a region from the Rolpa district which was the epicenter of Maoist insurgency and the square of the distance.

The finding of our study is that the marginal increase in killing per thousand population decreases height-for-age (HAZ) of the children by 0.335. The loss in child health was significant among the indigenous community and Dalit caste. We find a decrease in HAZ by 0.499 in female children.

## Data

In our study, we use Nepal Demographic and Health Survey (NDHS) datasets from 1996 and 2006. The data collection for the 1996 survey started in January and ended in June. The survey of 2006 started in February and ended in August. The Maoist insurgency started in February 1996 and ended in November 2006. The availability of NDHS datasets at the beginning of insurgency and after the end of it provide a suitable setting to study the impact of the insurgency on the nutritional status of children. The dataset from the survey of 2006 has data on 0-5 years children but the 1996 dataset has data on only 0-3 years children. We, therefore, use data of 0-3 years children from the 2006 dataset. The sample size in our study is 6,870 children. We have 3,747 children in the 1996 dataset and 3,123 children in the 2006 dataset.

The 1996 NDHS dataset does not have data on the district where the household is located. However, it has data on development regions and ecological belts. Nepal was divided into 5 development regions. Each development region runs from north to south. Geographically, Nepal has 3 ecological belts: mountain, hill, and terai (plain). All three belts run from east to west. The mountain belt is in the northern part of the country and the plain belt is in the southern part. The hill belt is in between the other 2 belts. We have created 15 subregions by using 5 development regions and 3 ecological belts (*Figure 5*).

According to the report of the Informal Sector Service Centre (INSEC), 13,236 people were killed during this decade-long insurgency. As a proxy for the intensity of conflict in the various subregions of the country, we use the number of deaths. The data on the number of deaths in all the districts of the country is obtained from INSEC. To get the total number of deaths in each subregion, we add the number of deaths of all districts in the subregion. We normalize the number of deaths in the subregions by dividing it by the population of the respective subregion as per the

census of 1991. This way, we created our principle independent variable i.e. killed per thousand population (KPT).

Our dependent variable of interest is the indicator of the nutritional status of children. We use height-for-age z-score (HAZ). A low HAZ (stunting) reflects the cumulative effects of undernutrition and infections since and even before birth (WHO, 2019). During the insurgency, the children were exposed to conflict for a long duration. We are therefore interested in HAZ because it captures the cumulative effects which is also stock variable. A child is stunted if  $HAZ < -2$ . A stunted child often results in delayed mental development, poor school performance, and reduced intellectual capacity. If a girl child is stunted, then this leads to short stature when she grows adult. Small women are at greater risk of delivering an infant with low birth weight. Infants of low birth weight tend to be smaller while growing into an adult. Therefore, stunted girl child leads to the intergenerational cycle of malnutrition (WHO, 2019).

For the preliminary analysis, we have categorized the subregions into low and high conflict groups. In the 15 subregions, the lowest killed per thousand population is 0.0509 and the highest is 3.8575. The subregions with less than 0.8275 KPT are categorized as low conflict regions otherwise the subregions are in the high conflict region. The *table 2* presents the statistics of low and high conflict regions, before and after the Maoist insurgency. Columns 1-4 present statistics before the insurgency and columns 5-8 present statistics after the insurgency. Before the insurgency, the average HAZ is -2.115 for the low conflict region (column 1) and -2.18 for the high conflict region. The difference of 0.064 (column 3) is statistically insignificant. After the insurgency, the average HAZ for the low conflict region is -1.613 (column 5) and for the high conflict region is -1.825 (column 6). The difference increases to 0.212 (column 7) which is statistically significant at 1 percent level. The *figure 1* also tells similar results. Before the

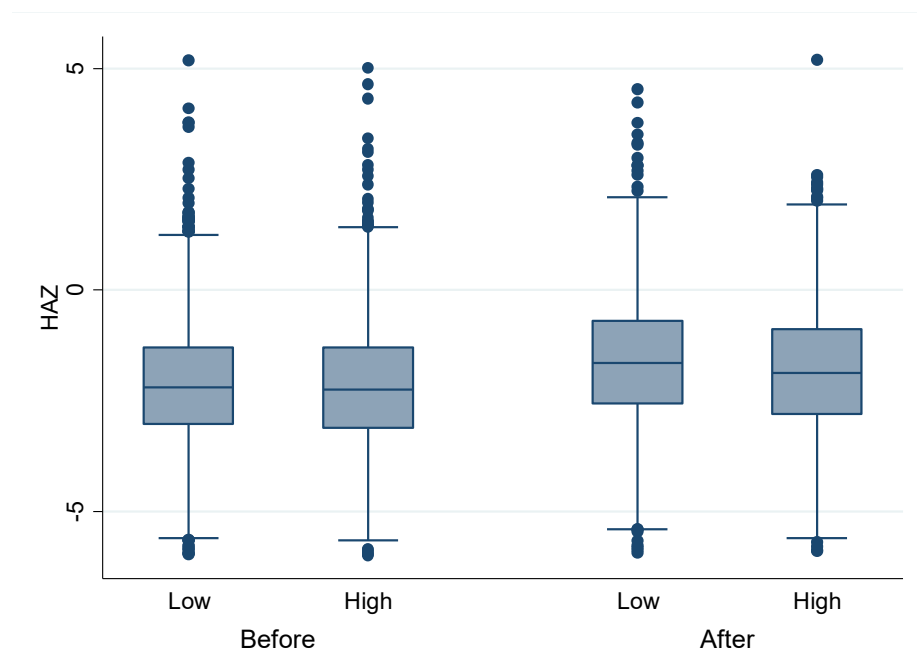
insurgency, the average HAZ of low and high conflict regions was not different. After the insurgency, we could see the progress made in the nutritional status of children in both regions, but the progress is not the same. We see the difference in the average HAZ between the low and high conflict groups. We can infer from these results that the insurgency has negatively affected the nutritional health status of the children. From HAZ, we have generated dummy variable i.e. stunted. The preliminary result for stunted is similar to the result we found for HAZ.

*Table 1: T-test between Low and High conflict regions before and after Maoist insurgency.*

|                             | Before insurgency |         |       |         | After insurgency |         |        |         |
|-----------------------------|-------------------|---------|-------|---------|------------------|---------|--------|---------|
|                             | Low               | High    | dif   | p value | Low              | High    | dif    | p value |
| <b>Child</b>                |                   |         |       |         |                  |         |        |         |
| HAZ                         | -2.115            | -2.18   | .064  | .179    | -1.613           | -1.825  | .212   | 0       |
| Stunted                     | .555              | .572    | -.017 | .321    | .407             | .473    | -.066  | 0       |
| Sex of Child: M=1 and F=2   | 1.498             | 1.48    | .018  | .276    | 1.509            | 1.492   | .017   | .347    |
| Age of Child                | 17.127            | 17.056  | .071  | .833    | 18.002           | 18.27   | -.268  | .466    |
| <b>Household</b>            |                   |         |       |         |                  |         |        |         |
| Sex of HH Head: M=1 and F=2 | 1.091             | 1.06    | .032  | .001    | 1.185            | 1.223   | -.038  | .009    |
| Age of HH Head              | 41.818            | 41.145  | .672  | .157    | 43.103           | 40.754  | 2.349  | 0       |
| <i>Wealth index</i>         |                   |         |       |         |                  |         |        |         |
| Poorest                     | .218              | .309    | -.091 | 0       | .176             | .433    | -.257  | 0       |
| Poorer                      | .199              | .205    | -.007 | .613    | .192             | .226    | -.035  | .019    |
| Middle                      | .181              | .203    | -.022 | .099    | .214             | .137    | .076   | 0       |
| Richer                      | .218              | .18     | .037  | .005    | .232             | .13     | .102   | 0       |
| Richest                     | .185              | .102    | .083  | 0       | .187             | .074    | .113   | 0       |
| <i>Ethnicity/caste</i>      |                   |         |       |         |                  |         |        |         |
| Brahmin/Chettri             | .219              | .468    | -.25  | 0       | .214             | .503    | -.289  | 0       |
| Newar                       | .074              | .011    | .064  | 0       | .036             | .032    | .004   | .563    |
| Janajati                    | .343              | .31     | .034  | .033    | .318             | .276    | .042   | .012    |
| Muslim                      | .072              | .013    | .06   | 0       | .074             | .018    | .056   | 0       |
| Madhesi                     | .153              | .011    | .142  | 0       | .196             | .01     | .186   | 0       |
| Dalit                       | .139              | .188    | -.049 | 0       | .164             | .161    | .003   | .81     |
| Residence: U=0 and R=1      | 1.896             | 1.934   | -.038 | 0       | 1.769            | 1.807   | -.038  | .01     |
| <b>Parents</b>              |                   |         |       |         |                  |         |        |         |
| Height of Mother            | 150.301           | 150.928 | -.626 | .001    | 150.34           | 151.456 | -1.116 | 0       |
| Age of Mother               | 26.588            | 27.196  | -.609 | .004    | 25.707           | 26.124  | -.417  | .049    |
| Mother's education          | .388              | .206    | .182  | 0       | .783             | .571    | .213   | 0       |
| Father's education          | 1.167             | .996    | .172  | 0       | 1.336            | 1.342   | -.005  | .875    |
| <b>Pathway</b>              |                   |         |       |         |                  |         |        |         |
| <i>Mother</i>               |                   |         |       |         |                  |         |        |         |
| Delivery at home            | .885              | .946    | -.061 | 0       | .771             | .848    | -.076  | 0       |
| Antenatal visit             | .49               | .334    | .156  | 0       | .774             | .703    | .072   | 0       |
| Tetanus vaccine             | .528              | .32     | .209  | 0       | .789             | .66     | .129   | 0       |

|                            |      |      |      |      |      |      |       |      |
|----------------------------|------|------|------|------|------|------|-------|------|
| Iron folic tablet<br>Child | .107 | .076 | .03  | .002 | .248 | .186 | .063  | 0    |
| Vaccine to child           | .706 | .576 | .131 | 0    | .909 | .907 | .003  | .837 |
| Vitamin to child           | .261 | .254 | .007 | .658 | .767 | .822 | -.055 | .001 |

Figure 1: Box plot of HAZ across low and high conflict regions before and after Maoist insurgency.



In analyzing the relation of HAZ and KPT, we have the possibility of an endogeneity issue. The deaths of people in high conflict regions could be driven by many socioeconomic factors and other unobservable. In the *table 1*, we are making a comparison between the low and high conflict regions before the insurgency using various variables. The differences in the variables before the insurgency suggest that these two regions are not similar. From the wealth index variable, we can say the households in low conflict regions are wealthier than in high conflict regions. The proportion of the Brahmin/Chettri caste is higher in the high conflict region. Janajaties (indigenous ethnic communities) are evenly distributed between the regions. Our data show that in comparison to the proportion of Muslims and Madhesi in low conflict regions the proportion is lesser in the



high conflict region. This is aligned with the development that the Maoist movement had made in different parts of the country. Terai where these communities reside was less affected during the insurgency. The education level (none, primary, secondary, and higher) of both mother and father are higher in the low conflict region. In all the health indicators, the low conflict group is better off. These statistics before the insurgency raise the endogeneity issue in our principle explanatory variable i.e., killed per thousand population (KPT).

We have plotted a two-way graph of HAZ and KPT variables, before and after insurgency (*figure 2*). The fitted linear line before insurgency shows that there is a correlation between HAZ and KPT. This tells us that some unobservable variables are affecting HAZ and KPT of the region. This again raises the issue of endogeneity in our study. After the insurgency, the fitted linear line gets steeper than before the insurgency. This infers that the KPT has negatively affected the health of children. The upward shift of curves after insurgency tells that nationally the nutritional status of Nepalese children is on a positive trend.

*Figure 2: Two-way graph of HAZ and KPT, before and after insurgency.*



## Empirical model

We use difference-in-differences (DID) in our analysis. The availability of datasets before and after the insurgency provides a suitable setting to use this model.

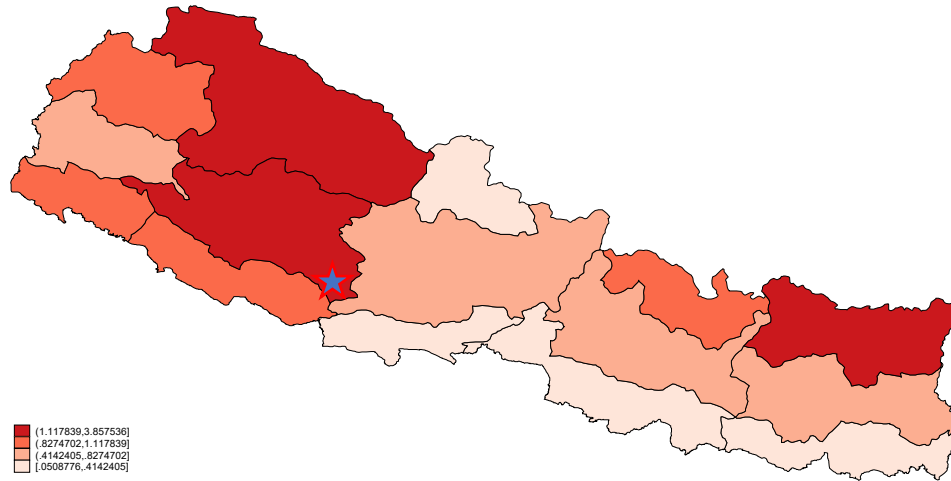
$$HAZ_{itr} = b_0 + b_1 * Post_t + b_2 * Killedperk_r + b_3 * Post_t * Killedperk_r + b_4 * X_{itr} + b_5 * M_{itr} + \gamma_{itr} + \delta_{itr} + \bar{U}_{itr} + \theta_r + \rho_r + \varepsilon_{itr} \quad (1)$$

where  $HAZ_{itd}$  represents the nutritional status of child  $i$  at time  $t$  living in the region  $r$ .  $Post_t$  is a dummy variable equal to one in the pre-war period ( $t = 1996$ ) and zero otherwise ( $t = 2006$ ).  $Killedperk_r$  is the number of people killed during the insurgency per thousand population in the subregion.  $X_{itr}$  is a matrix of control variables consisting of indicators for the household head's sex and age, caste/ethnicity, and residence.  $M_{itr}$  is a matrix of variables that includes the characteristics of the child's parents. It has the mother's height, mother's age, education of mother, and education of the father.  $\gamma_{it}$  is the birth year of the child.  $\delta_{it}$  is the birth month of the child.  $\bar{U}_{itr}$  is the birth order of the child.  $\theta_r$  is development region.  $\rho_r$  is the ecological belt. In equation 1, the coefficient  $b_3$  provides the estimate of the net effect of insurgency on the nutritional status of children. However, we have an issue with endogeneity in our DID model. The variable  $Killedperk_r$  could be correlated with the unobservables characteristics of the subregion.

## Identification strategy

Rolpa district was the epicenter of the Maoist insurgency. It is therefore that we see in the *figure 3* the intensity of insurgency was severe in the subregions around the Rolpa district. We are using the distance between the centers of the Rolpa district and subregion and the square of the distance as the instrument variables.

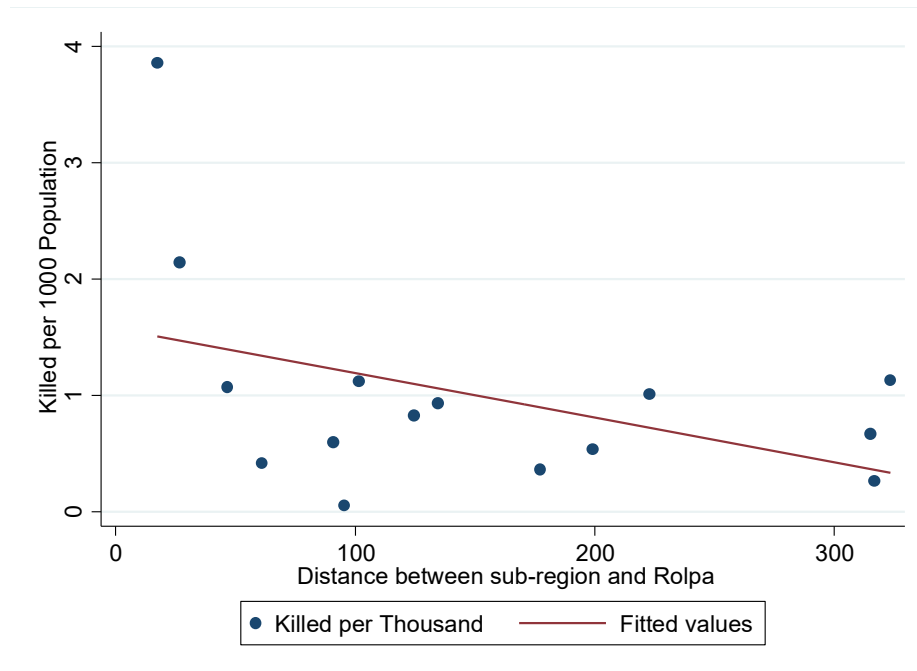
Figure 3: Conflict intensity across sub-regions during Maoist insurgency.



Note: Nepal had 75 districts and 5 administrative development regions. The development regions are Eastern, Central, Western, Mid-western, and Western development regions. It has 3 ecological belts: Mountain, Hills, and Terai (plain belt in the south). The star represents Rolpa district.

In the *figure 4*, we have the scatter plot of KPT and the distance between the subregion and Rolpa. The fitted linear line in the graph shows that these two variables correlate. The graph shows that the KPT decreases with the increase in distance. This satisfies our relevance condition for our IV. Another condition is the exclusionary restriction. For this, the nutritional status of children has nothing to do with the distance between the sub-region and Rolpa. It is therefore that our IV also satisfies our second condition. The *table 9* also shows that HAZ and distance to Rolpa have no relation. We got a statistically significant coefficient for our next IV i.e., square of the distance to Rolpa but its magnitude is very small.

Figure 4: Scatter plot of KPT and distance between the centers of Rolpa district and sub-region.



## Results

In the *table 2*, our DID model without addressing the endogeneity issue gives us estimates of -0.138 for HAZ. The negative estimates infer that the insurgency has negatively affected the nutritional health status of children. However, our estimates could be biased due to the endogeneity issue. We employ the IV approach to address this issue. We use the two-stage least square (2SLS) method. In the first stage, we regress our endogenous variable KPT on IVs and other control variables. In the *table 3*, the estimate for distance to Rolpa is -0.0233 which tells that every 100 miles increase in distance of the center of the subregion from Rolpa decreases killed per thousand by 2.33. The estimate for our next instrument i.e. square of the distance to Rolpa is 0.0000625. This estimate infers that the decrease in KPT with an increase in distance to Rolpa is at an increasing rate. Both the instrument variables' estimates are statistically significant. Our F estimate is 725.33 which is greater than 10. These estimates from the first stage regression of 2SLS infer that our instrument variables are appropriate.

Table 2: OLS result.

| VARIABLES                  | (1)<br>HAZ           |
|----------------------------|----------------------|
| Post                       | 3.523***<br>(0.238)  |
| Killed per Thousand        | 0.0515<br>(0.0423)   |
| Post * Killed per Thousand | -0.138**<br>(0.0613) |
| Constant                   | -11.88***<br>(0.592) |
| Observations               | 6,834                |
| R-squared                  | 0.325                |
| Control                    | YES                  |

Table 3: First stage regression result.

| VARIABLES                   | Killed per<br>Thousand      |
|-----------------------------|-----------------------------|
| Distance to Rolpa           | -.0232962 ***<br>(.000685)  |
| Square of distance to Rolpa | .0000625***<br>(0.00000220) |
| Observations                | 6,870                       |
| R-squared                   | 0.8807                      |
| F                           | 725.33                      |
| Control                     | YES                         |

The *table 4* presents the second stage result in which the dependent variables are Z-scores. Column 1, in which the dependent variable is HAZ, the estimate infers that each unit increase in KPT decreases HAZ by -0.335. The average HAZ in the high conflict region before the insurgency was -2.18 (*table 1*) which is already at the critical level. In this context, a 0.335 decrease in HAZ with a unit increase in KPT could push children to severe nutritional status. Low HAZ is associated with delayed mental development, poor school performance, and reduced intellectual capacity.

The finding of a decrease in HAZ due to insurgency tells that the conflict had a severe impact on the nutritional status of children.

*Table 4: The impact of the insurgency on child health.*

| VARIABLES                  | (1)<br>HAZ           |
|----------------------------|----------------------|
| Killed per Thousand        | 0.175**<br>(0.0841)  |
| Post * Killed per Thousand | -0.335***<br>(0.109) |
| Post                       | 3.637***<br>(0.243)  |
| Constant                   | -11.91***<br>(0.600) |
| Observations               | 6,834                |
| R-squared                  | 0.323                |
| Control                    | YES                  |

We use stunted as the alternative dependent variable which is a dummy variable. We interpret the estimate in the *table 5* in probability. Similar to the results in the *table 6*, we have got statistically significant estimate for stunted. A unit increase in KPT increases the probability of being stunted by 7.4%. This result strengthens the finding in the *table 6*.

*Table 5: Stunted as the alternative dependent variable.*

| VARIABLES                  | (1)<br>Stunted        |
|----------------------------|-----------------------|
| Killed per Thousand        | -0.0396<br>(0.0276)   |
| Post * Killed per Thousand | 0.0740**<br>(0.0341)  |
| Post                       | -0.885***<br>(0.0827) |
| Constant                   | 3.406***<br>(0.214)   |
| Observations               | 6,834                 |
| R-squared                  | 0.230                 |
| Control                    | YES                   |

## **Heterogeneity analysis**

The decade-long Maoist insurgency in Nepal was a conflict between the state and the communist party. The insurgency was driven by a communist ideology that had the flavor of class struggle. One important characteristic of the insurgency was that it exploited the economic class conflict in Nepalese society. Another significant feature of the insurgency was that many guerillas were from marginalized communities. Historically, the indigenous nationalities and Dalits were underrepresented in national politics. Also, they were economically marginalized. Under this socio-economic background, the agenda of providing autonomy to indigenous communities attracted them. It is therefore that the historical marginalization based on ethnicity and caste highly explains the Maoist insurgency in Nepal (Murshed and Gates 2005). On this pretext, we are interested to analyze the heterogeneous impact of the insurgency across caste/ethnicities. Further, due to the patriarchal characteristics of Nepalese society, we are also interested to analyze the impact across gender.

### *Ethnicity/caste*

We have created six categories of caste/ethnicities in our dataset. Newars are among the indigenous nationalities. However, they are relatively less marginalized in comparison to other ethnic communities in Nepal. Brahmin/Chettri is the higher caste in the Hindu caste system and Dalit is the most underprivileged caste. They belong to the lowest caste category and are economically and socially most marginalized. Madhesi and Muslims are from the terai ecological belt of the country. Their marginalization from the state is different in context to other ethnicities. Although the Madhes movement was the major force to make Nepal a constitutionally federal state, they were less influenced by the autonomy agenda of the Maoist party during the decade-long insurgency.

In the *table 6*, the estimate in column 3 for indigenous nationalities is -0.772 and is statistically significant at a 5 percent level. From this result, we can infer that the insurgency had hugely affected the children from the indigenous communities. This could be due to the involvement of indigenous youth as a guerilla because, as discussed earlier, the youths from indigenous nationalities were influenced by the autonomy agenda of the Maoist party. For other communities, the estimates are not statistically significant. Dalit caste who are the most marginalized has a -0.150 estimate. Although this estimate is not statistically significant, the decrease in the nutritional status of the already most vulnerable caste needs attention. The effect of insurgency on Madhesi and Muslims is no different than zero. Among the Brahmin/Chettri caste, the estimate is -0.0570 which is statistically insignificant.

*Table 6: The impact of insurgency across caste/ethnicities.*

| VARIABLES                  | Dependent variable: HAZ |                     |                      |                      |                      |                      |
|----------------------------|-------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
|                            | Brahmin/Chettri         | Newar               | Janajati             | Muslim               | Madhesi              | Dalit                |
| Killed per Thousand        | -0.0744<br>(0.0742)     | 0.167<br>(0.777)    | 0.869***<br>(0.285)  | 0.232<br>(0.533)     | 0.592<br>(0.766)     | 0.101<br>(0.124)     |
| Post * Killed per Thousand | -0.0570<br>(0.111)      | 2.432<br>(2.178)    | -0.772*<br>(0.395)   | 0.472<br>(0.775)     | 0.496<br>(1.631)     | -0.150<br>(0.169)    |
| Post                       | 2.955***<br>(0.450)     | 1.999<br>(1.818)    | 4.250***<br>(0.428)  | 3.905**<br>(1.753)   | 2.160***<br>(0.831)  | 4.360***<br>(0.697)  |
| Constant                   | -11.26***<br>(0.945)    | -5.837**<br>(2.486) | -12.94***<br>(1.293) | -11.04***<br>(3.247) | -15.83***<br>(2.100) | -12.99***<br>(1.542) |
| Observations               | 2,269                   | 281                 | 2,154                | 331                  | 701                  | 1,098                |
| R-squared                  | 0.338                   | 0.483               | 0.334                | 0.415                | 0.377                | 0.365                |
| Control                    | YES                     | YES                 | YES                  | YES                  | YES                  | YES                  |

### *Gender*

Nepalese society has a patriarchal characteristic. The households have a preference for sons over girls. It makes sense to see the impact of the insurgency on children's health across gender. In the *table 7*, column 2 presents the estimate for female children. We observe that the female children have an estimate of -0.499 which is statistically significant at a 1 percent level. However, the



estimate for male children is -0.191 with a standard error of 0.132. From these results, we can infer that the negative impact of the insurgency on Nepalese children is largely driven by the negative impact on female children. Due to this feature of the impact of insurgency, the negative effect of the insurgency could lead to the intergenerational cycle of malnutrition.

*Table 7: The impact of insurgency across gender groups.*

| VARIABLES                  | Dependent variable: HAZ |                      |
|----------------------------|-------------------------|----------------------|
|                            | Male                    | Female               |
| Killed per Thousand        | 0.0466<br>(0.0967)      | 0.297**<br>(0.118)   |
| Post * Killed per Thousand | -0.191<br>(0.132)       | -0.499***<br>(0.131) |
| Post                       | 3.490***<br>(0.362)     | 3.776***<br>(0.326)  |
| Constant                   | -12.08***<br>(0.923)    | -11.84***<br>(0.770) |
| Observations               | 3,452                   | 3,382                |
| R-squared                  | 0.334                   | 0.328                |
| Control                    | YES                     | YES                  |

### **Robustness check**

We excluded high conflict intensity subregions i.e., the subregions with KPT greater and equal to 2. After excluding those subregions, we found that a marginal increase in KPT decreases HAZ by 1.068 and WAZ by 1.328, both statistically significant (*table 10*). The magnitude of the coefficients of our interaction variable for all our outcome variables is larger than our main results. This tells that our main result is robust. In our main result, we used the distance between the centers of the Rolpa district and subregion and the square of the distance as our instrument variables. For the robustness check, we are using only the distance between the centers of the Rolpa district and subregion as our instrument variable. In the *table 11*, a marginal increase in KPT decreases HAZ by 0.399 and WAZ by 0.265. These results tell that our main results are again robust.

## Conclusion

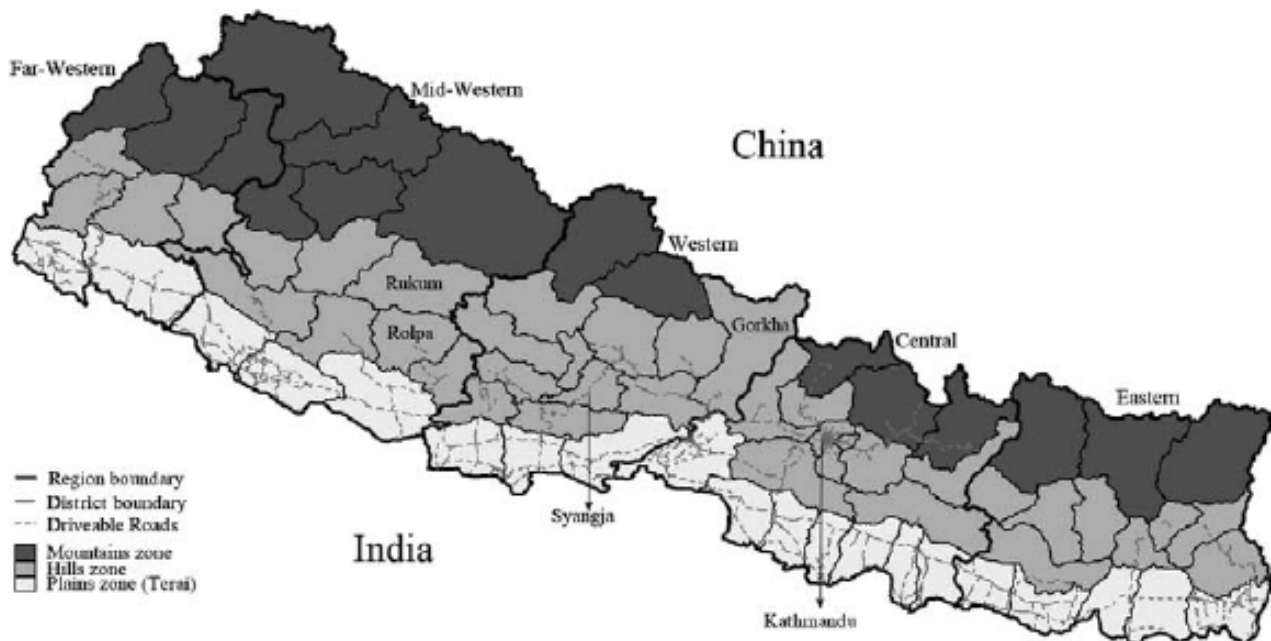
The paper studied the impact of the Maoist insurgency on the nutritional status of children. We employed a difference-in-differences (DID) econometric model. In our DID model, killing per 1000 population is the variable that is the proxy for conflict intensity in a subregion. We have the issue of endogeneity with the conflict variable. To address this issue, we used instrument variable (IV) approach. The IV for our identification strategy is the distance of a region from the Rolpa district which was the epicenter of Maoist insurgency and the square of the distance. The finding of our study is that the marginal increase in killing per thousand population decreased height-for-age (HAZ) of the children by 0.335. The loss in child health was significant among the indigenous community and Dalit caste. We find a decrease in HAZ by 0.499 in female children.

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## Appendix

Figure 5: Development regions and ecological belts map of Nepal.



Source: Holtermann 2014

Table 8: Descriptive statistics by survey year.

|                           | 1996 (Before insurgency) |          |           |       |       | 2006 (After insurgency) |          |           |       |       |
|---------------------------|--------------------------|----------|-----------|-------|-------|-------------------------|----------|-----------|-------|-------|
|                           | N                        | Mean     | Std. Dev. | min   | max   | N                       | Mean     | Std. Dev. | min   | max   |
| <b>Child</b>              |                          |          |           |       |       |                         |          |           |       |       |
| HAZ                       | 3747                     | -2.142   | 1.437     | -5.99 | 5.19  | 3123                    | -1.708   | 1.429     | -5.94 | 5.2   |
| Stunted                   | 3747                     | .562     | .496      | 0     | 1     | 3123                    | .436     | .496      | 0     | 1     |
| Sex of Child: M=1 and F=2 | 3747                     | 1.491    | .5        | 1     | 2     | 3123                    | 1.501    | .5        | 1     | 2     |
| Age of Child              | 3747                     | 17.097   | 10.09     | 0     | 35    | 3123                    | 18.121   | 10.192    | 0     | 35    |
| Birth year                | 3747                     | 2050.993 | .857      | 2049  | 2053  | 3123                    | 2061.094 | .88       | 2059  | 2063  |
| Birth month               | 3747                     | 6.618    | 3.366     | 1     | 12    | 3123                    | 6.612    | 3.317     | 1     | 12    |
| Birth order               | 3747                     | 3.38     | 2.231     | 1     | 16    | 3123                    | 2.782    | 1.906     | 1     | 13    |
| <b>Household</b>          |                          |          |           |       |       |                         |          |           |       |       |
| Sex of HH Head: M=1 and F | 3747                     | 1.078    | .269      | 1     | 2     | 3123                    | 1.202    | .402      | 1     | 2     |
| Age of HH Head            | 3747                     | 41.541   | 14.3      | 12    | 95    | 3123                    | 42.054   | 15.204    | 16    | 96    |
| <i>Wealth index</i>       |                          |          |           |       |       |                         |          |           |       |       |
| Poorest                   | 3747                     | .255     | .436      | 0     | 1     | 3123                    | .291     | .454      | 0     | 1     |
| Poorer                    | 3747                     | .201     | .401      | 0     | 1     | 3123                    | .207     | .405      | 0     | 1     |
| Middle                    | 3747                     | .191     | .393      | 0     | 1     | 3123                    | .179     | .384      | 0     | 1     |
| Richer                    | 3747                     | .202     | .402      | 0     | 1     | 3123                    | .186     | .389      | 0     | 1     |
| Richest                   | 3747                     | .151     | .358      | 0     | 1     | 3123                    | .137     | .344      | 0     | 1     |
| <i>Ethnicity/caste</i>    |                          |          |           |       |       |                         |          |           |       |       |
| Brahmin/Chettri           | 3747                     | .321     | .467      | 0     | 1     | 3123                    | .343     | .475      | 0     | 1     |
| Newar                     | 3747                     | .048     | .213      | 0     | 1     | 3123                    | .034     | .18       | 0     | 1     |
| Janajati                  | 3747                     | .329     | .47       | 0     | 1     | 3123                    | .299     | .458      | 0     | 1     |
| Muslim                    | 3747                     | .048     | .214      | 0     | 1     | 3123                    | .049     | .217      | 0     | 1     |
| Madhesi                   | 3747                     | .095     | .293      | 0     | 1     | 3123                    | .113     | .316      | 0     | 1     |
| Dalit                     | 3747                     | .159     | .366      | 0     | 1     | 3123                    | .162     | .369      | 0     | 1     |
| Residence: U=0 and R=1    | 3747                     | 1.911    | .284      | 1     | 2     | 3123                    | 1.785    | .411      | 1     | 2     |
| <b>Parents</b>            |                          |          |           |       |       |                         |          |           |       |       |
| Height of Mother          | 3725                     | 150.559  | 5.481     | 124.8 | 192.6 | 3122                    | 150.838  | 5.398     | 130.5 | 185.8 |
| Age of Mother             | 3747                     | 26.838   | 6.345     | 15    | 49    | 3123                    | 25.893   | 5.867     | 15    | 49    |
| Mother's education        | 3747                     | .313     | .668      | 0     | 3     | 3123                    | .688     | .9        | 0     | 3     |
| Father's education        | 3747                     | 1.097    | 1.006     | 0     | 3     | 3110                    | 1.339    | .92       | 0     | 3     |
| <b>Pathway</b>            |                          |          |           |       |       |                         |          |           |       |       |
| <i>Mother</i>             |                          |          |           |       |       |                         |          |           |       |       |
| Delivery at home          | 3747                     | .91      | .287      | 0     | 1     | 3123                    | .805     | .396      | 0     | 1     |
| Antenatal visit           | 3663                     | .425     | .494      | 0     | 1     | 2822                    | .742     | .438      | 0     | 1     |
| Tetanus vaccine           | 3736                     | .442     | .497      | 0     | 1     | 2822                    | .731     | .443      | 0     | 1     |
| Iron folic tablet         | 3740                     | .094     | .292      | 0     | 1     | 2822                    | .22      | .414      | 0     | 1     |
| <i>Child</i>              |                          |          |           |       |       |                         |          |           |       |       |
| Vaccine to child          | 2869                     | .651     | .477      | 0     | 1     | 2053                    | .908     | .288      | 0     | 1     |
| Vitamin to child          | 3745                     | .258     | .437      | 0     | 1     | 2858                    | .791     | .407      | 0     | 1     |
| Small size at birth       | 3746                     | .266     | .442      | 0     | 1     | 3123                    | .2       | .4        | 0     | 1     |
| Diarrhea                  | 3746                     | .294     | .455      | 0     | 1     | 3123                    | .16      | .367      | 0     | 1     |
| Fever in child            | 3745                     | .415     | .493      | 0     | 1     | 3123                    | .213     | .41       | 0     | 1     |
| Cough in child            | 3745                     | .488     | .5        | 0     | 1     | 3123                    | .218     | .413      | 0     | 1     |

*Table 9: Relation between HAZ and IVs.*

| VARIABLES                   | (1)<br>HAZ                   |
|-----------------------------|------------------------------|
| Distance to Rolpa           | -0.000459<br>(0.000905)      |
| Square of Distance to Rolpa | 0.00000559**<br>(0.00000241) |
| Constant                    | -12.11***<br>(0.590)         |
| Observations                | 6,834                        |
| R-squared                   | 0.328                        |
| Control                     | YES                          |

*Table 10: Robustness check on the impact of the insurgency on child health.*

| VARIABLES                  | (1)<br>HAZ           |
|----------------------------|----------------------|
| Killed per Thousand        | 1.664***<br>(0.352)  |
| Post * Killed per Thousand | -1.068*<br>(0.642)   |
| Post                       | 3.834***<br>(0.414)  |
| Constant                   | -12.14***<br>(0.690) |
| Observations               | 6,137                |
| R-squared                  | 0.316                |
| Control                    | YES                  |

Note: In this robustness check, we exclude subregions that have killing per thousand greater and equal to 2.

*Table 11: Robustness check on the impact of the insurgency on child health.*

| VARIABLES                  | (1)<br>HAZ           |
|----------------------------|----------------------|
| Killed per Thousand        | -0.652**<br>(0.305)  |
| Post * Killed per Thousand | -0.399*<br>(0.218)   |
| Post                       | 3.944***<br>(0.304)  |
| Constant                   | -10.49***<br>(0.712) |
| Observations               | 6,834                |
| R-squared                  | 0.267                |
| Control                    | YES                  |

Note: In this robustness check, we use the distance between the centers of the Rolpa district and subregion as an instrument.