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Geographic Isolation and Poverty among Indigenous Peoples in Nepal

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ABSTRACT

This study analyzed nationally representative sample of women (N =10793) to quantify the magnitude and predictors of poverty among indigenous peoples of Nepal. The study estimated the risk of poverty among the major ethnic groups in Nepal. Cross-sectional data from the Nepal Demographic and Health Survey 2006 (NDHS 2006) was used. Step-wise multivariate logistic regressions were conducted. The results show that significant variations exist in the risk of poverty between indigenous and non-indigenous peoples. Tamang were at the highest risk of poverty among the indigenous peoples. Controlling for geography further exacerbated the disparity between indigenous and non-non indigenous peoples. Attentions to the intrinsic development practices are needed to determine if these variations are reflective of the institutions that systematically isolate geographic territories of the indigenous peoples.

Key word: poverty, indigenous, geography, Nepal

INTRODUCTION

Over 370 million peoples across the world consider themselves as indigenous peoples. They represent over 5,000 of the estimated 7,000 distinct culture and language groups in the world. They live in more than 90 countries across the globe (UNPFII, 2007), and an estimated 70 percent of them live in Asia (IFAD 2000/2001). Despite the vastly varied geographic and cultural contexts in which they live, they all share a common problem- high rate of poverty (Carino, 2009). Indigenous peoples suffer disproportionally higher rate of poverty than non-indigenous peoples throughout the world (Carino, 2009; Eversole, 2005; Psachoropoulos & Patrionos, 1994). Although the indigenous peoples make up about 5% of the world's population, they comprise over 30% of the world's 900 million extremely poor and 15% of all poor of the world (State of the World's Indigenous Peoples, 2009). Almost 99% of the indigenous peoples throughout the world are poor (make less than $2 a day) and over 72% of them are extremely poor (make less than $1 a day). The determinants of their poverty, however, are currently unknown.

Although indigenous peoples have begun to gain attention in public discourses since 1950s, the empirical works on socioeconomic status of indigenous peoples, began only recently in the early 1990s. The movement towards empirical studies of indigenous poverty was motivated by the studies of racial disparities between Blacks and Whites in the United States, which began in the 1960s (Psacharopoulos & Patrinos, 1994). To date, there have been only very few studies that explicitly looked at the poverty among indigenous peoples vis-à-vis non-indigenous populations.

The first quantitative study on indigenous poverty was conducted by Psacharopoulos and Patrinos (1994) who looked at the income disparities between indigenous and non-indigenous

peoples in Latin Americas. In their classic study, they found that there is a "cost" of being indigenous. They found significant earning differentials between indigenous and non-indigenous peoples, and that this difference was not solely due to the differences in human capital and other productivity characteristics. They concluded that the 'cost' was due to discrimination against indigenous peoples. Consistent with the findings of this study, other studies have documented discrimination against indigenous peoples in land tenure, income, employment, housing, and education (Wood & Patrinos, 1994; ILO, 2007; Taylor & Kalt, 2005; Altman, Biddle & Hunter, 2008; Eversole, 2005; Carino, 2009; Freeman & Fox, 2005 etc.).

Studies also have noted that indigenous peoples are largely subsistent farmers and mostly live in rural areas (Hall & Patrino, 2005; Panadiges, 1994). Poverty map in almost all the countries of Latin America coincide with indigenous peoples' territories (Hall & Patrino, 2005); and in Mexico, in geographic areas where majority of the populations were indigenous, only 16.1% had piped water (compared to 62.5%); 48.9% had electricity (compared to 92.9%) and only 2.4% had telephone services (compared to 22.2%) (Panadiges, 1994). Even in urban areas, virtually all the indigenous peoples living in municipalities, where more than 90% of the peoples were indigenous, were extremely poor (Plant, 1998).

In the industrialized countries (U.S., Canada, Australia, and New Zealand), studies point out that lack of "self-governance" by indigenous peoples over their own territories is the primary determinant of indigenous poverty (Cornel, 2005). Studies at Harvard Project by Cornel (2005) suggest that the reason indigenous peoples in the United States are better off than indigenous peoples in Australia and New Zealand is that indigenous peoples in the U.S. have more "autonomy" over their territories than their counter-parts in other countries.

While these studies inform us about the disparity between indigenous and non-indigenous peoples of the industrialized countries or the developing countries of the Latin Americas, in which the non-indigenous groups are European White settlers, they do not shed light on the extent to which such disparity exists in the developing countries of Asia where non-indigenous groups are non-White. Furthermore, the current works on indigenous peoples have been mostly descriptive, and some are inductive (mostly from anthropology). These works are scattered here and there and largely focused on small indigenous groups or geographic areas. The previous studies have assumed homogeneity among the indigenous groups, and glossed over the differences that may exist within these groups (e.g. Hall & Patrino, 2005; Panadiges, 1994; Psacharopoulos and Patrinos; 1994; Plant, 1998). To date, no systematic studies have been conducted using nationally representative sample to look at the variations between indigenous and non-indigenous groups and within each of these groups. The extent to which disparity exists among various ethnic groups in the developing countries of Asia, and the factors that contribute to such disparity is currently unknown.

In an effort to begin to fill this gap in our knowledge, we conducted this study using nationally representative sample of women in Nepal- a developing country in Asia. Using theory of institutional design (North, 1990) as a theoretical guidance, we asked following research questions:

1. How does the risk of poverty vary among various ethnic groups in Nepal?
2. Are indigenous peoples at significantly higher risk of poverty than non non-indigenous peoples?
3. To the extent there is a disparity, what are the factors that contribute to such disparity?

These questions are critical to policy makers as they strive to promote economic wellbeing of the poor; and bridge the gap that exists between the poor and the rich.

Context: Geography and Demography of Nepal

Nepal is a developing country in Asia. Poverty rate is estimated to be 31% in 2004 (World Bank). The population of Nepal is estimated to be 28.5 million in 2009 (CIA the World Fact Book). Ecologically, Nepal is divided into three geographic zones: the mountain, the hills and the plain (Terai). Nepal is divided into five developmental regions- East, Central, West, Mid-west and Far-west regions. These regions are further divided into sub-regions. In total, there are 13 development sub-regions. These sub-regions serve as the geographic units for National Planning.

Indigenous peoples of Nepal

Indigenous peoples are the native or original inhabitants of the Himalayas, and they constitute more than two-third of the total population of Nepal. They speak more than 60 different languages, and they practice diverse cultures, and are largely Buddhists. The indigenous peoples look distinct in their physical features, costumes and cultural practice from the non-indigenous or Khas people. The major indigenous peoples of Nepal include Magar, Tharu, Tamang, Newar, Gurung, Rai, Limbu, Sherpa and Thakali. The indigenous peoples of Nepal had sovereign nations prior to the establishment of current Nepali nation-state around 1770s (AD).

Non-indigenous peoples of Nepal (also known as Khas or Caste people)

The Khas or Caste peoples are the settlers who migrated to Nepal in the late 1600s as refugees from the low land, what is currently known as India. The Khas people are a monolithic group (one language, one religion, one culture, one race) who practice Hinduism and caste

system. Khas group are divided into four caste categories- Brahmin, Chetri, Baisya and Suddra. On the top of this caste hierarchy is the Brahmin or the priest group, and at the bottom of the hierarchy is Sudra or untouchables. They all speak one language- the Khas language. They are homogenous group in their physical features and cultural practices; and one cannot identify their caste from their look alone. The only way to identify their caste is by their last names or by asking them directly of their caste. Common last names of Brahmins and Chetries include Sharma, Upadhaya, Pandeys, Shah, Rana, Thapa, Paudel, Pohkhrel, Upreti, Panth, KC and so on. Common last names of lower caste people include Kami, Biswokarma, Damai, Nepali, Sarki, Pode and so on. The low caste people are also known as Dalits or occupational caste in Nepal. Brahmins and some Chetries have been the de facto political elites of Nepal since the establishment of Nepal as a nation-state in the late 1770s A.D.

METHODS

Data

This study utilized the cross-sectional data from the nationally representative sample of adult women aged 15 -49 (N = 10793). The data was obtained from the Nepal Demographic and Health Survey (NDHS). For current analysis, we used data for year 2006 (NDHS 2006), the latest year for which data was available.

We obtained GPS data separately. The GPS data includes longitude/latitude coordinates for 205 clusters or primary sampling units (PSU), in which the women reside.

Measures

Poverty was measured using Wealth Index. The NDHS 2006 Wealth Index was developed by Rutstein and Johnso (2006). The Wealth Index was constructed using household assets including ownership of a number of consumer items ranging from a television to a bicycle or car, as well as dwelling characteristics, such as source of drinking water, electricity, sanitation facilities and type of material used for flooring (Rutstein & Johnson, 2006). The NDHS 2006 Wealth Index was pre-coded into five quintiles: the bottom 20% (the poorest), 21%-40% (poor); 41% -60% (middle); 61%-80% (rich); and top 81% -100% (the richest). The Wealth Index is an asset-based measure of wealth distribution rather than absolute value of wealth. Wealth Index does not include income. For this analysis, we used bottom 40% of the wealth distribution as poor. The poor was coded as 1, else it was coded 0. This analysis estimates the probability of belonging to the bottom 40% on wealth distribution. The probability of being poor is the probability that a person belongs to the bottom 40% on the asset-based wealth distribution

Ethnicity was dummy coded into 10 major ethnic categories. The data contains more than 75 ethnic categories. First, caste group and indigenous group were identified. Those who belong to caste group were dummy coded into three caste groups: Brahmin (high caste), Chetri (middle caste, and Dalit (the low-caste one the caste hierarchy). Thos who belong to the indigenous group were dummy coded into seven major indigenous groups: Rai-Limbu, Magar, Tharu, Tamang, Newar, Sherpa-Gurung-Thakali, and 'Other'. The 'Other' indigenous group consists of more than 65 different small groups. Sherpa, Gurung and Thakali were grouped into one category because of small sample size and the economic homogeneity among these groups.

Education was measured as the number of years in school. This variable was dummy coded into four groups- no education, primary education (1-5 grade), secondary education (6-10

grade but not SLC), and SLC and above. *Age* was a continuous variable measured in years. *Occupation* was constructed from more than 80 job categories. This variable was dummy coded into a single variable since each of these categories had too small a sample size. If the occupation was farming, it was coded 1, and all other occupations were coded 0. Marital status was dummy coded (married =1, not-married =0). *Head of household* was dummy coded (female =1, male =0).

Geography: Nepal is divided into five development regions and 13 sub-development regions. These regions represent the geographic boundaries for development priorities of the national government. These sub-regions were dummy coded into 13 variables.

Data Analysis

Weighted descriptive and bivariate analyses were conducted to document the characteristics of women, and variation in risk of poverty across ethnicity. Stepwise multivariate logistic regressions were conducted to quantify and estimate the relationship between poverty and other variables in the model. We first estimated the probability of poverty conditional upon the ethnicity of the women (Model 1). We then added individual characteristics (education, occupation, age, marital status, and household) to the model to test the extent to which these characteristics explain variation in the risk of poverty across ethnicity (Model 2). Finally, we added geography to the model to estimate the effect of place of residence on the risk of poverty (Model 3).

Data analysis was carried out using SAS, Release 9.1 (SAS Institute, Inc., Cary, US-NC). Maps were produced using ArcMap, Version 9.3 (ESRI, Redlands, US-CA).

RESULTS

Table 1 presents the characteristics of the sample population. Of the 10793 women in the survey, 57.13 % were indigenous peoples. Over 70% of the women had either no education or had only primary education; and over 70% were farmers. Majority of the women in our sample were married (76.51%); lived in households headed by males (78.64%); and came from the Hill (42.6%) and the Terai (plains/low-land) (50.44%) regions of Nepal.

How does the risk of poverty vary among ethnic groups?

Table 2 presents the weighted percent distribution of women who are in poverty (i.e. belong to the bottom 40% in wealth distribution) by ethnicity. The risk of poverty rate in our sample ranged from 20.75% to 55.58%. The risk of poverty was highest for Dalits (55.58%) and lowest for Brahmin (20.75%).

Among the indigenous groups, Tamangs were the poorest of the poor. The risk of poverty for Tamang was 50.67%- two and half times the risk for Brahmin (20.75%), and almost two times higher the sample average (37.43%). Rai & Limbu were at the second highest risk of poverty (47.29%), Magars were at the third highest risk of poverty (45.08%, same as Chetri), followed by Tharu (40.62%). Newar, Sherpa, Gurung and Thakali had the lowest risk of poverty among the indigenous peoples (< 25%).

Are indigenous peoples significantly at higher risk of poverty than non-indigenous peoples?

Table 3 presents the results of multivariate logistic regressions models where sets of predictors are regressed on the binary outcome of poverty. This table shows the effects of

ethnicity alone (Model 1), ethnicity and individual characteristics such as education, occupation, age, marital status, and head of household (Model 2), and a full model with geography added to represent the place of residence (Model 3). When compared to non-indigenous group (Brahmin), women of indigenous group—particularly, Tamang, Rai & Limbu, Magar, Tharu and "other indigenous" were at significantly higher risk of poverty (Model 1, Tabl3). Tamangs were at 300% higher risk of poverty (odds ratio = 3.92, $p < .0001$); Rai & Limbu were at 243% higher risk of poverty (odds ratio = 3.43; $p < .0001$); Magars were at 213% higher is of poverty (odds ratio = 3.13, $p < .0001$); and Tharus were at 161% higher risk of poverty (odds ratio = 2.61, $p < .0001$) than Brahmins (Model 1, Table 3).

What factors contribute to the risk of poverty for indigenous peoples?

The risks of poverty for indigenous peoples persisted after controlling for education, age, occupation, marital status, and head of household (Model 2). Education and age were associated with decreased risk of poverty (odds ratio < 1, $p < .05$). Being a farmer and living in a male-headed household were associated with increased risk of poverty (odds ratio > 1, $p < .05$). Marital status had no significant effect on the risk of poverty.

When the geography was added to the model, the risk of poverty was further exacerbated (Model 3). Newar, which was initially not at risk of poverty (Model 1) now became significantly at risk of poverty (odds ratio = 1.36, $p <. 05$). Compared to those who live in Central hill region, those who live in all other hill and mountain regions were at higher risk of poverty (odds ratio > 1, $p <. 05$). However, living in Eastern, Central and Western Terai reduced the risk of poverty; while living in Mid-western and Far-western Terai had no effect on the risk of poverty.

Even after controlling for all the variables in the model, Tamangs remained at the highest risk of poverty among the indigenous groups (odds ratio = 3.57, $p < .0001$), and Dalits remained at the highest risk of poverty among all the ethnic groups (odds ratio = 3.64, $p < .0001$). Within the non-indigenous group, Chetries were also at significantly higher risk of poverty than Brahmins, but the risk was lower than for the most of the indigenous groups (odds ratio = 1.54, $p < .0001$). Sherpa, Gurung and Thakali were not at significantly higher risk of poverty than Brahmins (odds ratio = 0.86, $p > .05$).

DISCUSSION

This is the first empirical study reporting poverty among the nationally representative sample of indigenous peoples in Nepal. The findings from this study reveal more than two-fold variations in the risks of poverty between indigenous and non-indigenous groups, with some indigenous women at 300% higher risk of poverty. Variations also exist in the risk of poverty within non-indigenous or caste-group and within indigenous group. Among the caste groups, Dalits were at the highest risk of poverty. Among the indigenous groups, Tamangs were at the highest risk of poverty.

The results show that human capital and age mitigates the risk of poverty for indigenous women, but they do not account for the disparity that exists between indigenous and non-indigenous women. In other words, even if non-indigenous peoples were endowed with similar human capital, they would still remain at higher risk of poverty. On the other hand, controlling for occupation, head of households and geography further exacerbates the indigenous women's risk of poverty. The findings suggest that the observed differences in poverty status between

indigenous and non-indigenous women are not solely due to the mean differences in women's human capital or other personal characteristics but largely driven by structural variables such as occupation, family structure, and geography.

The findings are consistent with other studies that suggest that there is a "cost of being indigenous" (Psacharopoulos & Patrinos, 1994); and also with the prediction of the theory of institutional design (North, 1990) which suggests that the political elites (Brahmins) have low risk of poverty than the commons. However, the findings of this study further expands our understanding of poverty by demonstrating that the "cost" is being imposed on the indigenous peoples primarily through structural variables- chiefly occupation and geography.

Explaining variation

One contribution of this paper is to expand our understanding of the importance of 'ethnicity" on the risk of poverty, at least with respect to women, that "there is a cost of being indigenous". It appears that the "cost' arises because indigenous peoples are 'trapped' in occupation that yield low return for their investment, and in geographies that are resource-deprived and under-developed. These traps must be analyzed in the historical and institutional context of Nepal.

There is a reason to believe that the occupation and geographic "traps" are inherent in the institutions that govern Nepali society. The origin of the prevalent institutions in Nepal began with the caste-system, which was imposed on the Nepali society when Nepal became a nation-sate in the late l700s A.D.

First, occupational trap is a direct result of the cast-system. By design, the institution of caste system constrains people's ability to change occupations; and it justifies differential treatment of peoples based on their occupation. Under the caste-system, high paid jobs such as

doctors, lawyers, teachers, political leaders, government officials and other professionals had been reserved for caste groups- mainly Brahmins and Chetries. Indigenous peoples and Dalits are confined to low-paid labor-intensive jobs such as farmers and skilled/unskilled workers. This is also, perhaps, a reason why technology for agricultural and industrial production in Nepal has not evolved beyond the medieval tools. This is because the advancement of science and technology was not in the best interest of the governing elites, who were neither farmers nor skilled workers. With no modern technology for agricultural production, it is not surprising to see that being a farmer presents significant risk of poverty.

Second, the geographic trap is likely to be due to ethnic clustering. Indigenous peoples live in different geographies than non-indigenous peoples. Historically, productive lands of the indigenous peoples had been confiscated by the governments. The confiscated lands were either transferred to the governing elites (Brahmins & Chetries) under the system known as "Birta"; or they were turned into national parks (Bhattachan & Webster, 2005). This process pushed the indigenous peoples further to remote and unproductive lands. The government then deliberately kept the indigenous territories isolated and under-developed –to exploit their cheap labor. With no access to roads, universities, electricity or healthcare system in these areas, it is not surprising to see that geography presents a significant risk of poverty for indigenous peoples who live in those geographic areas.

In regards to the variations in risk of poverty within caste groups and indigenous groups, the reason for relatively better-off economic status of Newar is thought to be due to their geographic proximity to the capital city. The reason for Sherpa, Gurung, and Thakali's relatively better-off economic status is thought to be due to tourism in their territory, and their recruitment to the British Army.

The reason for high risk of poverty for Dalits peoples and Chetries is thought to be due to caste-discrimination, in which Chetries and Dalits are treated as lower castes.

As to why Tamangs are the poorest among the indigenous peoples, anecdotal histories indicate that Tamang people suffered devastating loss during the unification of Nepal as a nation-state. During this process, they lost sovereignty over their territories; lands and resources on them; and the local governance systems and cultural institutions. Collective memories among the Tamang peoples indicate that under the Rana regime (1846 -1950 AD), Tamangs were legally barred from educational institutions, holding public offices and government jobs including military and police, and from joining British Gurkha Army and leaving the country for better future elsewhere. Tamang men were used for free labors as servants and porters. Tamang women were used as concubines in the Rana palaces and then sold to India for prostitutions. Trafficking of women in Nepal is believed to have originated during the Rana regime, and still today the Tamang women continue to be the victims of this slave trade. These historical injustices are assumed to be the driving forces that led to the current state of poverty among the Tamangs..

Implication for policies and institutions

The primary interest of this study is not to find the causes of poverty but how to overcome it. The findings of this study present compelling evidences that suggests that current institutional design is detrimental to the economic wellbeing of the indigenous peoples. The findings suggest that while changes in social policies, such as education, may mitigate the risk of poverty for indigenous peoples, they are less likely to bridge the gap that exists between indigenous and non-indigenous peoples. The findings indicate that the ethnic disparity is systematic, and not due to

individual differences or random chances. Attentions to the intrinsic development practices is needed to determine if the significant variation in the risk of poverty across ethnicity is driven by deliberate institutional design, which isolate indigenous territories from development.

New set of institutions that guarantee equal treatment of all peoples and the government that can enforce these institutions seem imperative. However, how best to design such institution is still an open question, and beyond the scope of this study. To being with, an institution that promotes the sovereignty of the indigenous peoples to govern and develop their own geographic territories, and chart their own future seems not only appropriate but also a scientific thing to do. Such institutions are likely to facilitate occupational transfers and self-development of the geographies in which the indigenous peoples live. This will ultimately help bridge the gap that exist between indigenous and caste people of Nepal.

Limitation

We recognize that our findings were tempered by a number of limitations. First, we used asset-based Wealth Index as a measure of poverty. The Wealth Index is a measure of wealth distribution rather than absolute value of wealth. Wealth Index does not include income. The probability of being poor is the probability that a person belongs to the bottom 40% on the asset-based wealth distribution. Second, we did not control for institutional characteristics of the geography. The dataset does not include information on the extent of geographic isolation. Despite these limitations, this study represents the first ever analysis of poverty among all ethnic groups using nationally representative sample. Future research should include income in the wealth index and control for the degree of isolation of the geographic areas in which indigenous peoples live.

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Appendix A: Tables

Table1. Unweighted frequency and weighted percent distribution of women characteristics

Characteristics	N	%
Non-Indigenous Group:		
Brahmin	1542	12.76
Chetri	2364	18.52
Dalits	1353	11.59
Indigenous Group:		
Rai & Limbu	535	4.59
Magar	721	6.63
Tharu	1029	11.98
Tamang	525	5.46
Newar	491	4.19
Serpa, Gurung, Thakali	368	3.8
Other ethnic groups	1865	20.48
Education		
No education	5677	53.08
Primary Education	1908	17.62
Secondary Education	2207	20.61
SLC (10th grade) or above	1001	8.69
Occupation		
Not-Farmer	3143	29.87
Farmer	7650	70.13
Marital Status		
Currently not married	2549	23.49
Currently Married	8244	76.51
Head of household		
Male	8399	78.64
Female	2394	21.36
Geographic Sub-region		
Eastern mountain	541	1.75
Central mountain	448	1.87
Western mountain	491	3.35
Eastern hill	729	5.81
Central hill	1070	15.87
Western hill	1078	11.74
Mid-western hill	733	6.02
Far-western hill	619	3.16
Eastern terai	1259	14.6
Central terai	1221	15.18
Western terai	971	7.26

Mid-western terai	738	4.24
Far-western terai	895	9.16

Mean Age = 28. 64 years (SD = 9.79)

Table 2. Weighted Percent Distribution of Women in Poverty (i.e. belong to the bottom 40% of wealth distribution) by ethnicity.

Ethnicity	Proportion Poor (%)
Total population	37.43
Non-Indigegenous Group:	
Brahmin	20.75
Chetri	45.09
Dalits	55.58
Indigenous Group:	
Rai & Limbu	47.29
Magar	45.08
Tharu	40.62
Tamang	50.67
Newar	23.63
Serpa, Gurung, Thakali	21.47
Other ethnic groups	33.08

Table 2. Multivariate Analysis Predicting Risk of Poverty

	Odds Ratios and [95% Conf. Intervals]					
Variables	Model 1		Model 2		Model 3	
Non-Indigenous Group:						
Brahmin ®	1.0		1.0		1.0	
Chetri	3.14	(2.707 - 3.634)****	2.07	(1.759 - 2.438)****	1.54	(1.281 - 1.847)****
Dalits	4.78	(4.059 - 5.625)****	2.63	(2.189 - 3.161)****	3.64	(2.966 - 4.478)****
Indigenous Group:						
Rai & Limbu	3.43	(2.778 - 4.225)****	3.20	(2.524 - 4.047)****	3.43	(2.591 - 4.552)****
Magar	3.13	(2.588 - 3.796)****	1.74	(1.408 - 2.145)****	2.73	(2.154 - 3.447)****
Tharu	2.61	(2.193 - 3.112)****	1.27	(1.045 - 1.541)**	2.66	(2.111 - 3.34)****
Tamang	3.92	(3.177 - 4.842)****	2.44	(1.926 - 3.087)****	3.57	(2.747 - 4.651)****
Newar	1.18	(0.927 - 1.505)	1.12	(0.859 - 1.466)	1.36	(1.019 - 1.806)*
Serpa, Gurung, Thakali	1.04	(0.791 - 1.378)	0.92	(0.679 - 1.244)	0.86	(0.616 - 1.187)
Other indigenous groups	1.89	(1.615 - 2.208)****	1.28	(1.073 - 1.535)**	3.54	(2.855 - 4.386)****
Education						
No education			1.0		1.0	
Primary Education			0.50	(0.442 - 0.569)****	0.53	(0.465 - 0.609)****
Secondary Education			0.22	(0.194 - 0.26)****	0.25	(0.212 - 0.291)****
SLC (10th grade) or above			0.09	(0.069 - 0.124)****	0.10	(0.076 - 0.139)****
Age			0.97	(0.961 - 0.971)****	0.97	(0.965 - 0.976)****
Occupation						
Not -Farmer ®			1.0		1.0	
Farmer			5.75	(5.064 - 6.526)****	4.75	(4.157 - 5.424)****
Marital Status						
Not -married ®			1.0		1.0	
Married			0.91	(0.808 - 1.028)	0.91	(0.799 - 1.03)

Head of Household				
Male ®	1.0		1.0	
Female	1.33	(1.197 - 1.485)****	1.34	(1.193 - 1.502)****
Geographic Sub-region				
Eastern Mountain			2.53	(1.951 - 3.278)****
Central Mountain			1.43	(1.09 - 1.872)**
Western Mountain			4.76	(3.569 - 6.343)****
Eastern Hill			2.24	(1.753 - 2.866)****
Central Hill ®			1.00	
Western Hill			1.19	(0.947 - 1.506)
Mid-western Hill			5.29	(4.113 - 6.806)****
Far-western Hill			5.38	(4.101 - 7.05)****
Eastern Terai			0.40	(0.314 - 0.511)****
Central Terai			0.70	(0.555 - 0.88)**
Western Terai			0.28	(0.219 - 0.367)****
Mid-western Terai			0.92	(0.718 - 1.189)
Far-western Terai			1.26	(0.987 - 1.615)

N =10793 ® Referent category *p<.05, **p<.01, ***p<.001, ****p<.0001

Model1 χ^2= 216.27, p<0.0001 Model 2 χ^2=2667.13, p<0.0001 Model 3 χ^2= 3686.36, p<0.0001

Max-rescaled R^2=0.075 Max-rescaled R^2=0.30 Max-rescaled R^2=0.39