**Micro-level estimation of rural poverty and inequality in a village of Nepal[[1]](#footnote-2)**

Anita Bhatt Phuyal and Ram Kumar Phuyal[[2]](#footnote-3)

 **Abstract**

*This paper analyzes different natures of rural poverty, and estimate the regression line between income and consumption relationship of Kantai Village Development Committee of Darchula district of Nepal. Each sampling unit of different wards of research area was selected purposively and information sought through structured questionnaires by the researchers. The study has estimated absolute poverty line (Rs. 33.76) which is 60% of sample population. Similarly, upper poverty line (Wolf point) has been estimated to Rs.41.87 per day per capita which is, 78% of sample population whereas 17.5% people are relatively poor and 22% are non poor. Gini's coefficient among the total sample households is found 0.34 and marginal propensity to consume of absolutely poor households is 0.74.The correlation coefficient between income and consumption among total sampled households is 0.83. Hence, the entire outcomes conclude that there is positive correlation between income and consumption. The study also traces out about the high disparity in landholding where most of the poor households are found to be landless. The result recommends that government should provide basic education, nutrition, electricity, and communication facilities to the people of study area, and also support them for creating alternative opportunities of employments for their livelihood.*

**Keywords:** Gini's coefficient, household consumption, income inequality, primary data and rural poverty

1. **Introduction**

Nepal is one of the most beautiful countries in the world; it has three distinct geographic and climatic areas: the Mountain, Hill and Terai regions. With its tropical climate, the Terai region is most suited for agriculture. The Hill region, with the Valleys of Kathmandu and Pokhara, is the most urbanized. Its slopes are increasingly being used for cattle grazing and breeding activities. Finally, the Mountain region is the most sparsely populated with economic activities geared towards tourism and mountaineering. Nepal is landlocked between India and China; covers an area of 147,181 square kilometers and is a land of contrasts, raising from 70 meters above sea level to 8,848 meters atop Mount Everest.

The 2011 census estimated the population of Nepal at 26.5 million with 68 years life expectancy, 2.3% fertility rate and a growth rate of 1.35 per cent per annum between 2001 and 2011. Approximately 34.9 per cent of inhabitants were under the age of 15, and 27.8 per cent were aged 15–29. The population is multi-ethnic and multilingual, with a total of 125 castes and ethnic groups and 123 languages. Seventeen per cent of the population at the time of the census lived in urban areas and 83 per cent in rural regions. The male and female literacy rates were 75.1 per cent and 57.4 per cent, respectively.

A kingdom ruled by the Shah dynasty for approximately 240 years, Nepal became a federal republic in 2006 after a ten-year civil war. The transition did not go smoothly and the political situation has remained tense, inevitably affecting the economy. As a result, Nepal has $1500 GDP per-capita (ppp), its economic growth rates are not in line with those of other countries in the region, although annual growth in real gross domestic product (GDP) has remained at more or less 4 per cent per year since 2009. The main contributors to this growth rate are the service and agricultural sectors, which grew an estimated 5 per cent each in 2012. The industrial sector, on the other hand, has been more volatile; with a negative growth rate and a lackluster performance in 2012.The industrial production growth rate is 1.5% which exports 1.06 billion whereas country imports 6.329 billion with major import partners such as India (79.4%), South Korea (3.1%), and China (2.5%).

Nepal is well known for its mountain ranges and its extreme trekking and mountaineering activities. Tourism is often cited as the country’s main activity. However, the facts show otherwise. Since 2003, the share of tourism income in GDP has oscillated between 2 and 3 per cent, employing 120,000 people or less than 1 per cent of the total number of employed Nepalese. Nepal is also known as the country of village, where majority of the people live in rural areas so there is no significant difference between poverty and rural poverty in the Nepalese content with 32.8% of Gini-Coefficient Index(distribution of family income). Upward mobility is extremely limited, and social exclusion is one major reason for persistent unequal access to resources, rights, and opportunities in Nepal. Population below the poverty line has been estimated to be 19%. Here, poverty is considered as a multidimensional phenomenon not only an economic, and rooted among the majority of rural people. At present, there has been16 millions labor forces in which 46% are unemployed. The inflation rate of the country is also estimated as 9.5% at the end of the fiscal year 2014.

This is a country of villages with 3913 Village Development Committees (VDC) where 83% of population is inhabitant (CBS 2008) in rural villages. Since 83 percent of the total population lives in rural areas, the nature of poverty in Nepal is rural oriented one. Its pressures in Terai and Mountains are similar, but it is extremely high in Himalayan region. The reality of the poverty situation in rural Nepal is not similar to as common poor as we expected. By the development regions incidence of poverty in mid-western, and far western development regions are the highest. So, it was meaningful to study the poverty situation of kantai VDC which is one of the remote VDCs of Darchula district (far-western region), Nepal.

The key goal of this research is to show the real socio-economic condition of the rural people and their sustained poverty status in the study area. This paper made an attempt to measure absolute poverty, relative poverty, and the intensity of poverty situations and has also examined the extent of income inequality, and correlation between income and expenditure. We believed that the outcome of this research helps educate rural people about how to participate in economic activities and it further suggests creating additional self-employments, increase labor efficiency, ensures food security, reduces malnutrition, and supplements household incomes in the regions.

The paper is organized as follows; the second section has discussed the literature review, third section is designed to elaborate the research methodology whereas fourth section deals with the data analysis, and final section concludes the results

.

1. **Review of Literatures**

To the best of our knowledge, the first attempt to define and quantify the level of poverty in Nepal was made by National Planning Commission in 1976/77 through a survey on employment, income distribution and consumption patterns. The minimum subsistence level of income and expenditure were used for derivation of income and expenditure of the poverty line. An income level of Rs.2 per capita per day at 1976/77 prices was taken as the minimum substance level. This out of level was based on the expenditure required to buy food, giving average daily intake of 2256 calories and value of the lowest actual daily consumption of other basic necessities this centurion at that time gave a poverty estimated of 40.30 percent.

**Hamilton (1968)** examined income and its distribution. He has also taken the income inequality as the major factor of poverty he has used Lorenz curve to show it geometrically. He makes distinction between absolute poverty and relative poverty. However, he uses relative concept for analytical purpose. He has made a due consideration on how to eliminate poverty.

**Human Development Report (2000**) has shown various figures regarding in the context of Nepal. According to HDI; Nepal is ranked as 144th out of 174th countries according to human poverty index 51.3 percent people below poverty line. Per capita income per person is $210 per year. Out of total population 90% people live in rural areas. About 80% of rural poor are either self-employed in agriculture of agriculture labour with or without tenancy.

**Jain (1981)**focuses on the various poverty problems of Nepal and recommends some long terms policies to reduce poverty situation. His study is based on the sample survey done by National Planning Commission. He categorizes the poor people into two groups poorest of poor and the poor about poverty line. In the former case he takes the people who have income less than NRS. 2 per day in 1977 prices and he calculated that 36.2% of the total population falls in this group. In the latter case, there falls the people whose per capita daily income ranges from NRS 2.00 to 2.68 and he estimated that 18.8% the total population lies in this group. Thus 55% of total population is poor in Nepal. According to him, 87 percent of the total poor live in rural areas of Nepal. He recommends some policies for additional income generation in order to raise the living standard of the poor people of Nepal (Jain 1981).

**Dahal and Shrestha((1987**) adoptedprimary data to analyze the causes of poverty from data collected in a village of Panchthar District. Break-even technique is used to determine the wolf point. To analyze the poverty, they have used minimum subsistence norm and Sen' s poverty index. The nature of poor had been analyzed by taking into consideration the various factors like the size of land holding, literacy, family size and monthly income by ethnic group etc. In this study, they have identified the rural poor in Nepal into two category viz. Marginal farmers and small farmers. This study further argues that the poverty problems originates in agriculture productivity levels in the rural sector and has considerable implications for interclass and interpersonal relations.

**Adhikari(1987)** assessed the impact of agricultural development activities on the poor including small and marginal farmers as well as landless rural people. The study focused that more absolutely poor live in rural areas than in urban areas and the institutional setting (including macro economic factors) is more important for development than the strategic institutions such as research extension, input and output markets credit irrigation and SFDP.

**Bhandar, Kunwar and Dangol(1986)** has presented a comparison of the magnitude of poverty between Hills and Terai regions of Nepal. The study highlights the hardships faced by rural poor. Not only this, they have also tried to show the future of rural poor. They have shown the relationship between malnourishment and poverty. According to their study, the prevalence of malnourishment in the hill is 75.

**Nepal Rastra Bank (1989)** made a study on “Multipurpose Household Budget Survey” and tried to show the income, consumption and employment situation in Nepal. Simple statically tolls like Gini Coefficient has also been computed for the analytical purpose. In comparison of Gini coefficient among various countries, it is revealed that there is high-income inequality in Nepal. The survey had found the national average monthly income as Rs.1233. Where it was Rs.1192 and Rs.1785 for rural and urban Nepal respectively, The annual average per capita income for rural and urban Nepal was speculated to be at Rs.2456 and Rs.4108 respectively, in rural Nepal 18.5 percent of all household with average monthly income of Rs.384 covers 6 percent of total income while 3 percent of household with, and average monthly income of Rs.4225 and above received 12.8 percent of total income. The Gini ratio based on prospectively. The survey found that 50 percent of the population of hills and 43.1 percent of population of rural area are living below the poverty line. Finally, the research concludes that Nepal is the very poor nation of the world.

**Gautam(1996),** in his study has examined the cause of poverty in Nepal. According to him, low national consumption expenditure heavy unemployment along with misemployment explosive growth rate of population, in adequacies of anti poverty planning and actions in this regard, rising inequalities of income regional disparities, in appropriate technology, capital deficiency, selection of wrong investment strategies, lack of education, lack of skill development program and a number of social factor are also responsible.

**World Bank and UNDP (1991**) made a joint study on Nepal: Poverty and income has intended to deepen our understanding of the nature of poverty in Nepal of its causes and of constrains which prevent the poor from improving their conditions. It investigates the effect of development policies and strategies on personal income and seeks to identify the most promising area for raising income of the poor. The main objectives of this study were to purpose the outlines of a ling-term country strategy to reduce poverty as well as to recommended specific measures for government and donor support. The study showed that the incidence of poverty is more serious in rural area. For this purpose, secondary data from NRM and other research organization have been used finally; it gives some priority alleviation strategy in Nepal.

The Ninth Five Year Plan has set poverty alleviation as its main objectives with a determination of bringing down the number of the below poverty line from 42 percent to 32 percent. The plan also aim at improving the living standard of the people below poverty line, placing special emphasis on uplifting the living standard of those lacking productive assets and income generating resource and those counted as the poorest empowering socially and economically the backward, down trodden and weaker sections of society and lowering the high incidence of poverty by developing physical, social and economic infrastructure in the underdeveloped, remote regions of the country.

 Poverty has been perceived from different perspectives. Income based poverty weakness in different aspects of human development and social exclusion are the main aspect of poverty. The main indicator of income-based poverty is the percentage of people living below poverty line. Human development capacity indicators are also equally important because these indicators do not change as per the change in income-based indicators. The typology of these capacities includes access to existing resources, human resource development and participation in social/poetical decision-making process etc.

The first income poverty estimation on scientific basis was carried on in 1976/77, which estimated that 33 percent if total populations live below poverty line. The incidence of poverty was high in mid-western and far-western development regions along with rural areas highly affected. The survey of 1984/85 estimated that 41.2 percent people live below poverty line. The difference in poverty incidence between various geographical and development regions was almost similar.

It was estimated at the beginning of the Ninth Plan that 42 percent of population live below poverty line. The Nepal living standard measurement survey had estimated annual per-capita income of Rs.4404 to meet the expenses on daily minimum average of 2124 kilo calories from food basket and other non-food items requirements too. The income level at the current process of 2001 turns out to be Rs.6100.

The mid-term evaluation of the Ninth Plan has estimated that 38 percent of populations live below poverty line. These micro levels of estimates do not provide disaggregated live poverty on geographical basis. According to Nepal living standard survey 1996 (NLSS) 44 percent of rural population lives below poverty line whereas the figure for urban sector is 23 percent only. There is a great difference between Kathmandu valley and other urban areas in this regard, too.

The present study has reviewed many of the possible research articles in highlighting the research gap. Hence, researcher believes that the outcome of this study help contributes something new in the literatures of rural poverty in Nepalese context.

1. **Research Methodology**
	1. **The Survey Area**

The Main purpose of the study here is to explore the problems and impacts of poverty in Kantai VDC of Darchula district. This VDC has been purposefully selected as one of the model VDCs of Darchula district in undertaking this research because the assessment of general socio-economic status of Kantai VDC has clearly depicted the status of people living in entire VDCs of the darchula district. Out of 9 wards and 479 households in the VDC, 58 households from wards no. 2, 5, and 9 have been proportionately selected for the study which is approximately twelve percentages of the total households of the entire VDC. Each sampling unit is selected by purposive sampling technique and required information has been sought from either household head or senior member of the family as a respondent. The data were collected with well- structured questionnaires, survey and personal interview with the household heads, and local well informed people in the year 2013.The questionnaires encompass information regarding literacy, employment, age, marital status, caste, nature and size of family, nature of job, income, and profession etc of households. The collected information from the observation & the sample survey has been manually tabulated and mathematical and statistical tools have been implemented to analyze the data.

* 1. **The Model and Methods**

Descriptive and inferential statistical techniques have been used to measure the poverty and its extent. Especially, the study estimates the absolute, relative, total poverty line. In addition to that it has shown the relationship between poverty and other factors such as income inequality, unemployment and level of education as follows;

* + 1. **Estimating Absolute Poverty**

This section deals with indicators and bases about how we can measure the rural poverty in the quantities unit. We have some already basic principle about how we take the thresholds on calculation of poverty line. According the National Planning Commission (NPC) and the latest report of FAO, expenditure on minimum food requirement per-capita per day per person calorie for survival for every Nepal is 2256, which requires net consumption of 605gms of cereals and 60gm of pulses which secures only 65% of substance consumption and 35%will be spent on another food and non-food items.

We add that 35% of consumption expenditure made on other basic essentials of life to derive the minimum substance level of income. The minimum substance norm is followed to estimate absolute poverty line. The household whose per-capita income is below minimum substance level is known as absolute poor. Minimum substance norm followed by FAO is used to estimate the absolute poverty line.

* + 1. **Computing Total Poverty Line**

For computing total poverty line, *Keynesian consumption function and wolf- point* techniques have been used.

* 1. **In Keynesian consumption function:** It is assumed that consumption is the function of income. Thus, it is expressed as;
	Ci = a + bYi

 Where,

 a = represents autonomous consumption

 b = represents marginal propensity to consume

 Ci = represents consumption expenditure

 Yi = represents income

* 1. **Computation of wolf-point:** Wolf-point is known as break-even point and implies equality between income and expenditure i.e. Ci and Yi (income and expenditure) are equal in Keynesian consumption function.

Mathematically, Ci = a + bYi . If Ci and Yi are equal, the expression: wolf-pint = can be obtained. To compute it we have to calculate the values of and  in Keynesian consumption function applying *least square regression analysis* as follows;

 Ci = a + bYi

 

 .

Thus, the wolf gives us total poverty line, so the household whose income falls below this point is termed as poor.

* + 1. **Derivation of Relative Poverty Line**

The relative poverty line is derived on the basis of absolute poverty line and wolf-point because the relative poverty level is income level between the absolute poverty line and the wolf-point.

* + 1. **Estimation of Non-Poor**

Those households are considered to be non-poor whose income is above the breakeven level of income (wolf point) i.e. above the equality point of income and expenditure and who can save as desired.

* + 1. **Intensity of Poverty Situation**

*Sen's poverty index* is used to estimate the intensity of the existing situation of the poverty in the survey area. With considering Inequality among poor, we use following expression,

 i.e. 

Without Considering Inequality among poor, we use following expression,

i.e.

Where, P\* = poverty index

 X = percentage of population below absolute poverty line

 C\*p = poverty line in per capita per day

 Cp = per-capita, mean income of absolute poor

 Gp = Gini co-efficient of the absolute poor

In theoretical notion, it is considered that if the value of poverty index (P\*) approaches near to zero there is low intensity of poor. And, if it (P\*) approaches near to one, there is high degree of intensity of poverty.

* + 1. **Existent of Income Inequality**

Various statistical tools are used to measure the distribution of income and extent of income inequality. Among these, some common tolls are given below.

1. **Lorenz Curve**

*Lorenz curve* is a graphical method to measure inequality where we measure the cumulative percentage of household in the X-axis, and the cumulative percentage of income in the Y-Axis. The perfect equality in income is expressing by a line of 45 degree between the intercepts of X and Y-axises. It shows the difference between equal distributions of income in the study area. As the area between actual and equal distribution lines increases, the inequality in the distribution of income also increase and if the area decrease the distribution of income decreases.

1. **Gini’s Coefficient**

*Gini coefficient* measures the inequality in income distribution. Since we have the ungrouped data, let us consider that be the variate values all of whose frequency is unity. Here, i.e. the variate values are arranged in ascending order.

Gini coefficient can be calculated by using the following formula if data are arranged in ascending order.

 

Where, 

 n = the number of observation

 = the mean value of variable (Y)

 Yi = the variable value for the ith observation, and notice that

For the grouped data, G.C. can be calculated as follows;



The higher the value of the *Gini co-efficient* the higher will be the inequality. Similarly, lower value of the *Gini co-efficient* indicates lower inequality. When the value of *Gini co-efficient* approaches to zero of exact equal to zero, it is the symbol of perfect equal distribution of income in society. The value of Gini coefficient is always positive. We should take only the absolute value of the result even if we sometimes encounter with a negative value.

1. **Correlation**

*Correlation* between income and expenditure is calculated because these two are highly correlated phenomena. The correlation gives the relation between any two factors.

 Mathematically, it can be expressed.

 

 Where,

 r = correlation co-efficient

 Yi = income of the ith households

 Ci = consumption expenditure of the ith households

 N = number of observation.

The value of correlation ranges between -1 to +1. If the value of correlation coefficient is negative, it implies that there is inverse relationship between the variables and if it is positive, this implies direct relationship between variables.

* 1. **Specification of Variables**

Household is a private and non-institutional economic unit in which a single individual or more than one family is living together. They earn together and consume together.

* + 1. **Households Head**

Present study assumes that person who manages all the rules and regulations in the family is considered as the household head. He always plays a dominant role in the family. Most of the economic activates in the family depend upon the households head's decisions. Household head ruled over the all families and he makes all plans and program for the whole families. And other members of family obey as it is mandatory for them to do or follow.

* + 1. **Total Income of Households**

The income earned by family members through different sources is defined as total household income. In this study, it is calculated by summing total of net income from agricultural production, income from live stocks and poultry farming, income from labor, income from business and cottage industry, income from service and income from other sources. Especially major sources of income of households are from agricultural income and minority of households generates income from other sources like business, labor, police and army forces, and teachers as a government or non-governmental officials.

* + 1. **Education of Household Member**

The entire person who can read and write Nepali languages are literate, who passed high school level and more are educated others illiterate. In the study area most of the people are illiterate. Only few people are educated especially boys than girls. But nowadays, some community-based organizations are lunching different educational programs to provide education to old age male and females.

* + 1. **Active Population**

In the study area, all the household members who are in between 10-60 ages have been considered as active/working group population. The male, females and children who can do few works such as; taking water, taking grass, woods, taking care of small child etc are the active or working people. Now, younger people are migrating to foreign country in search of jobs for increasing income activities. So, maximum younger people are out of the villages and some household's females are going to be household head and they are active to run their daily activities.

1. **Data Analysis and Presentation**

This section presents the results of household survey on the basis of primary data collected in Kantai VDC. The demographic information is obtained to compare the influence of various characteristics such as occupation, education, and other efficiencies in management of socio-economic affairs of families by the household heads. Then; the entire analysis of the study has been conducted using descriptive and inferential statistics.

4.1 **Demographic Profile**

**Sample Households:** The table below shows the distribution of sample population in which there is a majority of male population in each ward of the survey VDC.

**Table No. 1.Distribution of Sample Household Population**

|  |  |  |  |
| --- | --- | --- | --- |
| Ward No. | Total HHs | Sample Population | Sample HHs |
| Male | Female |
| 2 | 55 | 156 | 139 | 16 |
| 5 | 79 | 120 | 115 | 24 |
| 9 | 59 | 170 | 140 | 18 |
| Total | 193 | 446 | 394 | 58 |

**Education of Households:** There are eight government schools in which one higher secondary, one lower secondary and others are primary schools located. The educational status of the sample population is given as follows;

**Table No. 2. Education Status of Sample Population**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Level | Male | Female | Total Number | Percent |
| Illiterate  | 70 | 116 | 186 | 50 |
| Literate  | 90 | 38 | 128 | 34.40 |
| Educated | 40 | 18 | 58 | 15.59 |
| Total | 200 | 172 | 372 | 100.00 |

From the table no.2 it is clear that out of 372 people, 186 are illiterate and 128 are literate population in which only 58 are educated. Thus, the percentage of illiterate population is very high in the study are i.e. 50 percent where as the percentage of educated population is very low i.e. only 16 percent. Thus, the educational status of the people of this VDC seems not so much satisfactory.

**Sample Households by Family Size:** Out of total sample population, 200 are male and 172 are female. The average households' family member size for the sample households is 6.4. The table no.3 given depicts the picture of households by family size.

**Table No.3. Distribution of Households by Family Size**

|  |  |  |
| --- | --- | --- |
| Family Size | No. Of HHs | Percent |
| 2-4  | 5 | 8.62% |
| 4-6 | 11 | 18.96% |
| 6-8 | 25 | 32.6% |
| 8-10 | 15 | 25.8% |
| 10 above | 2 | 3.4% |
| Total | 58 | 100.00 |

From the table no.3, it is known that most of the households have 5 to 6 members that may be due having joint family structure as well as ineffective family planning program. Similarly, the religious duties and attitude of the people also can be another reason. There is a belief that, without son they could not enter into the heaven after death, which leads the family in large size.

**Economic Status:** The people have been involved in various types of occupations such as agriculture, animal husbandry, services, business, military and police, wage labors etc. Out of all these occupations, maximum households depend on agriculture profession. They grow various types of crops like maize, wheat, paddy, barley, potato etc. and different kinds of vegetables and fruits as well. A part from service, the labors of the study area work as reciprocal exchange of labor, daily wages, and contract etc. The forest is source of timber, fodder, cattle grass, firewood etc. Nowadays young people go to Kathmandu and outside the country in foreign employment that helps to increase economic status of the study area.

**Table No 4. Sample Households According to Main Occupation**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Family Size | No. of HHs | Percent |
| 1 | Agriculture | 41 | 71.00 |
| 2 | Service | 5 | 8.00 |
| 3 | Wage labor | 8 | 14.00 |
| 4 | Business  | 4 | 7.00 |
|  | Total | 58 | 100.00 |

The table no.4 shows that out of 58 sampled households, 41 households (71percent) are engaged in agriculture, which is followed by wage earners, service holder and business people respectively. Most of the service holders in this VDC are school teachers and they are landholders also. So, about 4 months they are engaged in agricultural activities. Similarly, some of the wage earner of this VDC works in the field of the big landholders as well.

**Landholding:** There exists an extreme inequality in the distribution of land and some of the families do not possess land. The table no.5 represents the distribution of land among the sample households.

**Table No 5. Distribution of Sample Households by Landholding**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Family Size | No. of HHs | Percent |
| 1 | Up to 2 Ropani | 16 | 9.33 |
| 2 | 2 to 4 Ropani  | 13 | 30.66 |
| 3 | 4 to 6 Ropani | 12 | 26.66 |
| 4 | 6 to 8 Ropani | 9 | 13.33 |
| 5 | 8 to 10 Ropani | 5 | 9.33 |
| 6 | Above 10 Ropani | 3 | 6.66 |
|  | Total | 58 | 100.00 |

The highest holding group is consisting with 30.66% with having 2 to 4 ropani of land which is also not productive. 4-6 Ropani holdings are in second position which consist of 26.66% and 8% of the sample households are holding 10 ropani of land. It shows that there is very high disparity of the distribution of land among sample household.

* 1. **Poverty line and Poor**

Present study has estimated two types of poverty lines they are absolute poverty and relative poverty lines. The *absolute poverty* line is determined on the basis on minimum income required to purchase the subsistence calorie requirement per day per person i.e. known as subsistence norm whereas *relative poverty line* is determined by *Keynesian consumption* notion of break-ever point. An individual whose income is above absolute poverty line and below the break-even point is known as relative poor. In other words, break-even point is the level of income where it just equals the consumption expenditure. The break-even point is known as total poverty line and people below it are considered as total poor. Therefore the total poor are the sum of absolute poor and the relative poor in the study area.

* + 1. **Absolute Poverty line and Poor**

The absolute poverty line is determined on the basis of minimum income required to purchase the subsistence calorie requirement per day per person for the survival and social existence which is known as subsistence norm.

As instructed by FAO (1972) and NPC (1987), to derive the value of 605 grams of various cereals like rice, wheat, maize etc and 60 grams of various pulses like seeds, masuro, rahar etc are taken which is commonly available in the local market. Therefore, the value of 605 grams of cereals and 60 grams of pulses are calculated NRS 18.65 and NRS 3.30.respectively on the basis of current local market price. Thus, the value of 2256 calorie per capital per day is estimated be NRS 21.95 (Annex-1)

According to NPC, the expenditure on food items covers only 65 percent of total subsistence expenditure; the remaining is for meeting other basic non-food requirement such as clothing, housing etc. The calculated value NRS 21.95 for the present study area gives us only 65 percent of their expenditure per-capita per day. Remaining 35 percent of total expenditure is expended on non-food items.

The value of minimum average daily consumption expenditure on non-food item is estimated to be NRS 11.81 per person per day for the study area. By summing up the expenditure on both food and non-food items, we arrive to draw the absolute poverty line in the study area for the year 2013. The absolute poverty line income per capita per day for the study area of Kantai VDC of Darchula district comes out be NRS 33.76 on the basis of subsistence norm. (See Annex-1)Thus, those households whose per capita daily income is less than NRS 33.76 are known as absolutely poor households.

* + 1. **Absolute Poverty Line in Different Studies**

Various researchers have estimated absolute poverty line in different time and different place in Nepal. The comparison of the absolute poverty line in the present study and some previous studies are shown in table no.6

**Table No. 6. Absolute Poverty line in Different Studies**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.N. | Study Area  | Average daily value of 2256 calories (605gms of cereals and 60gms of pulses (NRS) | Lowest average actual daily consumption (non-food) | Absolute poverty line (NRS) |
| 1 | Rural Nepal (1978)  | 1.32 | 0.70 | 2.02 |
| 2 | Panchathar (1987) | 3.90 | 0.50 | 4.40 |
| 3 | Sindhuli (1994) | 6.38 | 3.43 | 9.81 |
| 4 | Dang (1997) | 7.63 | 4.11 | 11.74 |
| 5 | Rauthat  | 8.42 | 4.53 | 12.95 |
| 6 | Rukum (2005) | 10.96 | 5.90 | 16.86 |
| 7 | Darchula(2013) | 21.95 | 11.81 | 33.76 |

The present study has estimated the absolute poverty line i.e. NRS 33.76 is which is the highest as compared to previous studies. One of the major reasons could be the increasing rate of inflation.

* + 1. **Absolute Poor Households and Population**

 The analysis of the absolute poor among the sample households and sampled population of the different studies is presented in table no.7.

**Table No. 7. Absolute Poor Households and Population in Different Studies**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.N | Study Area | Total No. of HHs | HHs below poverty line | Total Population | Population below poverty line |
| HHs | % | Pop | % |
| 1 | Rural Nepal | 213668 | 860769 | 40.3 | 12445368 | 4505835 | 36.2 |
| 2 | Panchathar | 89 | 56 | 62.92 | 519 | 333 | 64.16 |
| 3 | Sindhuli | 70 | 29 | 41.42 | 402 | 173 | 43.03 |
| 4 | Dang | 108 | 44 | 40.74 | 873 | 432 | 49.48 |
| 5 | Rauthat  | 60 | 29 | 48.3 | 460 | 214 | 46.2 |
| 6 | Rukum  | 75 | 32 | 42.6 | 431 | 196 | 45.7 |
| 7. | Darchua | 58 | 36 | 62 | 372 | 225 | 60.8 |

* + 1. **Relative Poverty Line and Relative Poor**

Relative poverty line is estimated with the help of wolf point. The wolf point level of income is that levels of income which is just equal to expenditure. Relative poverty level refers to that level of income, which lies between wolf point and absolute poverty line. Therefore, the households or population, whose income level lies below this point and above the absolute poverty line are called relatively poor. Such households are just able to meet the minimum expenditure but not total expenditure.

In the present study, the value of wolf point found to be Rs.41.87 per capita per day (See Annex-3) and absolute poverty line is 33.76 per capital per day (See Annex-1)

For the study area those households or population are relative poor whose income levels lies between these two income levels. Out of 58 total sampled households and 372 populations, 11 households and 65 people are relatively poor. Thus, it is found that 0.19 percent households and 17.5 percent people are relatively poor.

The comparison of the relative poor among the sampled households and sampled population of the different studies is presented in table no.8.

**Table No. 8. Relative Poor in Different Studies**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Study Area | Relative Poor HHs | Relative Poor Population |
| No. | % | No. | % |
| 1 | Panchathar | 23 | 26.00 | 132 | 25.00 |
| 2 | Sindhuli | 13 | 18.57 | 68 | 16.19 |
| 3 | Dang | 38 | 35.26 | 247 | 28.29 |
| 4 | Rauthat  | 9 | 15.00 | 73 | 15.87 |
| 5 | Rukum  | 14 | 17.5 | 73 | 16.95 |
| 6 | Darchula | 11 | 19 | 65 | 17.5 |

* + 1. **Total Poverty line and the Total Poor**

The income level, which lies below the wolf point, indicates total poverty line. Total poverty is the sum of absolute poverty and relative poverty. Total poverty is also called as upper poverty line. The wolf point for the present study in rural area is NRS. 41.87and on this basis, it is found that 62 percent of sampled households or 60 percent of sampled population are poor. These data are presented in table no.9.

**Table No. 9. Absolute, Relative, Total and Non-Poor in the Study Area**

|  |  |  |  |
| --- | --- | --- | --- |
| S.N | Types of poor | Households | Total Population |
| Number | Percent | Number | Percent |
| 1 | Absolute poor | 36 | 62.00 | 225 | 60.5 |
| 2 | Relative Poor | 11 | 19.00 | 65 | 17.5 |
| 3 | Total Poor  | 47 | 81.00 | 290 | 78.0 |
| 4 | Non- Poor  | 11 | 19.66 | 82 | 22.0 |
|  | Total | 58 | 100.00 | 372 | 100.00 |

*Source: Field Survey, 2013.*

Comparison of the result with other studies is presented in table No.10.

**Table No. 10: Total poverty Line and The total poor in Different studies**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.N | Study Area | Total poverty line (Per capita per day NRS) | Poor | Total population |
| No. | % | NO. | % |
| 1 | Panchthar  | 4.23 | 79 | 89 | 465 | 90 |
| 2 | Sindhuli | 15.18 | 42 | 60 | 241 | 59.9 |
| 3 | Dang | 32.74 | 81 | 75 | 679 | 78.57 |
| 4 | Rautahat  | 17.87 | 38 | 63.33 | 287 | 62.39 |
| 5 | Rukum | 20.25 | 49 | 61.26 | 269 | 61.13 |
| 6. | Darchula | 41.57 | 47 | 81 | 290 | 78 |

* + 1. **Income Distribution among Sample Households**

The main cause of poverty is unequal distribution of income. Unequal distribution of income is a worldwide problem. Nepal is one of the developing countries and is not far from this problem. In the rural areas of Nepal there is a wide gap between haves and haves not resulting into poor people getting poorer and rich people getting richer day by day. The standard of living of people is mainly determined by income. It is the inequality in the distribution of income, which is considered as main cause of unemployment, poverty etc. Therefore, it is necessary to analyze the exiting patter of income among the poor and a non-poor household is examined. To examine the actual patter of income and wealth distribution in the study area the Gini coefficient and loran curve are used.

In order to study the income distribution and inequality on its distribution, the sample households of the study area are distributed into ten income group. Each group occupies 10 percent of total sample household’s i. e. in each decile group there are 8 households. It has ranked from low income group to high. Thus, the first decile covers 10 percent households of low income group and last decile covers 10 percent households of high income group. In the present study, the per capita daily income is taken to draw Lorenz curve as well as to estimate the value of gini-co-efficient ratio. The following table represents a picture of income distribution per capita per day of sample households into decile group.

**Table No. 11. Income Distribution of Sample HHs Per Capita by Decile Group**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Group | No. HHS | % of HHS | Cum. % of HHS(Xi) | Income | Cum of Income | Cum. % Of Income(Yi) |
| 1 | 5 | 8.62 | 8.62 | 56.66 | 56.66 | 3.33 |
| 2 | 5 | 8.62 | 17.24 | 67.95 | 124.61 | 7.33 |
| 3 | 5 | 8.62 | 25.86 | 83.29 | 207.9 | 12.23 |
| 4 | 5 | 8.620 | 34.48 | 98.98 | 306.88 | 18.05 |
| 5 | 6 | 10.35 | 44.83 | 143.07 | 449.95 | 26.47 |
| 6 | 6 | 10.35 | 55.17 | 172.39 | 622.34 | 36.60 |
| 7 | 6 | 10.35 | 65.52 | 200.91 | 823.25 | 48.42 |
| 8 | 6 | 10.35 | 75.86 | 224.63 | 1047.88 | 61.64 |
| 9 | 7 | 12.07 | 87.93 | 305.29 | 1353.17 | 79.59 |
| 10 | 7 | 12.07 | 100 | 347.05 | 1700.22 | 100 |
|  | 58 | 100 | --- | 1700.22 | --- | ------ |

*Source: Calculation made by author from Field Survey data, 2013.*

1. **The Lorenz curve**

It shows the difference between equal distribution of income and actual distribution of income. The area between Lorenz curve and the line of equal distribution is known as the area of concentration. The basic notion is that the greater the area of concentration, the large magnitude of income inequality and vice versa. It is seen that top 8.22 percent of Household's members have received 3.33 percent of total income where as bottom 12.08 percent of households members receive only 20.4 percent of total income.

The above table of income distribution can be reflected in the following graphical expression called Lorenz curve.

*Figure.1. Income distribution among sample households in Lorenz Curve*

1. **Income Distribution among Absolute Poor**

In order to examine the income distribution among absolute poor household, total 36 absolute poor households are divided into 4 groups. Each group contains 9 households.

**Table No. 12. Income Distribution among Absolute Poor Household**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Group | No. of HHS | % of HHS | Cum % of HHS | Income | Cum of Income | Cum % of Income |
| 1 | 9 | 25 | 25 | 109.82 | 109.82 | 14 |
| 2 | 9 | 25 | 50 | 155.39 | 265.21 | 35 |
| 3 | 9 | 25 | 75 | 211.83 | 477.04 | 63 |
| 4 | 9 | 25 | 100.00 | 276.1 | 753.14 | 100 |
| Total | 36 | 100.00 | -- | 753.14 |  | -- |

In the present study, the value of Gini co-efficient ratio of total households is found to be as 0.34(Annex-4). The Gini co- efficient ratio among the sample households in different studies is shows in the table given below.

**Table No. 13. Gini Co-efficient Ratio of the Absolute Poor**

|  |  |  |
| --- | --- | --- |
| **S.N** | **Study Area** | **G.C. Ratio of Absolute Poor** |
| 1 | Panchther | 0.0412  |
| 2 | Sindhuli | 0.1837 |
| 3 | Dang  | 0.15  |
| 4 | Rautahat | 0.1425 |
| 5 | Rukum  | 0.20 |
| 6 | Dharchula | 0.34 |

1. **Sen's Poverty Index**

Considering the question ''How poor are the Poor?,' Sen's poverty index has been calculated. It is based on the ordinal welfare concept. It shows the intensity of the poverty problem. The value of poverty index considering income inequality is found to be 0.32 and without considering income inequality is found to be 0.27 among absolute poor household. It shows higher intensity of poverty due to inequality in income distribution among poor.

1. **Concluding Remarks**

The major outcomes of the entire study of this study are as follows;

1. For the study area NPR 33.76 per- capita per day has been drawn as the absolute poverty line. Based on this, it is found that 62 percent households or 60 percent of sampled population is absolute poor.
2. The wolf point or upper poverty line for the study area has been estimated as NPR41.87 per capita per day. According to this 81percent households or 78 percent population in the study area are poor.
3. The difference between the total poor and the absolute poor is called relative poor. It is found that 19 percent households and 17.5 percent population are relative poor in the study area.
4. As the value of Gini coefficient among the total sample households is 0.34. There is existence of inequality in the distribution of income among the total sample households.
5. The calculated value of sen's poverty index considering inequality is 0.32 and without considering inequality is 0.27. It shows higher intensity of poverty due to total inequality in income distribution among poor.
6. It is found that the marginal propensity to consume of absolutely poor households is very high i.e.0.74.
7. The value of correlation coefficient between income and consumption among total sampled household is 0.83 and the value of correlation coefficient between income and consumption of absolute poor households is 0.75. It shows that there is a positive correlation between income and consumption.
8. There is a high disparity in the landholding in the study area. Because most of the poor households are found to be landless, agricultural laborers or marginal land holders.
9. The poverty problem is higher among the illiterate people in the study area. The level of income is dependent on education and employment.

It is found that people of rural area are forced to involve in agriculture due lacking of alternative employment opportunities. The services of financial institution should be expanded to provide facilities to poor people at confessional interest rate so that they can establish the cottage industries in the area. Special technical support and awareness program also should be launched.

Electricity, transportation and communication facilities should be expanded in the study area. This may develop the market for the local production and help to establish domestic raw material based industries that can raise the living standard of the poor. As the educated households have relatively higher income in the study area, it is clearer that education may help to reduce the extent of poverty. So, programs for human resource development like primary education adult literacy, skill development, and basic health care nutrition and drinking water facilities should be increased.

Finally, the result of present study may lead to be a role model for the rural areas to reduce the intensity of sustained poverty and will show thresholds level of relationship of poverty with that of other social factors such as unemployment, land holding, education level, and family sizes of poor people etc.

**References**

Aryal, J.P. (1994). Poverty in rural Nepal: A case study of Sindhuli district, Master’s thesis in Economics, *CEDECON, Tribhuvan University,* Kathmandu

Baulch, B. and Hoddinott, J. (2000). Economic mobility and poverty dynamics in developing countries, *Journal of Development Studies*, vol. 36, 1–24

Baye F. M.( 2005).Alternative methods for setting poverty line: Measuring poverty in Cameroon, *Pakistan Economic and Social Review* Vol III (1), 107-132

Bhandari, B.N. Kuwar and B.S. Dangol (1986*). Rural Poverty and the poor in Nepal*, Win-rock international Project, Kathmandu.

Bhatt, A.(2013). An analysis of rural poverty: a case study of Kantai village development committee of Darchula District, Master’s thesis in *Central Department of Rural Development, Tribhuvan University,* Kirtipur, Nepal.

CBS (2010/11).*Nepal Living Standards Survey Report*, Vol. 1 and 2, HMG/NPCS, Kathmandu, Nepal

CBS (2008).*Nepal Labor Force Survey,* HMG/NPCS, Kathmandu, Nepal

CBS (2011). National Population Census, HMG/NPCS, Kathmandu, Nepal

Chaudhry S. I., Malik S. and Hassan, A. (2009). The impact of socio-economic and demographic variables on poverty: A village survey, *The Lahore Journal of Economics* Vol 14(1), 39-68

Dhakal, K.K. and Shrestha,M.K. (1987). *Poverty in rural Nepal:* A Case Study of Panchathar District, Win-Rock Project, Kathmandu, Nepal

Elbers, C., Lanjouw, J., and Lanjouw, P., (2003). Micro-level estimation of poverty and inequality, Econometrica, Vol. 71, pp. 355-364

Gautam, A.(1996). *Poverty in rural Nepal*: A case study of Ramjha village development committee, Lamjung District, an unpublished master’s thesis in Economics, *CEDECON, Tribhuvan University*, Kathmandu

Gautam, B.(1997). Poverty in Tarigaun village development committee of Dang District, An unpublished master’s thesis in Economics, *CEDECON, Tribhuvan University,* Kathmandu

Hamilton, David (1968). *A Primer on the Economics of Poverty*, Random House, New York

Jain, S.C.(1981). *Poverty to prosperity in Nepal*, Development Publishers, Australia

Malik, S.(1996). Determinants of rural poverty in Pakistan: A micro study, *The Pakistan Development Review,* Vol. 35 (2), 171-187

Ministry of Labour and Employment (2013). *Labour Migration for Employment: A Status Report for Nepal,* Government of Nepal, Kathmandu

National Planning Commission (2013). *Nepal Millennium Development Goals, Progress Report,* Kathmandu

National Planning Commission (2000). *Human Development Index Report,* Kathmandu

National Planning Commission (2013). *Human Development Index Report,* Kathmandu

National Planning Commission (2013).*Three Years Interim Plan, Fiscal year 2014-2016,*Kathmandu

Nobuhiko F., (2007). Pathways out of rural poverty: a case study in socio-economic mobility in the rural Philippines, *Cambridge Journal of Economics* Vol(3),123–144

Sen, A. K., (1976).Poverty: an ordinal approach to measurement, *Econometrica,* Vol(44), 219-231.

Serriere, N. and CEDA (2014). Labour market transitions of young women and men in Nepal, *Work4Youth Publication*, No.12, ILO, Geneva

World Bank (2000). *World Development Report 2000/2001: Attacking Poverty*, New York: Oxford University Press.

World Bank (2011*). Large Scale Migration and Remittance in Nepal: Issues, Challenges and Opportunities*, Report No.55390-NP, Washington, DC, USA

**Annexes:**

# **Annex-1: Calculation of Absolute Poverty**

**Table: 01 Cereals items**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **Cereals (in Kilograms)** | **Price/kg (in NPR.)** |
| 1 | Rice Mansuri | 50 |
| 2 | Rice Local  | 30 |
| 3 | Corn/Maize | 35 |
| 4 | Millate  | 20 |
| 5 | Wheat (Flour) | 20 |
| 6 | Maize | 30 |
| **Total** | **6kilograms** | **185** |

605 gm of cereals cost =

NRS or Rs are the Nepalese currency unit i.e $1=NPR 93(in approximation during study period)

**Table: 02 Pulses items**

|  |  |  |
| --- | --- | --- |
| **S.N.** | **Pulses** | **Price/kg (in NPR)** |
| 1 | Swibeen  | 50 |
| 2 | Beens  | 50 |
| 3 | Musuro | 90 |
| 4 | Gram(gagat)  | 30 |
| **Total** | **4 kilograms** | **220** |

 60 gm of pulses cost = 

Thus**,** total cost required for 605 gm of cereals and 60 gm of pulses;

= NPR (18.65 + Rs. 3.30) =NP R.21.95.

According to national planning commission, expenditure on minimum food requirement covers only 65 percent of subsistence consumption expenditure whereas remaining 35 percent of subsistence consumption will be spent on other items.

Thus, 65% of subsistence expenditure =NPR 21.96.

1% of subsistence of expenditure 

35% of subsistence of expenditure 

Thus, the total required expenditure per capita per day;

 = NPR (21.95 + Rs. 11.81) = NPR33.76

So, absolute poverty line = NPR32.75 per-capita per day.

Then, total expenditure for a year =NPR. 33.76x 365 =NPR. 12,322.40 (Annually)

Absolute poverty line = NPR 12,322.40per capita per year

### Annex-2: Estimation of Regression Line

*Income consumption relationship among total sample household and their MPC*

If c =f (Y)

Then, C1 ­= a+by………………………………(i)

In order to find out the value of a, and b we should apply the least square method by introducing the following equation.

∑C1 =Na+b∑Y1 (ii)

∑C1Y1 =∑ Y1a+ b∑Y12 (iii)

From the data sheet, we get:

∑C1 = 1882.46, ∑y1= 1700.22, ∑Y1C1 = 62118.37

∑Y12= 59089.10, N = 58 and ∑C12= 68544.7678

Substituting these values in to the above equations (ii) and (iii)

We get,

1882.46 = 58 a + 1700.22 b

62118.37 = 1700.22 a+59089.1b

Arranging into matrix from



Or, 

Now, finding the determined of A

 



The cofactor Matrix of the given matrix,



The Ad-joint of A is the transpose of Cofactor matrix .i.e





Or, 

Or, 

Or, 

I.e. a = 10.473079 and b = 0.74991

Here, autonomous consumption a = 10.473079 and marginal propensity to consume b = = 0.74991

Hence the estimate regression line is 

**Annex – 3: Derivation of the Wolf point**

Wolf point is defined as the point of equality between income and expenditure per capita per day in the Keynesian consumption function.

i.e C1=Y1

Since, i.e C1=a+bY1

Or, C1=a+bC1

Or, C1-bC1 = a

 



Thus, the wolf point (C1) =41.87

## Annex – 4: Estimation of Gini-Coefficient

Gini-Coefficient individual series among the total sample households according to per capita daily income has been computed using the following formula where the data are arranged in the ascending order i.e. 

Where, 

 n = the number of observation

 = the mean value of variable (Y)

 Yi = the variable value for the ith observation, and notice that

*For the grouped data, G.C. can be calculated as follows;*

## Table-03: Computation of Gini-Coefficient using group data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Cum.% of HHS.(Xi) | Cum%of Income(Yi) | XiYi+1 | YiXi+1 |
| 1 | 8.620689655 | 3.33250991 | 0 | 57.45707 |
| 2 | 17.24137931 | 7.329051535 | 63.18148 | 189.5444 |
| 3 | 25.86206897 | 12.22782934 | 210.8246 | 421.6493 |
| 4 | 34.48275862 | 18.0494289 | 466.7956 | 809.1123 |
| 5 | 44.82758621 | 26.46422228 | 912.5594 | 1460.095 |
| 6 | 55.17241379 | 36.60349837 | 1640.846 | 2398.16 |
| 7 | 65.51724138 | 48.42020444 | 2671.46 | 3673.257 |
| 8 | 75.86206897 | 61.63202409 | 4037.96 | 5419.368 |
| 9 | 87.93103448 | 79.58793568 | 8793.103 | 7958.794 |
| 10 | 100 | 100 | ------- | 0 |
| Total | --- | ------ | 18796.73 | 22387.44 |

Using the formula;



We have, G.C.=- 0.34 i.e. 34%

### Annex – 5: Computation of Sen’s poverty index among the absolute poor

We have computed Sen’s Poverty index in two ways; ( i) considering inequality, and (ii) without considering inequality among the absolute poor.

* 1. **Considering inequality**
		1. **Intensity of Poverty Situation**

With considering Inequality among poor;

 

Where, P\* = poverty index

 X = percentage of population below absolute poverty line

 C\*p = poverty line in per capita per day

 Cp = per-capita, mean income of absolute poor

 By Calculation, P\* = 0.32

* 1. **Without considering inequality**

****

By Calculation, P\* =0.27

**Annex 6: Computation of Correlation Coefficient**

### We calculated the correlation coefficient between income and consumption expenditure among the total sample households using direct method as follows;



Where,

 r = Correlation Coefficient

 Y1 = Income of the0.835705 1th households

 C1 = Consumption expenditure of the 1­­­th households

 N = Number of observation

Thus

Correlation Coefficient(r) =0.835705

Therefore, this implies that there are direct relations between these two variables such as income and consumption expenditure among the total sampled households.

**Annex-7: Income and Expenditure**

**Table 04: Household size, per capita daily household income and expenditure**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| S.N | Size of HHs |  (NRs)Y1 | (NRS) C1 | Y1C1 | Y12 | C12 |
| 1 | 3 | 9 | 17.81 | 160.29 | 81.00 | 317.1961 |
| 2 | 5 | 11.52 | 17.92 | 206.4384 | 132.7104 | 321.1264 |
| 3 | 9 | 11.94 | 18.34 | 218.9796 | 142.5636 | 336.3556 |
| 4 | 8 | 11.86 | 18.31 | 217.1566 | 140.6596 | 335.2561 |
| 5 | 7 | 12.34 | 21.34 | 263.3356 | 152.2756 | 455.3956 |
| 6 | 6 | 12.5 | 21.84 | 273 | 156.25 | 476.9856 |
| 7 | 9 | 12.85 | 20.9 | 268.565 | 165.1225 | 436.81 |
| 8 | 6 | 13 | 22.5 | 292.5 | 169.00 | 506.25 |
| 9 | 8 | 14.81 | 19.7 | 291.757 | 219.3361 | 388.09 |
| 10 | 7 | 14.79 | 20.46 | 302.6034 | 218.7441 | 418.6116 |
| 11 | 5 | 15.12 | 26.31 | 397.8072 | 228.6144 | 692.2161 |
| 12 | 6 | 16.92 | 19.35 | 327.402 | 286.2864 | 374.4225 |
| 13 | 6 | 16.96 | 21.84 | 370.4064 | 287.6416 | 476.9856 |
| 14 | 7 | 16.98 | 21.89 | 371.6922 | 288.3204 | 479.1721 |
| 15 | 5 | 17.31 | 28.39 | 491.4309 | 299.6361 | 805.9921 |
| 16 | 6 | 17.8 | 24.61 | 438.058 | 316.84 | 605.6521 |
| 17 | 6 | 19.35 | 25.34 | 490.329 | 374.4225 | 642.1156 |
| 18 | 8 | 20.16 | 27.38 | 551.9808 | 406.4256 | 749.6644 |
| 19 | 6 | 20.36 | 28.12 | 572.5232 | 414.5296 | 790.7344 |
| 20 | 5 | 21.31 | 21.73 | 463.0663 | 454.1161 | 472.1929 |
| 21 | 7 | 22.52 | 25.36 | 571.1072 | 507.1504 | 643.1296 |
| 22 | 5 | 22.64 | 26.23 | 593.8472 | 512.5696 | 688.0129 |
| 23 | 6 | 22.8 | 27.21 | 620.388 | 519.84 | 740.3841 |
| 24 | 8 | 22.96 | 22.14 | 508.3344 | 527.1616 | 490.1796 |
| 25 | 7 | 25.34 | 21.17 | 536.4478 | 642.1156 | 448.1689 |
| 26 | 5 | 26.81 | 28.38 | 760.8678 | 718.7761 | 805.4244 |
| 27 | 2 | 27.09 | 28.63 | 775.5867 | 733.8681 | 819.6769 |
| 28 | 6 | 28.25 | 28.73 | 811.6225 | 798.0625 | 825.4129 |
| 29 | 8 | 28.34 | 21.32 | 604.2088 | 803.1556 | 454.5424 |
| 30 | 9 | 28.4 | 20.14 | 571.976 | 806.56 | 405.6196 |
| 31 | 6 | 28.52 | 35.38 | 1009.038 | 813.3904 | 1251.744 |
| 32 | 7 | 31.79 | 36.7 | 1166.693 | 1010.604 | 1346.89 |
| 33 | 5 | 31.9 | 35.46 | 1131.174 | 1017.61 | 1257.412 |
| 34 | 2 | 32.14 | 40.45 | 1300.063 | 1032.98 | 1636.203 |
| 35 | 5 | 33.28 | 42.36 | 1409.741 | 1107.558 | 1794.37 |
| 36 | 8 | 33.48 | 58.31 | 1952.219 | 1120.91 | 3400.056 |
| 37 | 5 | 34.89 | 47.12 | 1640.247 | 1211.736 | 2220.294 |
| 38 | 2 | 35.3 | 34.32 | 1211.496 | 1246.09 | 1177.862 |
| 39 | 6 | 36.35 | 42.52 | 1545.602 | 1321.323 | 1807.95 |
| 40 | 7 | 36.5 | 30.57 | 1115.805 | 1332.25 | 934.5249 |
| 41 | 7 | 36.75 | 42.37 | 1557.098 | 1350.563 | 1795.217 |
| 42 | 8 | 37.98 | 40.53 | 1539.329 | 1442.48 | 1642.681 |
| 43 | 10 | 38.45 | 45.34 | 1743.323 | 1478.403 | 2055.716 |
| 44 | 7 | 38.6 | 42.31 | 1633.166 | 1489.96 | 1790.136 |
| 45 | 8 | 39.01 | 27.63 | 1077.846 | 1521.78 | 763.4169 |
| 46 | 6 | 40.01 | 50.68 | 2027.707 | 1600.8 | 2568.462 |
| 47 | 9 | 41.13 | 31.69 | 1303.41 | 1691.677 | 1004.256 |
| 48 | 6 | 43.83 | 38.32 | 1679.566 | 1921.069 | 1468.422 |
| 49 | 5 | 46.41 | 62.31 | 2891.807 | 2153.888 | 3882.536 |
| 50 | 7 | 47.4 | 41.42 | 1963.308 | 2246.76 | 1715.616 |
| 51 | 6 | 47.5 | 49.53 | 2352.675 | 2256.25 | 2453.221 |
| 52 | 8 | 47.67 | 40.83 | 1946.366 | 2272.429 | 1667.089 |
| 53 | 7 | 48.07 | 50.36 | 2420.805 | 2310.725 | 2536.13 |
| 54 | 8 | 49.09 | 51.56 | 2531.08 | 2409.828 | 2658.434 |
| 55 | 10 | 50.41 | 44.18 | 2227.114 | 2541.168 | 1951.872 |
| 56 | 9 | 50.18 | 42.83 | 2149.209 | 2518.032 | 1834.409 |
| 57 | 2 | 50.2 | 41.32 | 2074.264 | 2520.04 | 1707.342 |
| 58 | 5 | 51.43 | 42.67 | 2194.518 | 2645.045 | 1820.729 |
| Total | 372 | 1700.22 | 1882.46 | 62118.38 | 59089.1 | 68544.77 |

1. Earlier version of this paper was presented at the First National Population Conference, Kathmandu, June, 2014.

Website: www.pan-nepal.org/event [↑](#footnote-ref-2)
2. Ms. Bhatt Phuyal is associated at Central Department of Rural Development, Tribhuvan University, and Dr. Phuyal is Associate Professor at Centre for Economic Development and Administration, Tribhuvan University, Kirtipur. **Corresponding Email:phuyal\_ram5@yahoo.com** [↑](#footnote-ref-3)