# A Regression Model Approach to Study the Out-Migration from Rural Areas of Nainital District of Uttarakhand

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***Abstract:*** *Migration (human) is the movement of people from one place in the world to another for the purpose of taking up permanent or semi permanent residence, usually across a political boundary in search of better living and livelihood opportunities. Migration is one of the important components of population change along with mortality and fertility. The creation of the separate state of Uttarakhand has caused a large part of the population of the rural Kumaun Region to migrate to different urban parts of the state and in the present scenario out migration is one of the major problems which the state faces.*
*This paper is an attempt to analyse the out-migration with reference to various demographic indicators like family size, family nature, region, religion, category, facilities in the rural areas of Nainital district. The data is collected through a survey with the help of questionnaire. The multiple regression model is used to show the impact of out-migration from the study area. The analysis shows that the facility in village, family size and category of respondent are most responsible indicator for out-migration in rural area of Nainital district.*
***Keywords:*** *Multiple regression, demographic indicators, push & pull factors, out-migration.*

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## I.  Introduction

Migration and the movement it initials have always accompanied civilisation in every stage of development. Migration occurs as intercontinental, intra continental and interregional at a variety of scales. One of the most significant migration patterns has been rural to urban migration-the movement of people from the countryside to cities in search of better livelihood. At the places of origin and destination, migration influences the social, economic and demographic characteristics of the people, in addition to affecting the size and composition of the population of the concerned regions. Secondly, migration is phenomenon, much more complex than fertility and mortality, which changes rapidly over the time and which shifts direction in response to changes in economic, political, environmental and social conditions. Migration embraces with various social, cultural, economic and political factors which are broadly classified as Push and Pull factors. Oftentimes, a combination of these push-pull factors is what helps determine migration of particular populations from one side to another. According to NSSO (2010); internal migrants in India constitute about 309 million accounting for about 30% of the total population of the country in 2001. The percentage of urban population in India which was only 17% of the total population in 1951 is expected to jump to around 42.5% of the total population by 2025. One of the serious population problems emerging during the last few decades is the migration of people from rural to urban areas. Migration becomes more conspicuous in hilly states like Uttarakhand because of inaccessibility, fragility and limited resources and opportunities. At present (as per 2011 census)  about 17% population of the hill districts of Uttarakhand lives in urban areas while in the plains district 42% of the population lives in urban areas. This paper focuses on rural-urban migration, which involves both permanent and temporary movement in search of better opportunities. This paper is an attempt to analyse the out-migration with reference to various demographic factors like region, family size, family nature, category, facilities in village, and Agriculture Land in the Nainital district of Kumaun region (Uttarakhand). The paper will present a descriptive study and test the association between out-migration and various demographic factors in the study area. The district Nainital comprises partly of hill pattis, the bhabar and the plains. Out of 13 districts of the Uttarakhand state, six districts occurs in Kumaun region of Uttarakhand and Nainital district was selected purposively for the study as migration because there are no any literature found in this regards. The Nainital district had shown 7.55% reduced population growth in 2011 census as compared to the 2001 census.

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**1.1 Objectives**
1. To show the status of rural areas of Nainital district with reference to various factors.
2. To fit the multiple regression model for migration on different independent variables.

## II.  Research Methodology

To determining the most responsible factor for migration, we have selected randomly 24 gram sabha includes 52 villages in rural areas of Nainital district. By using Stratified Sampling Method, we have chosen 1500 households for investigation. We thus had a total of 10182 respondents for our study area. The data is collected through a survey with the help of questionnaire. Dependent variable is the number of migrants that moved into the destination areas from the areas of their original residence. We will try to examine the associations between number of migrants and other independent variables by regression model approach in the study area. Various diagrammatic representations are used to show the migration with reference to different factors.

## III. Analysis

The Nainital district of Uttarakhand was taken in the present study as it has three altitude ranges such as Haldwani, Ramnagar and Kotabagh blocks in low altitude (150-700 m); Bhimtal and Dhari blocks (700-1800m) in mid altitude range and other blocks Betalghat, Okhalkanda and Ramgarh areas fall in high altitude range (>1800m).

**Table-1** Distribution of respondents according to the region

| Region | No. of household | No. of respondents | Percentage |
|---|---|---|---|
| Low Altitude (150m-700m) | 500 | 3119 | 30.6 |
| Mid  Altitude (700m-1800m) | 500 | 3260 | 32.0 |
| High Altitude (>1800m) | 500 | 3803 | 37.4 |
| **Total** | **1500** | **10182** | **100.0** |

Source: Based on Field Survey

It is observed from Table-1 out of total sampled 10182 respondents maximum of 3803 (37.4%) respondents were taken from high altitude of rural Kumaun region whereas 3260 (32%) and 3119 (30.6%) respondents were occurred in mid and low altitude of rural area of Kumaun region in Uttarakhand.
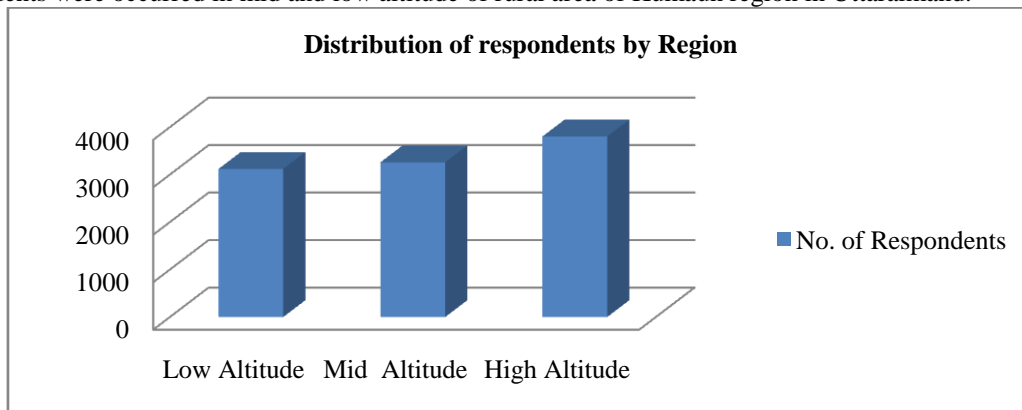


**Fig.1**

**Table 2** Distribution of Respondents according to the their nature of family

| Family type | No. of household | Percentage |
|---|---|---|
| Nuclear family | 809 | 53.9 |
| Joint family | 691 | 46.1 |
| **Total** | **1500** | **100.0** |

Source: Based on Field Survey

The family is very important in India and families tend to be very close knit. According to the nature there are two types of family found in the rural Kumauni society i.e., the nuclear family and the joint/ extended family. Nuclear family consisting of two usually heterosexual parents and their children (one or more). This is typically center on a married couple. There are allowed biological children that are full-blood siblings including stepchildren and adopted children. In a joint family, the number of dependents living under the roof is much larger including grandparents, married brothers, sisters, wives of sons, grandsons, granddaughters and other dependents.

Table 2 refers that the majority of the household (53.9%) were belongs to nuclear family whether 46.1% household were form joint family in rural area of Nainital district of Kumaun region.
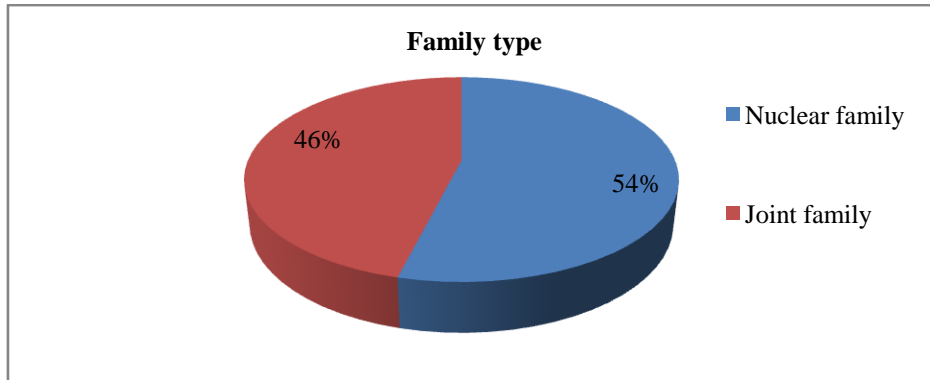


**Fig.2**

**Table 3** Distribution of Respondents according to the their family size

| Family size | No. of household | Percentage |
|---|---|---|
| 2-4 (small) | 214 | 14.3 |
| 5-8 (medium) | 977 | 65.1 |
| 9+ (large) | 309 | 20.6 |
| **Total** | **1500** | **100.0** |

Source: Based on Field Survey

The size of family is deal to the total number of family members. In ancient years, the people of rural regions have a tendency of large members of family. The only cause was behind for it, they believed if a child is born, he has take birth with two hands that means the birth of a child provides them two more hands for work-assistance in agricultural work. Increased number of hands means large numbers of family members. Therefore in view of socialization of a child or care for senior citizens a joint family is generally more beneficial. It is also felt that the children are well taken care of and the aged are given respect and security.

Table 3 refers that the majority of the household (65.1%) were belongs to medium size, 20.6% household were form large size and 14.3% household are found small size in rural area of Nainital district.
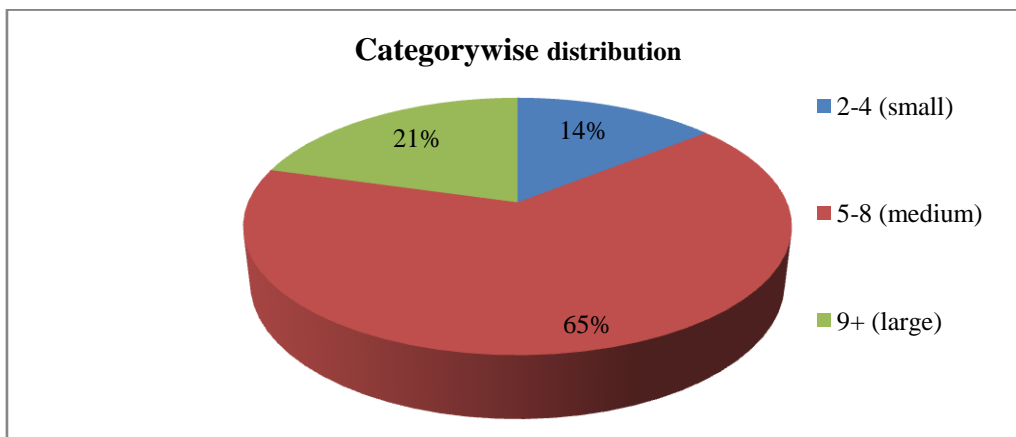


Fig.3

**Table 4** Distribution of respondents according to the category

| Category | | No. of household | Percentage |
|---|---|---|---|
| GENERAL | Brahamin | 355 | 23.7 |
| | Thakur | 624 | 41.6 |
| Schedule Category (SC) | | 414 | 27.6 |
| Other Backward Category (OBC) | | 107 | 7.1 |
| **Total** | | **1500** | **100.0** |

Source: Based on Field Survey

Social stratification plays a vital role to unite a society and keep solidarity among its members. Caste and ethnicity also influence the status of once household. In the present study the respondents are broadly categorized into General, Schedule Category (SC), Schedule Tribe (ST) and Other Backward Category (OBC).

According to Table 4 as found in field survey, out of total 1500 household of rural area of Nainital district 41.6 of respondents are of Thakur, 27.6% respondents are belong to Schedule Caste (SC), 23.7% respondents are belong to Brahamin and 7.1% respondents are of Other Backward Category (OBC). Schedule Caste (ST) respondent is not found in the present study.
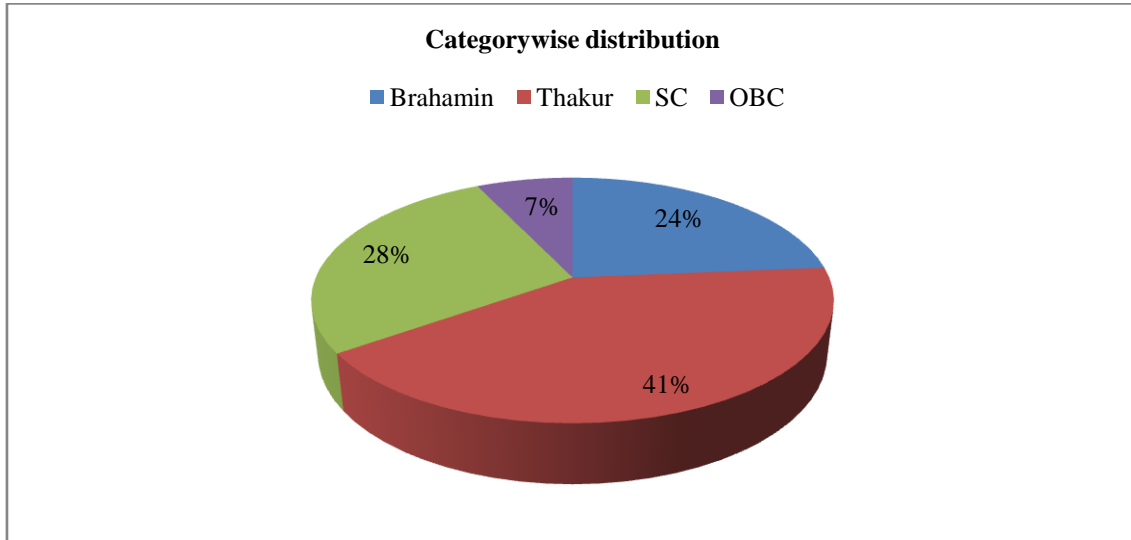


Fig.4

### 3.1 Multiple regression model

To reveal the functional relationship between one dependent variable to another independent variable, multiple regression approach is very beneficial tool. In this study number of migrants is our dependent variable and region, family size, family nature, category, facilities in village, Agriculture land are the independent variables. The data collected from 24 gram sabha of rural areas of Nainital district by conducting field survey and 1500 households were interviewed. The following multiple regression equation is obtained

Number of Migrants = $X_1$ + $X_2$ (Region) + $X_3$ (Family size) + $X_4$ (Family nature) + $X_5$ (Category) + $X_6$ (Facility in village) + $X_7$ (Agriculture land)

Where number of migration is dependent variables and region, family size, family nature, category, facilities in village, Agriculture land are use as independent variables.

**Table-5** Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.699[a] | 0.489 | 0.487 | 1.444 |
| a. Predictors: (Constant), region, family size, family nature, category, facilities in village, Agriculture land | | | | |
| b. Dependent Variable: Number of Migrants | | | | |

**Table-6** ANOVA

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2971.375 | 6 | 495.229 | 237.470 | 0.000[b] |
| | Residual | 3109.392 | 1491 | 2.085 | | |
| | **Total** | **6080.766** | **1497** | | | |
| a. Dependent Variable: Number of Migrants | | | | | | |
| b. Predictors: (Constant), region, family size, family nature, category, facilities in village, Agriculture land | | | | | | |

**Table-7** Residuals Statistics

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | -.48 | 9.47 | 2.18 | 1.409 | 1498 |
| Residual | -6.731 | 5.966 | 0.000 | 1.441 | 1498 |
| Std. Predicted Value | -1.887 | 5.173 | 0.000 | 1.000 | 1498 |
| Std. Residual | -4.661 | 4.131 | 0.000 | 0.998 | 1498 |
| a. Dependent Variable: Number of Migrants | | | | | |

**Table-8** Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.236 | 0.580 | | 2.132 | 0.033 |
| | Region | -0.221 | 0.121 | -0.089 | -1.820 | 0.069 |
| | Family size | 0.503 | 0.018 | 0.656 | 28.368 | 0.000 |
| | Family nature | -0.084 | 0.092 | -0.021 | -0.914 | 0.361 |
| | Category | -0.206 | 0.043 | -0.089 | -4.751 | 0.000 |
| | Facility in village | -0.570 | 0.126 | -0.224 | -4.517 | 0.000 |
| | Agriculture land | -0.388 | 0.287 | -0.025 | -1.353 | 0.176 |
| a. Dependent Variable: Number of Migrants | | | | | | |

The fitted multiple regression model for the dependent over the various independent variables is given below by the equation: Number of Migrants = 1.236 − 2.21(Region) + 0.503 (Family size) − 0.084 (Family nature) − 0.206 (Category) − 0.570 (Facility in village) − 0.388 (Agriculture land)

The Standardised regression equation is given below: $Z_{\text{(Number of Migrants)}} = -0.089\, Z_{\text{(Region)}} + 0.656\, Z_{\text{(Family size)}} - 0.021\, Z_{\text{(Family nature)}} - 0.089\, Z_{\text{(Category)}} - 0.224\, Z_{\text{(Facility in village)}} - 0.025\, Z_{\text{(Agriculture land)}}$
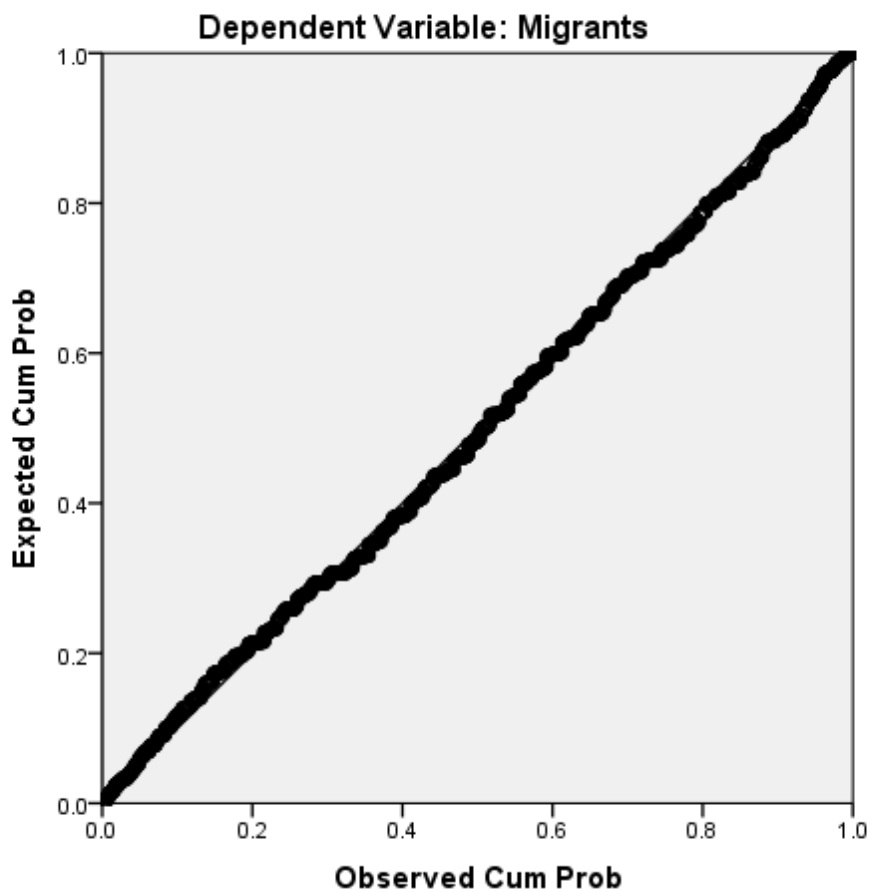


Fig. 5

## IV. Conclusions

Migration from the mountains of Uttarakhand to the other places is an age old practice and has its own importance in life of the mountain people. Migration has been used by the rural people as survival strategy to cope up with the employment and financial problems. Majority of people in the mountains are struggling for a good quality of life and livelihood. This has increased out-migration from the mountains to the plains and beyond. The massive out-migration from the hills to the plains is reflected in the 2011 census. In rural area of Nainital district migration is due to underdevelopment. A large number of able-bodied men have to migrate to earn their living, employment opportunities in this area being negligible. The multiple regression model is used

for out migration on different independent variables. The model summary shows the adjusted R square 0.489 by which 48.9% variations can be specified (Table-5).

Model shows the region, family nature, category, facilities in village, agriculture land were found to have a negatively associated variable with number of migrants excepted family size of the respondents. Finding also shows that family size, category and facility in village are highly significant. Thus the study area requires some new policies specially concern with rural areas of Nainital district.

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