# Analyzing the Parameters of Multidimensional Poverty in Taluka Naushahro Feroze: A Case Study

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**Abstract**

This research paper tackles the multidimensional poverty applying Foster and Alkire methods of Taluka Naushahro Feroze's 14 Union councils on the basic figures. No any single navigator gives clear value for deprivation as naturally it is multidimensional. Three dimensions are selected having unequal weights in health, education, and living standard. These areas have been extra distributed in ten indicators, two for education, two for health while six for living standards. The out-put shows that Union Council Waggan has the most multidimensional poverty while least multidimensional poverty was found in Union Councils of Cheeho Taluka Naushahro Feroze. It further suggests an indicator which has highest contributions for multidimensional poverty such as life expectancy, child school attendance, school quality, child mortality, year of schooling, walls, cooking fuel, overcrowding and which contribute lowest is electricity and improved drinking water. Percentage of people for those who are MPI poor of Taluka Naushahro is 47.95 % (incidence of poverty), while average deprivation of people is 55.75 % furthermore, multidimensional poverty index (MPI) is 26.73 % in Naushahro Feroze.

## 1.INTRODUCTION

Multidimensional deprivation has many factors hence it is multidimensional in nature. Poverty cannot be calculated by income alone. Multidimensional poverty is affected to deprived people such as poor health, starvation, access of pure drinking water and school attendance. Researchers around the world are taking various parameters to measure the multidimensional poverty. Most agreed multidimensional parameters of poverty around the world are education, health and living standard. Basically, these are three dimensions of multidimensional poverty. It can be observed that those having higher education have better health as well as their living standard is also better. On the contrary, people have higher income does not mean that their standard of education, health and living standard is better. Therefore, if we work on these parameters of poverty, we shall be able to give source of income to the people who are facing the menace of poverty rather the income. To calculate poverty, we require to establish multidimensional poverty tactics. It shows actual value of poverty.

## 2. METHODOLOGY

Population of Naushahro Feroze has been selected (Step 1) and as a sample we selected randomly fourteen Union Councils for primary data (Step 2). By using Krejci and Morgan table sample size 300 was chosen (Step 3). These 300 Questionnaires were asked to selected people of Union Councils for establishing multidimensional poverty index (Step 4).  MPI is created by using Alkire and Foster method.

**Step 1**: Sample size collection

| Population | Average No. of members from each house | No. of houses | Sample Size |
|---|---|---|---|
| 384874 | 7.3 | 384874/7.3≈ 52722 | 300 |

**Step 2**: Households numbers from each Union council

| Number of U-C | Selected U-C | Average No. of houses from each U-C |
|---|---|---|
| 21 | 14 | 300/14≈21 |

**Step 3**: Randomly selected union councils

| UC-01 | UC-02 | UC-03 | UC-04 | UC-05 | UC-06 | UC-07 |
|---|---|---|---|---|---|---|
| Bhambri | Cheeho | Abran | Noor Pur | Thatt | Phull | Waggan |

| UC-08 | UC-09 | UC-10 | UC-11 | UC-12 | UC-13 | UC-14 |
|---|---|---|---|---|---|---|
| Dangeja | Chanari | Masurjiah | Veesar | Koor hassan | Sarhal | Bhurind |

YS = Year of Schooling

CSA =Child School Attendance

SQ = School Quality

CM = Child Mortality

LE = Life Expectancy

E= Electricity

IDW = Improved Drinking Water

W = Walls

CF = Cooking Fuel

OC = Overcrowding

Above abbreviations are used in table A.

**Step 4**: Deprivation cut off for collecting basic data

Table: A

| Dimensions | Indicator | Deprived if… | Weight |
|---|---|---|---|
| Education | YS | Five years of schooling has domestic member has no completed. | 1/9 |
| | CSA | Any School-aged child is not joining school up to class 8. | 1/9 |
| | SQ | Disadvantaged if any child is not going to school for the reason that of quality issues (not enough teacher, school are distant away, too costly, no male/female teacher, substandard schools), or attending school but remains dissatisfied with service | 1/9 |

| Health | CM | Any child perished in the household | 1/6 |
|---|---|---|---|
|  | LE | Average life is less the anticipated lifetime in the world | 1/6 |
| Living Standard | E | The household has no electricity | 1/15 |
|  | IDW | The family does not have contact to pure water or harmless water is additional than a 10-minute away from house. | 1/15 |
|  | W | Family has unrestored walls (mud, uncooked/mud bricks, wood/bamboo) | 1/15 |
|  | CF | The household does not cook with natural gas | 1/15 |
|  | OC | Family is overloaded (4 or more persons per room) | 1/15 |

**Mathematical Equations:**

**Step 5**: formulation of deprivation matrix by basic data. Every individual is represented by each row and each indicator is represented by each column in deprivation matrix.

$$\text{Deprivation Matrix} = \begin{bmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ b_{m1} & b_{m2} & \cdots & b_{mn} \end{bmatrix}$$

**Step 6:** Score vector and censored deprivation matrix Score vector shows the score of each individual which is primarily the sum of entire row for each individual. Multidimensional poverty dual cut off is formed to establish censored deprivation matrix.

**Step 7**: Headcount ratio

$$H = \frac{p}{n}$$

Here "H denotes the Incidence of people whose share of weighted deprivation is k or more" and whole population is represented by n and persons who are multidimensional poor is represented by p.

**Step 8:** Intensity Level.

Intensity of poor individuals can be calculated by the sum of poverty encountered by the poor divided by number of poor people. Which mathematically can be written as.

$$A = \sum_{i=1}^{n} \frac{d_i(k)}{p}$$

Here di(k) is the censored deprivation of people i and p is the number of individuals who are multidimensional deprived.

**Step 9**: Calculating the MPI

MPI is an output of intensity level and Head Count Ratio: M = A × H

 H: Head count Ratio

A: Intensity level of people who are poor

**Step 10:** Formula to calculate Multidimensional Poverty.

Each indicator's contribution n to MPI $= \frac{UC_n CH_n}{MPI_{naushahro\ feroze}} \times 100$

Where $UC_n$ is the weight attach to indicator n. Where $CH_n$ is the censored deprivation score vector of indicator n.

## 3. RESULTS AND DISCUSSIONS

(Fig-1) displays that UC Abran has the highest incidence of poverty and least in UC Bhambri. (Fig-1) more indicates that MPI is least in UC Bhambri whereas Highest in UC Abran.. Sarhal and Masurjiwah collectively have the second highest percentage of deprived while UC Koor Hassan and UC Masurjiwah has the second highest average deprivation faced by poor people (Fig. 1). (Table. 2) shows that highest involvement to the MPI in taluka Naushahro Feroze is shared by the indicator life expectancy while the least contribution to the MPI is contributed by the indicator improved drinking water. Contribution of each indicator to the MPI differs in each Union Councils.
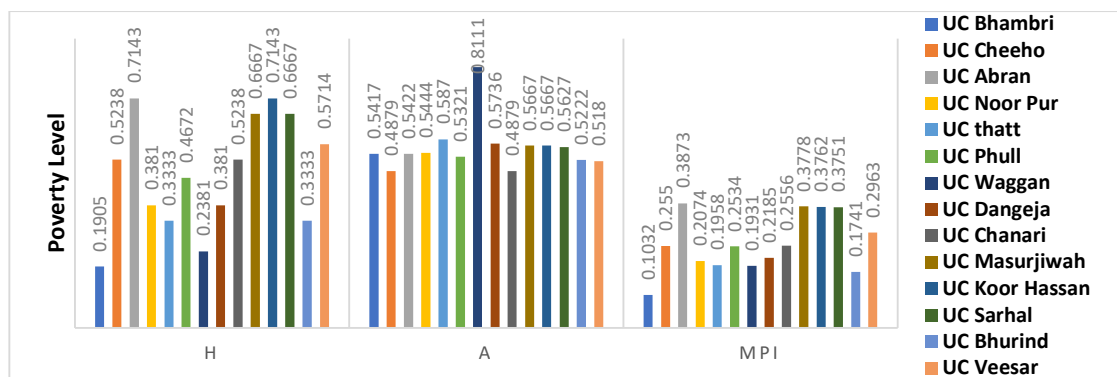


**Figure 1: Incidence of poverty, average deprivation and MPI of people who are poor**

**Table1: Incidence of poverty, average deprivation and MPI**

| UC | Sarhal | phull | waggan | Veeser | thatt | Noor pur | Koor hasan |
|----|--------|-------|--------|--------|-------|----------|------------|
| H | 0.6667 | 0.4762 | 0.2381 | 0.5714 | 0.3333 | 0.3810 | 0.7143 |
| UC | Dangeeja | cheeho | Masurjiwah | Chanari | Bhurind | Bhambri | Abran |
| H | 0.3810 | 0.5238 | 0.6667 | 0.5238 | 0.3333 | 0.1905 | 0.7143 |
| H OVERALL | 0.4795 | | | | | | |

| UC | Sarhal | phull | Waggan | Veeser | That | Noor pur | Koor hasan |
|----|--------|-------|--------|--------|------|----------|------------|
| A | 0.5627 | 0.5322 | 0.8111 | 0.5185 | 0.5873 | 0.5444 | 0.5267 |
| UC | dangeja | Cheeho | Masurjiwah | Chanari | Bhurind | Bhambri | Abran |
| A | 0.5736 | 0.4879 | 0.5667 | 0.4879 | 0.5222 | 0.5417 | 0.5422 |
| A OVERALL | 0.5575 | | | | | | |

| UC | sarhal | phull | Waggan | Veeser | thatt | Noor pur | Koor hasan |
|---|---|---|---|---|---|---|---|
| MPI | 0.3751 | 0.2534 | 0.1931 | 0.2963 | 0.1957 | 0.2074 | 0.3762 |
| UC | dangeja | Cheeho | masurjiwah | Chanari | Bhurind | Bhambri | Abran |
| MPI | 0.2185 | 0.2555 | 0.3778 | 0.2555 | 0.1740 | 0.1031 | 0.3872 |
| MPI Overall | 0.2673 | | | | | | |
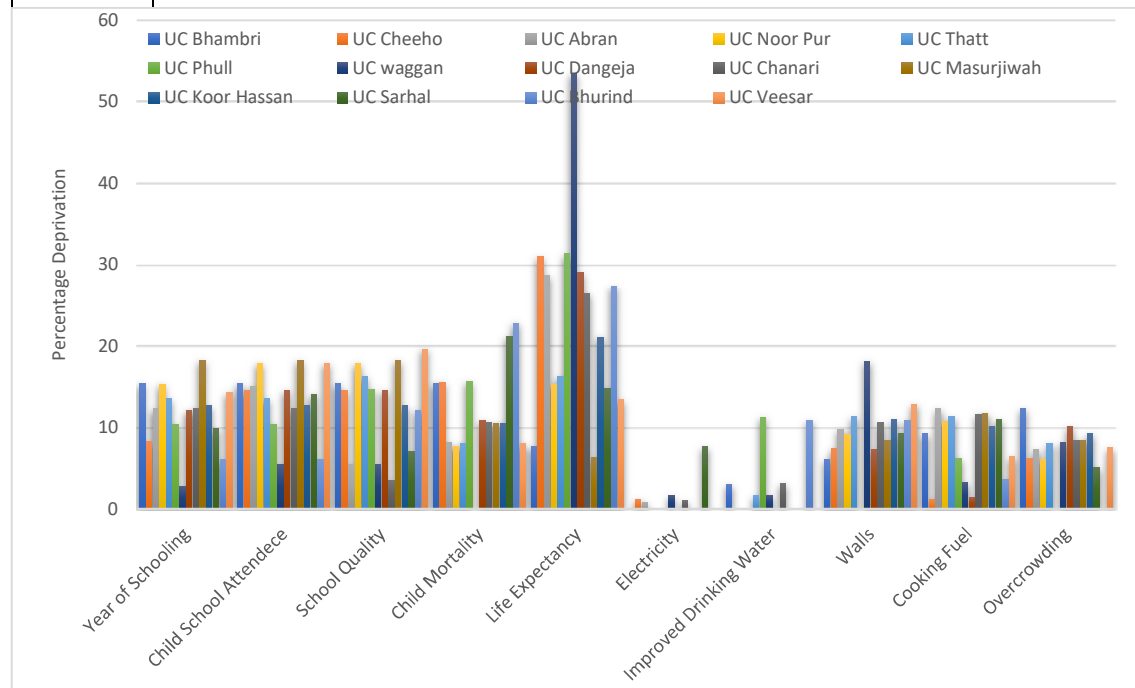


**Figure. 2: contribution of each indicator to MPI**

**Table2: Contribution of each indicator to MPI**

| | sarhal | Phull | Waggan | veeser | That | Noor Pur | Koor hasan | dangeja | cheeho | Masurji wah | chanari | Bhurind | bhambri | abran |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year of schooling** | 9.8733 | 10.439 | 2.739 | 14.285 | 13.514 | 15.306 | 12.658 | 12.107 | 8.280 | 18.206 | 12.324 | 6.078 | 15.383 | 12.295 |
| **Child school attendance** | 14.1042 | 10.439 | 5.478 | 17.857 | 13.514 | 17.857 | 12.658 | 14.528 | 14.493 | 18.206 | 12.324 | 6.078 | 15.383 | 15.027 |
| **School Quality** | 7.0528 | 14.614 | 5.478 | 19.642 | 16.217 | 17.857 | 12.658 | 14.538 | 14.493 | 18.206 | 3.520 | 12.156 | 15.383 | 5.463 |
| **Child mortality** | 21.1570 | 15.657 | 0 | 8.035 | 8.107 | 7.652 | 10.548 | 10.895 | 15.527 | 10.503 | 10.563 | 22.795 | 15.383 | 8.197 |
| **Life expectancy** | 14.8100 | 31.315 | 53.425 | 13.392 | 16.217 | 15.306 | 21.097 | 29.055 | 31.056 | 6.302 | 26.409 | 27.355 | 7.693 | 28.688 |
| **Electricity** | 7.6164 | 0 | 1.644 | 0 | 0 | 0 | 0 | 0 | 1.242 | 0 | 1.056 | 0 | 0 | 0.820 |
| **Improved Drinking Water** | 0 | 0 | 1.644 | 0 | 1.622 | 0 | 0 | 0 | 0 | 0 | 3.169 | 0 | 3.078 | 0 |
| **Walls** | 9.3085 | 11.273 | 18.081 | 12.857 | 11.352 | 9.183 | 10.970 | 7.263 | 7.453 | 8.403 | 10.563 | 10.942 | 6.152 | 9.836 |
| **Cooking fuel** | 11.0018 | 0 | 3.286 | 6.428 | 11.352 | 10.715 | 10.126 | 1.453 | 1.242 | 11.764 | 11.619 | 10.942 | 9.230 | 12.295 |
| **Overcrowding** | 5.0776 | 6.262 | 8.218 | 7.500 | 8.107 | 6.123 | 9.282 | 10.170 | 6.210 | 8.403 | 8.450 | 3.646 | 12.309 | 7.377 |
| **Total** | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

## 4.CONCLUSION

Multidimensional poverty in Taluka Naushahro Feroze is 26.73%, while incidence of poverty who are facing poverty is 47.95% while 55.75% is level of intensity. Many people of Taluka Naushahro Feroze's people are deprived in life expectancy while this is contributing most in every selected union councils of Naushahro Feroze. For instance, most of the people of UC Waggan are deprived in life expectancy whereas less contributing in UC Masurjiwah. In the same way large individuals of UC Masurjiwah are deprived in the year of schooling on the other hand less people are deprived in UC Waggan. Therefore, urgently steps should be taken for the development of the life expectancy and the year of schooling.

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