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Multidimensional Poverty in Urban and Peri-Urban Areas of Faisalabad, Pakistan: A Comparative Analysis

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Keywords

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Abstract

Poverty assessments in Pakistan have traditionally relied on monetary indicators, such as household income, consumption, and expenditure, often overlooking non-monetary dimensions of deprivation. This study examines multidimensional poverty and marginality in urban and peri-urban areas of Faisalabad, Pakistan. Data were collected from 160 households using a stratified random sampling technique. The Alkire–Foster methodology was employed to assess multidimensional poverty and marginality, while Poisson regression was used to examine the socioeconomic factors associated with household marginalisation. The findings revealed that 80% of households in peri-urban areas were multidimensionally poor, compared with 45% in urban areas. The results also indicated associations between household marginality and socioeconomic characteristics, including education, income, housing conditions, access to safe drinking water, and asset ownership. The findings highlight substantial disparities in multidimensional deprivation between urban and peri-urban households in Faisalabad. The study emphasises the importance of targeted interventions to improve access to education, adequate housing, safe drinking water, and essential resources, particularly in peri-urban communities.

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Introduction

Poverty is a complex phenomenon that does not mean an inability to meet basic survival needs. It also encompasses the involuntary absence of social and cultural resources considered necessary for a reasonable living in society (Cuesta et al., 2024). Traditionally, empirical studies relied on income and monetary indicators to measure poverty. These

approaches yielded satisfactory measures of poverty, but the most recent poverty literature argues that poverty should be seen as a multidimensional phenomenon. It must analyze poverty from the point of view of 'exclusion' from society that people experience because of a lack of resources (Haq et al., 2024; Saddique et al., 2023).

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The phenomenon of 'exclusion' from society is frequently referred to as 'marginality', characterized by an individual's lack of access to resources and the development of abilities, resulting in social and economic neglect and exclusion, alongside restricted freedom of choice, ultimately culminating in severe poverty (Cuesta et al., 2024). More thoroughly, it is characterized as *“an involuntary state and situation of an individual or collective at the periphery of social, political, economic, ecological, and biophysical frameworks, which obstructs their access to resources, assets, and services, limits freedom of choice, hinders the enhancement of capabilities, and ultimately results in severe poverty.”* (Cuesta et al., 2024).

The issue is especially serious in developing countries, where urbanization is markedly higher. Marginalization is increasing in these countries due to poor geographical endowments, social setup, poor policies (Haq et al., 2024; Ahmad et al., 2024), accessibility to health centers, formal occupations, educational facilities, and safe drinking water (Haq et al., 2024; Ali et al., 2026).

In Pakistan, the assessment of poverty have traditionally relied on a consumption-oriented monetary framework. Modern studies about poverty assessment in Pakistan have underscored the shortcomings of this methodology. These constraints can be represented as follows: a) These measurements assume the existence of markets for all commodities and ignore public goods and non-market provisions; b) These methodologies fail to recognize that individuals possess varying conversion factors for transforming monetary assets into valuable functions; c) The mere presence of financial resources does not ensure their allocation toward valuable goods and services; and d) Household-level data on income or consumption lacks sufficient detail regarding intra-household resource distribution (Alkire et al., 2025).

Faisalabad ranks as third largest city in Pakistan and is home to numerous textile businesses. Individuals from the countryside migrate to metropolitan regions seeking job opportunities in manufacturing facilities. Individuals of this nature are compelled to reside in the outskirts of the city and are vulnerable to marginalization and social exclusion. The objective of this study is to identify a remedy for reducing marginalization and poverty. The aims of this study are to: 1) Assess poverty from the marginalized perspective in the urban and peri-urban regions of Faisalabad city; 2) Evaluate the influence of marginality on disadvantaged and at-risk households; and 3) Contrast marginality across various strata of urban and peri-urban locales in Faisalabad city.

Although many researches have been on multidimensional poverty across the country, there’s limited exploration on comparative assessment on poverty and marginality between urban and peri-urban areas within industrial cities. Prior studies mostly focused on national, provincial or regional areas, while differences in scarcity and social marginalization within industrial cities are less explored. This study covers the gap observing multidimensional poverty among urban and peri-urban areas of Faisalabad using Alkire-Foster method.

Materials and Methods

Data Collection

Faisalabad, being the third-largest industrial city, was selected. We used a stratified random sampling procedure to collect data. Four strata were defined based on the presence of industrial units: Sheikhpura Road, Sargodha Road, Jaranwala Road, and Satiyana Road. Furthermore, one urban and one peri-urban area was selected from these strata, and from each area (urban and peri-urban), 20 households were designated randomly. This made the total sample size 160 households (Parsons, 2017) (Table 1).

During the data gathering process, the households taking part in the study were informed of its purpose. Respondents were informed that their information would only be used for study, and there was no compulsion to participate. Every piece of data collected from families was confidential, and the study did not reveal any personal information.

Table 1. Sample selection

Sampling stratum	Urban households (n)	Peri-urban households (n)	Total (n)
Sheikhpura road	20	20	40
Sargodha road	20	20	40
Jaranwala road	20	20	40
Satiyana road	20	20	40
Total	80	80	160

Poverty measurement: Alkire and Foster method

The Alkire-Foster methodology is employed to compute the multidimensional poverty index (MPI) and the marginality index (MI) for households. It is an uncomplicated yet robust approach. The benefit of MPI lies in its adaptability to modification, in contrast to a mere headcount ratio. The MPI illustrates the plight of poverty and adversity faced by people, families, and communities. The MPI is determined by

multiplying the head count ratio (H) by the average intensity of poverty (A) (Alkire et al., 2024; Haq et al., 2024; Ali et al., 2026).

The research encompassed four aspects: schooling, health care, standards of living, and assets, along with 13 indicators. Education is a complex process that mitigates poverty by boosting productivity and fostering economic progress. It improves individuals' well-being and facilitates their engagement in economic and social activities. Alkire et al. (2024), Haq et al. (2024), and Ali et al. (2026) utilised education as a facet of poverty. These are the two selected for this indicator.

Household head's education: Universal elementary education should be accessible to all. Education serves as an indicator of the caliber of human capital. An enhancement in quality education will elevate employment prospects, consequently leading to a reduction in poverty.

Child school attendance. The enrollment of children in school demonstrates the household's capacity to offer an improved quality of life. This indicator is determined by inquiring whether the children in the home, aged 6 to 13, are enrolled in school. This constitutes a characterization of the deficiency in educational resources or access inside the household.

The productivity of an individual household is affected by access to health facilities. Different research used health to measure poverty, such as Haq et al., (2024), Saddique et al., (2023) and Ali et al., (2026).

Child vaccination: This indicator considers the vaccination status of children under five years old within a family.

Disability: This indicator is characterized by the presence of a disability in the household head. It includes impairments such as physical difficulties, hearing loss, and visual impairment.

The standard of living is vital factor. Bask (2010) utilized housing conditions as a criterion to identify individuals experiencing social exclusion: both males and females. This comprises seven parameters, which are examined in the following sections;

Electricity (No/Yes): indicates if the residence has electrical availability. It serves as a housing metric that influences the quality of life for a household. The provision of power, encompassing appliances such as a television, refrigerator, and oven, is essential for domestic possessions

Access to gas: indicates if a family has access to gas or not.

Sanitation: Ahmad et al. (2024) and Haq et al. (2024) employed this metric to assess poverty. The equitable availability of sanitation is a crucial indicator of household welfare. Unsanitary conditions negatively affect human health.

Safe drinking water: Illnesses resulting from contaminated drinking water encompass Diarrhea and Hepatitis. In Pakistan, contaminated water is the cause of child fatalities due to diarrhea. The Nation (2009) reports that one in six individuals in Pakistan is impacted by hepatitis. Enhancements in access to potable water are necessary to augment ta. Consequently, access to drinkable water is a crucial indicator of health.

Flooring: This was investigated by asking whether the floor is made of manure or earth. Jamal (2009) utilized inadequate residence conditions as an indicator of poverty.

Cooking fuel: The type of cooking fuel utilized for cooking activities serves as a significant indicator. The use of manure, wood, or coal for cooking might cause respiratory issues for women. It would adversely affect women's health in the long run (Alkire et al., 2024; Haq et al., 2024). This metric is tangentially associated with the seventh Millennium Development Goal

Quality of house: The classification of a house is determined by its material: if constructed from mud, it is termed kacha; otherwise, it is referred to as pakka. This substandard dwelling condition metric was likewise utilized by Naveed and Islam (2010).

Assets are a measure of the long-term health of the household. Saddique et al., (2023) used the asset dimension to find household asset poverty. Other poverty-measuring parameters used by Haq et al., (2024) included assets and landholding. Ahmad et al., (2024) also adopted the asset dimension to determine poverty in Pakistan. There are two types of assets: urban and rural.

Urban assets: Seven possessions; refrigerator, stove, smartphone, motorcycle, bicycle, automobile.

Rural assets: Livestock like cow, goat, hen, and buffalo.

The assessment of multidimensional poverty employed the Alkire-Foster counting framework (Alkire et al., 2024). Thees thirteen poverty indicators were systematically arranged into an achievement matrix (X) for urban and peri-urban families independently. Each subsample had 80 homes and 13

indicators, resulting in achievement matrices with dimensions of 80×13 . Each row signifies a household, while each column pertains to one of the chosen poverty indicators. The configurations of matrix are as follows:

$$X(\text{urban}) = \begin{bmatrix} x_{11} & \cdots & x_{1\ 13} \\ \vdots & \ddots & \vdots \\ x_{80\ 1} & \cdots & x_{80\ 13} \end{bmatrix} \quad 1$$

For peri-urban regions, accomplishment matrix will be structured as follows

$$X(\text{peri} - \text{urban}) = \begin{bmatrix} x_{11} & \cdots & x_{13} \\ \vdots & \ddots & \vdots \\ x_{80\ 1} & \cdots & x_{80\ 13} \end{bmatrix} \quad 2$$

For every indicator j , the household performance x_{ij} was evaluated against the relevant deprivation benchmark z_j . A household was considered deprived in an indicator when its performance was below the established threshold and classed as non-deprived when it met or above that threshold.

$$g^0_{ij} = 1 \text{ if } x_{ij} < z_j; \quad g^0_{ij} = 0 \text{ if } x_{ij} \geq z_j$$

The implementation of this criterion produced distinct binary deprivation matrices for the urban and peri-urban populations. In these matrices, a value of one signifies deprivation in a certain indicator, whereas a value of zero indicates non-deprivation.

$$g^0(\text{urban}) = \begin{bmatrix} g_{011} & \cdots & g_{01\ 13} \\ \vdots & \ddots & \vdots \\ g_{080\ 1} & \cdots & g_{080\ 13} \end{bmatrix} \quad 3$$

$$g^0(\text{peri} - \text{urban}) = \begin{bmatrix} g_{011} & \cdots & g_{01\ 13} \\ \vdots & \ddots & \vdots \\ g_{080\ 1} & \cdots & g_{080\ 13} \end{bmatrix} \quad 4$$

The binary deprivation indicators were later modified based on the proportional significance allocated to each poverty indicator. For household i and indicator j , the weighted deprivation metric was delineated as follows.

$$g^0_{ij}(w) = w_j \text{ if } x_{ij} < z_j; \quad g^0_{ij}(w) = 0 \text{ if } x_{ij} \geq z_j$$

where w_j represents the weight allocated to indication j . The associated weighted deprivation matrices for the two research regions were thus depicted as:

$$g^0(W)(\text{urban}) = \begin{bmatrix} g_{011} & \cdots & g_{01\ 13} \\ \vdots & \ddots & \vdots \\ g_{080\ 1} & \cdots & g_{080\ 13} \end{bmatrix} \quad 5$$

$$g^0(W)(\text{peri} - \text{urban}) = \begin{bmatrix} g_{011} & \cdots & g_{01\ 13} \\ \vdots & \ddots & \vdots \\ g_{080\ 1} & \cdots & g_{080\ 13} \end{bmatrix} \quad 6$$

The cumulative deprivations across all thirteen variables for each family were subsequently combined to derive a comprehensive deprivation score:

$$C_i = \sum_{j=1}^{13} g^0_{ij}(w) = g_{i1} + g_{i2} + \cdots + g_{i13}$$

The deprivation-score vectors for urban and peri-urban families can be expressed as follows:

$$C(\text{urban}) = \begin{bmatrix} c_1 \\ \vdots \\ c_{80} \end{bmatrix} \quad 7$$

$$C(\text{peri} - \text{urban}) = \begin{bmatrix} c_1 \\ \vdots \\ c_{80} \end{bmatrix} \quad 8$$

The combined deprivation score C_i was then contrasted with the chosen multidimensional poverty threshold K . Households with deprivation scores at or above the threshold were defined as multidimensionally impoverished, whereas those with scores below the threshold were deemed non-impoverished.

$$\rho_k(x; z) = 1 \text{ if } C_i \geq K; \quad \rho_k(x; z) = 0 \text{ if } C_i < K$$

Following identification, the deprivations of families failing to meet the multidimensional poverty standard were omitted from the censored deprivation matrix.

Ultimately, the modified multidimensional headcount ratio (M_0) was derived by integrating the incidence and intensity elements of multidimensional poverty:

$$M_0 = H_0 * A \quad 9$$

Where H denotes the headcount ratio of households classified as multidimensionally poor, and A signifies the mean level of deprivation within those households.

Table 2. Weights and deprivation cut-offs for each indicator of the poverty index

Dimension	Weight	Indicators	Deprived if	Indicator weight
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Education	0.25	Years of schooling of the household head	No family head has achieved years of educational attainment (primary schooling).	0.125
Education	0.25	Child school attendance	Any child of school age is not enrolled in school until they reach the age at which they would finish eighth grade.	0.125
Health	0.25	Vaccination	Any offspring who has not received vaccinations.	0.125
Health	0.25	Disability	Any individual with a disability residing in the home.	0.125
Living standard	0.25	Electricity	The residence lacks electrical power.	0.036
Living standard	0.25	Gas	The residence lacks gas supply.	0.036
Living standard	0.25	Sanitation	The residences lack a sanitary facility.	0.036
Living standard	0.25	Safe drinking water	The residence lacks access to potable water.	0.036
Living standard	0.25	Flooring	If the residence features a floor made of soil, sand, or dung.	0.036
Living standard	0.25	Cooking fuel	If the residence use dung or wood for cooking.	0.036
Living standard	0.25	Quality of house	If the family resides in a Kacha house.	0.036
Assets	0.25	Urban	The household possesses no more than a single urban item, including a television, refrigerator, oven, mobile phone, motorcycle, bicycle, or automobile.	0.125
Assets	0.25	Rural	Cow, goat, buffalo and hen.	0.125
Total	1.00			1.00

Selection of indicators and dimensions are taken by multidimensional poverty literature and relevance to socioeconomic conditions of households. Health, Education, Living standards and assets were main aspects containing equal weights which ensures that each contribute equally for poverty assessment. This provides a consistent framework for comparing deprivations among poverty patterns among urban and peri-urban households.

To measure the marginality index, a total of two dimensions were used, including eight indicators. Each dimension contained four indicators. Zahra and Zafar (2015) described measurements and indicators of Marginality in Punjab by using four dimensions: residential instability, material deprivation, dependency, and ethnicity, which included a number of indicators. This study used only two dimensions, which are as follows:

Dimensions and indicators for marginality index

1. Residential instability

Dwelling: Those households that were living in Kacha/Semi-paka houses would be marginalized.

Marital status: Those household heads who were widow/widower would be marginalized.

Housing facility: Those who did not own a house. They were living on rent.

Gas facility: Those households who did not have access to gas facilities.

2. Material deprivation

Education: People in households aged 20 and above were without secondary education.

Transfer payments: Those households that were not receiving any kind of transfer payments would be marginalized.

Lack of urban assets: Those households who did not have access to urban assets such as TV, fridge, car, cycle, mobile, etc.

Lack of access to safe drinking water: Those households who did not have access to safe drinking water would be marginalized.

Table 3. Weights and deprivation cut-offs for each marginality indicator

Dimension	Weight	Indicators	Deprived if	Weight
Residential instability	0.5	Dwelling	A household who lives in Kacha/Semi-paka house.	0.125
Residential instability	0.5	Marital status	A household head who were widow/widower.	0.125
Residential instability	0.5	Housing facility	A household living on rented house.	0.125
Residential instability	0.5	Gas facility	A household had no access to gas facility.	0.125
Material deprivation	0.5	Education	The individual in the household aged 20 and above without secondary education.	0.125
Material deprivation	0.5	Transfer payments	A household not receiving transfer payment	0.125
Material deprivation	0.5	Lack of urban assets	A household having just one urban asset.	0.125
Material deprivation	0.5	Lack of access to safe drinking water	A household having no access to safe drinking water.	0.125
Total	1.00			1.00

Some indicators such as housing and gas facility, drinking water, household asset were used to assess poverty. These indicators are chosen because they are closely related to living conditions and well-being. However, there are mainly two directions focusing different aspects of deprivation. Poverty index that measures lack of basic needs for livelihood, and marginality index which assess housing conditions and material deprivation. Although, some indicators are common for both indexes, so including poverty index in regression model may lead to overlapping results. Therefore, relationship of poverty and marginality should be treated very carefully and should not be measured as direct cause-and-effect relationship.

Poisson regression

The Poisson regression analyses continuous and non-negative data attributes; its advantage lies in facilitating conclusions about the probability of events occurring (Winkelmann and Zimmermann, 1995). Poisson regression is notable for its randomness, which does not originate from outside sources but rather from the fact that the dependent variable is a predetermined function of the descriptive variables. Wang and Famoye (1997), Famoye et al. (2004), Mouatassim and Ezzahid (2012), along with Baetschmann and Winkelmann (1995), utilised this Poisson regression method.

Most margin indicators are comprised of count data (the number of indicators representing a person's deprivation) analyzed by Poisson regression, which is adept at modeling this type of data. In cases where poverty is recognized as the primary factor of marginalization, the same methodology as in Zahra and Zafar (2015) was utilized. The number of destitute individuals was employed as the dependent variable in the Poisson regression. It serves as a robust structure for representing discrete data, based on the premise that the dependent variable (the number of dimensions in which a person encounters poverty) adheres to a Poisson distribution, with its logarithm articulated as the linear function of the remaining variables.

The model's dependent variable is the tally of dimensions in which a person encounters marginalization (particularly, having non-negative values). An individual's deficiencies in several dimensions are influenced by a range of socio-economic characteristics; the expected value of the dependent variable (y) in relation to a set of explanatory variables (x) can be articulated as:

$$E\left(\frac{y}{x}\right) = e^{(x'\beta)} \quad 10$$

Where:

Y = Marginality index (0,1, 2, ...8)

x = Set of explanatory variables such as family size, education, poor health, poor housing facilities, poor drinking water facilities, income, poverty index, and assets.

e = base of natural logarithm

x' = transpose of x

β = the vector of parameters

Results and Discussion

Multidimensional poverty was measured through four dimensions and thirteen indicators. The results for the first

dimension (education) showed that 38 percent of the urban and 54 percent of the peri-urban residents could not read and write (the first indicator), hence were considered as poor and deprived of education. In terms of the second indicator, i.e. the education level of the household head, 40 percent of urban and 68 percent of peri-urban households were found to be poor and deprived of education.

The situation was somewhat different with regard to the second dimension, health, as 16 per cent and 4 per cent of poor households were assessed as being deprived in the urban and peri-urban areas, respectively. In terms of disability, (deaf, blind, and physical disability). Only one household was measured to be deprived in urban while four households were measured as deprived in peri-urban areas.

Regarding living standards, everyone had access to electricity in both urban and peri-urban areas, but 24 percent and 68 percent of poor households had no access to gas facilities in the urban and peri-urban areas, respectively. In the case of basic sanitation, everyone had access to such facilities. Poor households (80 percent and 45 percent) in urban and peri-urban areas were neither poor nor had access to safe drinking water. Regarding flooring, 35 percent and 71 percent of poor households were deprived off. As far as cooking fuel is concerned, 19 per cent and 63 per cent of poor households in the urban and peri-urban areas were deprived, respectively. The poor household population was lacking quality housing facilities in urban areas (36%) and peri-urban areas (64%).

Assets were the fourth multidimensional poverty dimension. It contained rural and urban assets. The animals were all rural, such as buffaloes, cows, hens, and goats. In the urban areas, households were not allowed to keep animals. 71 percent of households had animals in the peri-urban areas. Peri-urban rural households lost their assets; this rate was 64 percent among poor households. Within the urban areas, TV, fridge, oven (6), cycle, motorcycle, and car were included. In urban areas, 16 percent of households were deprived in terms of urban assets, and in peri-urban areas, 65 percent of the households were deprived.

Table 4. Distribution of households by indicators of multidimensional poverty

Dimension	Indicator	Deprivation	Urban	Urban	Peri-urban	Peri-urban
			Non-poor (%)	Poor (%)	Non-poor (%)	Poor (%)
Education	Can-not read and write	Non-deprived	55	7	19	26
Education	Can-not read and write	Deprived	0	38	1	54

Education	Households head educational level	Non-deprived	55	5	19	12.5
Education	Households head educational level	Deprived	0	40	1	68
Health	Child vaccination	Non-deprived	55	29	20	76
Health	Child vaccination	Deprived	0	16	0	4
Health	Disability	Non-deprived	55	44	20	75
Health	Disability	Deprived	0	1	0	5
Living standard	Electricity	Non-deprived	55	45	20	80
Living standard	Electricity	Deprived	0	0	0	0
Living standard	Gas	Non-deprived	54	21	13	13
Living standard	Gas	Deprived	12	24	8	68
Living standard	Sanitation	Non-deprived	55	45	20	80
Living standard	Sanitation	Deprived	0	0	0	0
Living standard	Safe drinking water	Non-deprived	33	0	5	0
Living standard	Safe drinking water	Deprived	23	45	15	80
Living standard	Flooring	Non-deprived	55	10	18	9
Living standard	Flooring	Deprived	0	35	3	71
Living standard	Cooking fuel	Non-deprived	55	26	16	16
Living standard	Cooking fuel	Deprived	0	19	4	64
Living standard	Quality of house	Non-deprived	53	9	16	16
Living standard	Quality of house	Deprived	2	36	4	64
Assets	Urban assets	Non-deprived	53	31	18	16
Assets	Urban assets	Deprived	2.5	14	1	64
Assets	Rural assets	Non-deprived	0	1	10	61
Assets	Rural assets	Deprived	55	44	10	19

Multidimensional Poverty Index

This study employed a 30 percent threshold based on the Alkire Foster methodology to derive findings in the urban and peri-urban areas of Faisalabad. 30 percent poverty cutoff applied to identify households facing deprivation in several important areas of life. Afzal et al. (2015) implemented a K-cutoff of 33 percent. Different cutoff levels were also examined to understand how changes in the poverty threshold affect the number of poor households. Table 5 indicated that, at a 30 percent threshold, 55 percent of households were

classified as non-multidimensional poor, while 45 percent were identified as multidimensional poor in the urban area. Twenty percent of households were classified as non-multidimensional poor, whereas eighty percent were identified as multidimensional poor in the peri-urban area. In total, 37 percent of households were classified as non-multidimensionality impoverished, while 63 percent were deemed multidimensionality impoverished. The occurrence of multidimensional poverty was more pronounced in the peri-urban area than in the metropolitan area.

Table 5. Percentage distribution of multidimensional poverty in urban and peri-urban areas

At 30 percent cut off	Urban	Urban	Peri-urban	Peri-urban	Total	Total
At 30 percent cut off	Frequency	%	Frequency	%	Frequency	%
Non multidimensional poor	44	55	16	20	60	37

Multidimensional poor	36	45	64	80	100	63
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The Head Count Ratio (H) is significantly elevated, specifically 45 percent in urban regions and 80 percent in peri-urban locales (Table 6). The severity of poverty was greater in metropolitan regions, at 73 percent, in contrast to 52 percent in peri-urban locales. The MPI indicated that multidimensional poverty was 33 percent in urban regions and 42 percent in peri-urban locales.

Table 6. MPI in urban and peri-urban regions at k = 30%

AF Measure	Urban	Peri-urban
Head count ratio (H)	0.45	0.8
Intensity of poverty (A)	0.73	0.52
M ₀ (MPI)	0.33	0.42

Note: MPI values are rounded: $0.45 \times 0.73 \approx 0.33$; $0.80 \times 0.52 \approx 0.42$.

Table 7. Headcount ratio, average intensity and MPI at different poverty cut-offs

K cut off percentage	Head count (H)	Average intensity (A)	M ₀ (MPI)
10	0.975	0.384	0.3744
20	0.656	0.545	0.375
30	0.635	0.5725	0.3575
40	0.4812	0.7286	0.3506
50	0.350	0.922	0.322
60	0.1625	1.922	0.312
70	0.0125	1.929	0.0241
80	0	0	0
90	0	0	0
100	0	0	0

The findings show the difference in multidimensional poverty among urban and peri-urban areas inside Faisalabad. Previous studies showed that poverty in Pakistan is influenced by different factors and varies across various regions (Haq et al., 2024; Saddique et al., 2023). This study contributes by comparing poverty in industrial areas. Higher poverty observed in peri-urban areas is linked to educational opportunities, poor housing conditions, and fewer household assets. The findings indicate that urban development and industrializations doesn't improve living conditions for all households.

Distribution of Households by Indicators of Marginality Dimensions

The residential instability dimension of marginality is divided into four indicators. The first indicator is dwelling (kacha/semi-pakka). 39 percent and 68 percent of households had kacha or semi-pakka houses in urban and peri-urban areas, Widows/widowers comprised 9 percent in urban and 15 percent in peri-urban areas. In urban areas, the majority of households reside on rent, which is 53%. While in the peri-urban areas, 24 percent of households live on rent. The fourth indicator is access to gas facilities. In urban and peri-urban areas, households still do not have access to gas facilities.

The secondary aspect of marginality is economic deprivation. It is further divided into four metrics. The initial metric was the lack of secondary education. In peri-urban regions, 73 percent of participants lacked secondary education, in contrast

to 40 percent of those living in urban areas. The second metric was the deficiency in transfer payments. Ninety percent of households in peri-urban regions were not obtaining transfer payments. Likewise, 88 percent of households in metropolitan regions did not obtain any transfer payments. The third metric was the lack of urban possessions (refrigerator, television,

oven, motorbike, bicycle, automobile, and mobile device). In the research locations, each participant possesses a mobile device. The fourth metric is the unavailability of potable water. These disadvantaged households rely on tap and public water for drinking, which poses health risks. The aquifer in Faisalabad is brackish and unsuitable for consumption.

Table 8. Percentage distribution of households by marginality indicators

Dimensions	Indicators	Urban	Peri-urban
Residential instability	Dwelling (Kacha/semi-pakka)	39	68
Residential instability	Widow/widower	9	15
Residential instability	Living on rent	53	24
Residential instability	No access to gas	25	20
Material deprivation	Household without secondary education	40	73
Material deprivation	Receiving no transfer payments	88	90
Material deprivation	Lack of access to urban assets	85	61
Material deprivation	No access to safe drinking water	68	85

Marginality Index

Table 9 shows that 43 percent and 7.5 percent households were non-marginalized respectively in the urban and peri-urban. 57

percent and 92.5 percent were marginalized respectively in the urban and peri-urban region. In the peri-urban regions households were more marginalized. Overall 75 percent households were marginalized in the Faisalabad.

Table 9. Percentage distribution of marginalized and non-marginalized households in urban and peri-urban areas

Marginality status	Urban	Urban	Peri-urban	Peri-urban	Total	Total
Variable	Frequency	%	Frequency	%	Frequency	%
Non-marginalized	34	43	6	7.5	40	25
Marginalized	46	57	74	92.5	120	75

Relationship between Poverty and Marginality

Zahra and Zafar (2015) demonstrated the correlation between marginality and poverty utilizing a dataset from PSLM 2007-08. The research demonstrated the adverse correlation between marginality and poverty. In elucidating this link, they employed the marginality index ranging from least to most marginal. The household's marginalization was evidenced by the rise in the index's value. A correlation between marginality

and poverty was demonstrated utilizing a dataset from PSLM 2011-12.

This research employed the marginality index derived from the Alkire-Foster methodology to illustrate the correlation between poverty and marginalized households. Franz et al. (2011) assert that it is not essential for a marginalized individual to be impoverished, nor for an impoverished individual to be marginalized; yet, these concepts are interconnected.

Table 10 illustrates the correlation between poverty and marginality. In the research region, 86 households were classified as economically disadvantaged. No household was

impoverished or marginalized. In the research zone, 34 households were classified as non-impoverished and marginalized.

Table 10. Relationship between poverty and marginality in the study area

In percentage	Non-poor	Poor	Total
Non-marginalized	40 (25)	0 (0)	40 (25)
Marginalized	34 (21)	86 (54)	120 (75)
Total	74 (46)	86 (54)	160 (100)

Marginality Comparison among four different strata

Table 11 shows that in strata three, 95 percent of households were marginalized in having a Paka house, as compared to strata one the percentage was only 5 percent. In strata two, 63 percent were living on rent that is the highest percentage of that indicator in the study area, as compared to 33 percent in strata four, which was the lowest. In strata three, 68 percent of households had no access to a gas facility and were marginalized, as compared to 35 percent, 50 percent, and 48 percent marginalized, respectively, in strata one, two, and

four. In strata four, 88 percent were marginalized in having secondary education, as compared to 33 percent, 63 percent and 50 percent respectively in strata one, two and four. Overall, strata three, which was an area along the Sargodha Road, was more deprived in all indicators. These households were deprived in dwelling by 95 percent, 28 percent widow/widower, 50 percent living in rented houses, 63 percent had no access to gas facility, 88 percent without secondary education, 93 percent receiving no transfer payments, 63 percent without urban assets, and no household had access to safe drinking water in this particular study area.

Table 11. Comparison of marginality among four strata (%)

Marginality indicators	Strata 1	Strata 2	Strata 3	Strata 4
Dwelling (Kacha/semi-pakka)	5	30	95	30
Widow/widower	7.5	7.5	28	5
Living on rent	38	63	50	33
No access to gas	35	50	68	48
Household without secondary education	33	63	88	50
Receiving no transfer payments	80	95	93	88
Lack of access to urban assets	28	40	63	35
No access to safe drinking water	50	90	100	85

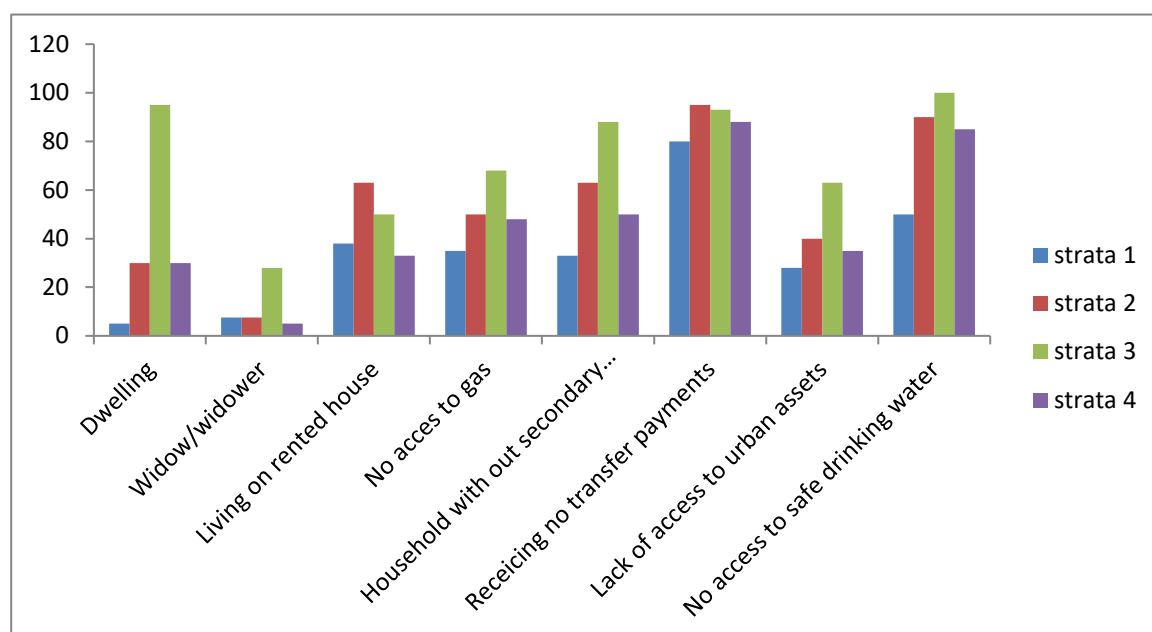


Figure 1: Comparison of marginalized households among four strata

Poisson regression analysis

The dependent variable is the count of indicators (e.g., $n=0, 1, 2, 8$) reflecting a household's marginalization. The determinants include family size, health status, educational attainment, substandard housing, inadequate drinking water facilities, income level, asset ownership, and poverty index. Table 12 presents the outcomes of Poisson regression within the research area. We discovered that several coefficients exhibit the appropriate indications, albeit with a few slight discrepancies.

Zahra and Zafar (2015) employed this regression model and discovered outcomes related to poverty statistics. Substandard health, inadequate housing circumstances, employment status, and marginality index exhibited a positive correlation with poverty levels. This research employed marginalized counts as the dependent variable to assess the influence of various factors like family size, inadequate health conditions, education, substandard housing, insufficient drinking water facilities, income, assets, and poverty index.

Adverse health issues were linked to families that have not immunized their offspring. The findings indicated a favorable correlation between the two factors in contrast to homes with superior health circumstances. The risk of being a marginalized household residing in substandard health circumstances rose by 3.3 percent in the examined area. Alexander et al. (2003) additionally discovered a favorable correlation between marginalized communities and adverse health outcomes, including immunization. As the number of

family members grows, the marginality of a home escalates. The risk of marginalization for families with more members rises by 0.3 percent. Alexander et al. (2003) determined that communities residing on the fringes or outskirts of society were the most susceptible to inadequate health services.

The education level within the home is inversely correlated with marginalization. The risk of marginalization diminishes by 16% with higher educational attainment. The research conducted by Ahmed et al. (2009) indicated that children from economically disadvantaged homes had a lower likelihood of attending school. In the absence of education, the prospects for children enduring extreme poverty are likely to be grim.

The living conditions were related to the factor of households possessing inadequate dwelling amenities. The findings indicated a favorable correlation between the two factors in contrast to households with superior home circumstances. In the study region, the chance of marginalized households living in bad housing conditions rose by 27%.

The inadequate water infrastructure was troubled by the factor of homes without access to potable water. The findings indicate a favorable correlation between the two variables in contrast to families equipped with a secure drinking water source. This variable exhibited significance at the 5 percent threshold. The risk of marginalization for households utilizing contaminated water escalated by 100% in the studied area.

The findings indicated that income negatively impacts the extent of a dimension where households may experience

marginalization; an elevation in income levels will diminish marginality risks by 0.2% in the examined area, assuming all other factors remain same. Schutte (2004) proposed that the provision of enduring income prospects and novel residential developments on the outskirts of urban areas may mitigate vulnerability.

Households without urban assets were marginalized by 17 percent in the study areas. The coefficient of urban assets was significant at the 10 percent level of significance.

The marginalized counts and poverty have a positive relationship. Zahra and Zafar (2015) also found a positive relationship between marginalized counts and the poverty index. As households' poverty increased, marginality rose.

The threat of being marginalized for poor households increases by 27 percent in the study region. This coefficient was significant at the 5 percent level of significance.

The Poisson regression's findings show that some variables have a stronger correlation with households' marginality than others. At the 5% level, there is a positive and statistically significant correlation between drinking water facilities, bad living conditions, and marginality. At this level, family size, income, education, and bad health are not statistically significant. There is not enough information in the study to verify their connection to marginality. The Poisson regression coefficients reflect changes in the predicted number of marginality indicators rather than changes in the likelihood of being marginalized. As a result, the results are seen as correlations rather than causes of the variables.

Table 12. Poisson regression results

Number of observations = 160 | Wald $\chi^2(10) = 1695.25$
Log likelihood = -263.87426 | Prob > $\chi^2 = 0.0000$

Marginality index	Coefficient	Std. Err	Z	P > Z
Family size	0.003	0.02	0.12	0.90
Education	-0.16	0.01	-1.11	0.27
Poor health	-0.033	0.19	-0.17	0.86
Poor housing	0.27	0.10	2.51	0.01
Poor drinking water facility	1.01	0.17	6.06	0.00
Income	-0.002	0.0001	1.42	0.15
Assets	0.17	0.11	1.52	0.10
Urban	-0.05	0.10	-0.54	0.10
Peri-urban				
Poverty index	0.27	0.14	1.95	0.05

Conclusion

This research seeks to discern methods for alleviating marginalization and poverty. The aims of this study are to: 1) assess poverty through the marginalized perspective in urban and peri-urban regions of Faisalabad city; 2) evaluate the effects of marginality on disadvantaged and at-risk households; and 3) analyze marginality across various segments of urban and peri-urban areas of Faisalabad city.

The findings indicated that 68 percent of the sampled households were disadvantaged in peri-urban regions, in contrast to 39 percent in metropolitan locales. Research indicates that education, income, and rural assets enhance the living standards of households, but factors such as large family size, inadequate schooling, substandard housing, insufficient

access to safe drinking water, and absence of urban assets diminish these living standards.

The following recommendations are suggested as policy implications of the study:

Improving educational level will lift people out of marginalization and poverty. Employment opportunities should be created through introducing innovative entrepreneurship ideas.

Although there was a positive correlation between family size and marginality, the results were not statistically significant. The study's main conclusion is that there isn't enough data to prove a causal connection between peri-urban marginalization and larger families. However, family planning services and

improving household members' well-being remain important. The following actions could be taken into consideration:

- a. Improving access to reproductive health information and raising demand for volunteer family planning services.
- b. Conducting print and digital media awareness campaigns about family health, well-being, and available support resources.
- c. implementing education and awareness campaigns at colleges, universities, and communities to promote better living circumstances and educated family planning decisions.

The research revealed that the availability of potable water was very inadequate in the examined region. It is advisable to guarantee the availability of potable water for these households by establishing water filtration facilities in certain regions.

This study has limitations. A sample of 160 families in particular urban and peri-urban districts of Faisalabad served as the basis for the analysis. As a result, the findings may not be typical of residences in other Pakistani cities or areas. Second, the study does not permit straightforward cause-and-effect findings because the data was collected all at once. Finally, the level of poverty used for the analysis, the weights assigned to the measures, and the choice of poverty measure can all affect the results. For a more comprehensive understanding of multidimensional poverty and marginality, future research could use larger samples, a wider geographic reach, and different methods of evaluating poverty.

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