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The Lottery of Birth Remains:
Poverty and Inequality Within and Between Socio-Religious Groups in India

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Abstract
Using a unique survey of 7101 households from Uttar Pradesh, India, this study, for the first time, measures 'poverty' and 'inequality' in consumption, wealth, and landholding at the sub-caste ('biradari') level. The findings revealed a significant gap in poverty headcounts by caste, which ranges from as low as 6% in Brahmin to as high as 55% in Paasi. Within the broad social groups, vertical economic inequality in consumption (G=.36), wealth (G=.72), and land (G=.66) varies across the sub-castes. The findings show a significant contribution of caste hierarchy in explaining poverty, inequality, food insecurity, and human opportunities. We also found a positive association between 'social exclusion' and 'food insecurity, poverty and inequality' across the caste groups. While the access to welfare programs measured through the human opportunities index shows little effect in reducing poverty, intergenerational educational status and household occupation significantly explain the wealth gap by caste.

Keywords: Poverty, inequality, food insecurity, exclusion, and Human Opportunity Index

Introduction
While poverty and inequality in India have been studied more in economic terms for a long time, recent literature has drawn attention to their social grounding. Caste groups remain the most significant determinants of lifetime opportunities, source of embarrassment, and social and economic discrimination (Borooah et al., 2014; A. Deshpande & Ramachandran et al., 2017; Mosse, 2018). This has led scholars to argue that caste be included within the global development policy debate, with the same attention as gender or race (Mosse, 2018). A persistent academic discourse on the subjective and objective nature of poverty further strengthens the linking of social deprivation with economic poverty (Lustig, 2012; Nándori, 2011; Ravallion, 2008). Subjective poverty is centred on the individual's perception of one's poverty or well-being (Othman et al., 2018; Shams, 2016). In contrast, objective poverty is based on researchers' and policymakers' decisions regarding the definition of an individual as poor, such as unsatisfied basic needs, a specific percentage of median income or a dual cut-off approach (Alkire & Santos, 2010; Ansari & Dhar, 2022; Battiston et al., 2013; Spicker, 2012). These deprivations include various aspects of life, capturing tangible essentials like access to food and health and extending to more intangible yet crucial elements such as limited educational, occupational and social opportunities (Anand et al., 2021). Thus, poverty as capability deprivation highlights the significance of a valuable life for an individual, free from social exclusion and discrimination and emphasises its pervasive impact on diverse dimensions of well-being (Graf & Schweiger, 2014; Sen, 2006; Sobel, 2016). Poverty is a complex and multifaceted phenomenon, revealing itself through numerous manifestations that comprehend a spectrum of deprivations (Anand, 2016; Pradhan et al., 2022).

India provides an intriguing situation to examine the role of caste due to its complex intersecting nature of poverty and social inequalities regarding caste, class, and religion (Jodhka, 2021; Mosse, 2018). The caste system is a complex social hierarchy of interdependent communities based on birth, occupation, and wealth. It has marginalised and oppressed lower castes, viz. Scheduled Castes (SCs), Scheduled Tribes (STs) and Other Backward Castes (OBCs) groups for centuries (Mamgain, 2023). These social constructions of identities cause vulnerabilities, which stress the immediate deprivations and pave the way to marginalisation over time. In addition to caste, communal ideologies based on different religious identities have also been a significant ground for social inequalities (Borooah et al., 2014). The node connected with caste and communal identities produces the most severe forms of social exclusion among Dalit Muslims, who face an identity crisis (Azam, 2023b, 2023a). The practice of untouchability is a dominant root of caste and religion-based discrimination in India (Azam, 2023b, 2023a; Kumar et al., 2009; Trivedi et al., 2016a, 2016b). The concerns of Dalit Muslims experiencing multicultural disadvantages have not been effectively integrated into research or policy agendas. Government-sponsored schemes for poverty reduction,

employment generation, and welfare programmes to promote the representation of marginalised groups are key measures used to promote social inclusion in India (Bandyopadhyay, 2007). However, these programmes are not always effective in contexts where prevailing power relations oppose initiatives that challenge their structural position in society.

This paper offers methodological and empirical interventions to understand poverty and inequality in India with respect to caste. It is built on a unique survey which enables data calculation at a sub-caste level. This facilitates several things that have been otherwise not possible in India since 1951 because of the discontinuation of the caste census by the independent Indian state under the Census Act 1948. One, specific caste-level data gives a remarkably more accurate picture than the broader governmental categories like Other Backward Castes (OBCs) and Scheduled Castes (SCs), which consist of hundreds of castes. Two, it aids the 'reversal of the gaze' of caste inequality, allowing focus on the wealth of 'upper castes' instead of only marking marginalised communities with caste – allowing seeing the concept of caste as 'power' instead of merely a 'disability' (K Satyanarayana 2013). Third, and very crucially, it enables the analysis of caste and religious inequality together, allowing future work on intersections of caste and communal discrimination. Fourth, we have attempted to present an association of untouchability across the caste with combined indicators of deprivation, marginalisation, and social exclusion. Finally, we have also attempted to clarify the nexus between economic inequality and food insecurity, exploring its associations with diverse deprivation, marginalisation, and exclusion indicators. To enhance the analytical depth of our investigation, we introduced an evidence-based index to measure social inclusion and untouchability.

2. Background and literature review

2.1 Caste and poverty

The absence and unavailability of resources restrict a person's freedom and well-being (Sen, 2006). In India, people where per capita consumption falls below a set threshold, designated as the absolute poverty line, are considered poor (Rangarajan et al., 2014). The poverty headcount in India is estimated by the World Bank, *i.e.,* as 10%, which is $2.15 per person per day in 2017 PPP-adjusted prices (Sinha et al., 2022). However, poverty is not uniform across the social groups. The evidence suggests that lower caste people suffer from greater economic disadvantage than others (Deaton & Drèze, 2005; Kumar et al., 2009; Pradhan et al., 2022). Although there has been a continuing decline in poverty across the castes, the economic disadvantage for lower castes still poses a greater challenge to overall development in the country (A. Thorat et al., 2017; S. Thorat & Lee, 2005). However, poverty cannot be understood or explained purely in economic terms. It includes not only low incomes and inadequate consumption but also low human capabilities, such as the inability to acquire technical skills, lack of education, poor health, malnutrition, insecurity, violence, vulnerability, social and political exclusion, and lack of dignity and fundamental rights (Alkire & Seth, 2008). The evidence suggests that these problems are mostly experienced by vulnerable sections of society, such as lower castes (Borooah et al., 2016; Mosse, 2018; Nandwani, 2016).

2.2 Caste and inequality

In India, one of the striking attributes of caste hegemony is its vertical structure following the 'principle of gradation and rank' based on the unequal assignment of economic, education, and civic rights across castes (Geetha, 2021). The significance of caste-based inequality intensifies hierarchical dominance and involves the narrowing down of entitlement to economic and social rights from the top to the bottom (Sen, 2004). These economic and social inequalities "abound with historically denied opportunities to lower caste groups," which are "deeply rooted in the caste system in India for generations"(Geetha, 2021). Caste remains a persistent determinant of power, economic inequality, and poverty in contemporary India. Traditionally, substantial contributions to the literature on caste relations in India have been made primarily by non-economists such as anthropologists, sociologists, and historians. The existing economic literature on 'caste and economic inequality' studied the broad social group differentials in consumption, income, education, occupations, and other development indices using either large surveys (mainly India Human Development Surveys [IHDS], National Sample Surveys [NSS] and National Family Health Surveys [NFHS]) or based small primary surveys (Ansari & Dhar, 2022; A. Deshpande, 2001; Hasan & Mehta, 2006; Jungari & Bomble, 2013). The near consensus in these studies is that the less privileged social groups tend

to be worse-off than the others on the measured indicators across the country. However, there are regional differences (Borooah, 2005). Using the NSS consumption surveys, Kijima and Lanjouw (2005) showed that lower endowments of physical and human capital possessed by disadvantaged groups and different income generation structures contribute equally to the disparities among caste groups. Among these studies, the persistence of systematic disproportions among households across different caste groups over long periods is remarkable. Discrimination and unequal caste relations are evident in diverse institutional spaces, such as the labour market, schools, and the institution of marriage (Banerjee et al., 2013; Hoff & Pandey, 2006).

2.3 Caste-based social exclusion, marginalisation, and untouchability

Deprivation is a material or socio-cultural disadvantage experienced by an individual or group due to different forms of cultural separation and discrimination (Borooah et al., 2014; Gang et al., 2008). Untouchability is one such discriminatory process experienced by an individual or group based on her/his caste identity (Trivedi et al., 2016a). It poses severe disadvantages regarding unequal distribution of resources and skills- education, training, health, employment, housing, financial resources, social security, and so on (Sooryamoorthy, 2008; A. Thorat & Joshi, 2020). Deprivation can be understood through the basic needs approach and the wider socio-cultural approach (Jungari & Bomble, 2013). When an individual or group is deprived of income, education, employment, or health opportunities, it is viewed through the basic needs approach (Ansari & Dhar, 2022).

However, when an individual or group is deprived of knowledge and awareness due to restricted social interactions and cultural participation, it is considered 'marginalisation' within the sociocultural approach (Hasan & Mehta, 2006; Nandwani, 2016). Marginalisation is the discriminatory process that forces individuals or groups to the edge of the economic, political, social, cultural, and ideological system. Social exclusion is an umbrella concept linked with deprivation and marginalisation that extends beyond economic or material exclusion (Jungari & Bomble, 2013). Often, these concepts overlap and are used interchangeably; subtle distinctions exist in the semantic analysis of these terms. However, the social approach outlines deprivation and marginalisation beyond income or resource deprivation and relates it to wider social and cultural inequalities (Kabeer, 2000). Uttar Pradesh, with the highest population in the country (19.98 Crores, 16.5% according to Census of India, 2011), is also one of the most poverty-stricken states and dominated by socially and economically marginalised social groups such as SCs, OBCs and Muslims (Goli et al., 2015; Pradhan et al., 2022). With this background, this study has twofold objectives: (1) to measure 'multiple indices of poverty' and 'inequality' in consumption, wealth, and landholding at the sub-caste ('biradari') level for the first time; (2) to assess the relationship between poverty and social discrimination process, such as untouchability, as well as the impact of affirmative action such as the provision of human opportunities. With these objectives, we test the following hypotheses:

- Socially deprived castes experience higher poverty levels in Uttar Pradesh, India
- Social discrimination or untouchability practices lead to higher lead to higher poverty levels.
- The provision of human opportunities by the state results in lower poverty levels.

3. Data and Methods

3.1 Data

The oversimplified categorisation of the population into broad groups like SCs, STs, and OBCs does not adequately capture the nuances of poverty and inequality among castes in India, especially in UP. Our study emphasises caste as the operational category, recognising the escalating internal differentiation within social groups and castes, thereby presenting a more nuanced understanding. This study uses primary data collected by the Giri Institute of Development Studies (GIDS) under the project "Social and Educational Status of OBCs and Dalit Muslims in Uttar Pradesh" (Trivedi et al., 2016a, 2016b). The household survey was conducted from October 2014 to April 2015, employing a multi-stage stratified random sampling design for data collection. 14 districts were distributed according to the population share from all four state regions: 6 from Western, 2 from Central, 5 from Eastern, and 2 from the Bundelkhand region. Each district's primary sampling units (PSUs) comprised Gram Panchayats/Villages/Wards and were selected based on probability proportional to size.

When selecting villages, it was ensured that sample villages had a mix of castes in both religious groups. If there was no caste heterogeneity in a village, then there was no caste heterogeneity in a village; the neighbouring village was included in PSUs to cover the required caste distribution. Similar procedures were followed in the case of sample selection from the wards of urban areas. The sample frame for the study design and sampling is the Primary Census Abstract (PCA) of the Census of India, 2011 (Census of India, 2011). We have ensured a minimum sample of 150 households in a district to ensure a sufficient sample of the six socio-religious groups: Hindu General, Muslim General, Hindu OBCs, Muslim OBCs, Hindu Dalits, and Muslim Dalits. Furthermore, around 50 households from a village and 30 households from a ward in a town/city were selected for the survey. Therefore, the final cumulative sample size of the study was 7124 households from 240 PSUs spreading across 14 districts (for detailed sampling methodology, see (Trivedi et al., 2016a, 2016b; Tiwari et al., 2022). However, after accounting for missing cases for some of the study variables, the analytical sample of the study accounts for 7101 households.

The caste groups categorised here are based on the *Varna* system and their historical dominance in terms of social and economic status. Data on caste, religion, and social group was collected from three sets of questions and matched with each other while classifying socio-religious groups (SRGs). The focus of this article is on the major castes (*jatis*) from all six SRGs which have sufficient statistical representation in the sample— *Brahmins* and *Thakurs* from upper caste Hindus; *Yadavs*, *Kurmis*, *Jats*, *Lodhs* among OBCs; *Jatav–Chamars* and *Pasis* among Dalits; *Ansaris* among OBC Muslims; besides upper caste Muslims and *Dalit* Muslims. The article prefers the term "upper caste" over "general category", which gives an illusion of a casteless group (A. Deshpande & Sharma, 2013).

3.2 Econometric Methods

3.2.1 Foster-Greer-Thorbecke (FGT) measures:

This paper used the concept of Foster-Greer-Thorbecke's measures of poverty. This family of measures was proposed by (Foster et al., 1984). FGT poverty measure for a given population is defined in discrete terms:

$$FGT_{(\alpha)} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{z}\right)^{\alpha} \quad \alpha>=0 \text{ (poverty aversion parameter and Gi} = (z\text{-}y_i) \qquad (1)$$

Where G_i is the deviation of household consumption from the poverty line, N is the total no of households and y is the variable of interest (monthly per capita expenditure to measure poverty ratio) and z is the poverty line or monetary cut-off. If household consumption(y_i) is less than the threshold value (z), then the household will be coded as 1 if poor; otherwise, zero for those households who are above the cut-off or State monetary thresholds for rural poverty is 768 rupees, and for urban poverty is 961 per capita per month (Commission, 2009) by households. All three poverty measures of the FGT family are calculated based on the aversion parameter value of α with respect to censored households.

a) *Head Count Index of Poverty FGT(a) = 0:*

$$FGT_{(0)} = \frac{q}{N} \text{ , where q is no of poor households} \qquad (2)$$

The most widely-used poverty indicator is the 'headcount ratio' (*hereafter* HCR), *i.e.,* the proportion of the population below the poverty line. The headcount index is easy to compute and interpret but has two weaknesses, which are the following:

i) First, it does not capture the intensity of poverty concerning the transfer of income from rich to poor households as a measure of welfare; simply, it violates the transfer principle formulated (Dalton, 1920).

ii) Second, the head-count index does not indicate how poor the poor are and hence does not change if people below the poverty line become poorer.

Hence, we used our second measure: the poverty gap index (FGT_1), given by the aggregate consumption shortfall of the poor as a proportion of the poverty line and normalized by the population size

b) *Poverty Gap Index FGT(a)=1*

$$\text{FGT}_{(1)} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{z}\right)^1 \quad (3)$$

A moderately popular measure of poverty is the poverty gap index, which adds up the extent to which households, on average, fall below the poverty line and expresses it as a percentage of the poverty line. This measure is the mean proportionate poverty gap in the population (where the non-poor have zero poverty gap). It shows how much would have to be transferred to the poor to bring their incomes or expenditures up to the poverty line (as a proportion of the poverty line).

c) *Square Poverty Gap Index FGT(a) = 2:*

$$\text{FGT}_{(2)} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{z}\right)^2 \quad (4)$$

To create a squared poverty gap index that the inequality among the households weighted according to the percentage of the poverty line. Thus, the measure implicitly gives greater weight to households that are significantly below the poverty line as such; while analysing poverty, it is crucial to use all three metrics.

3.2.2 Human Opportunity Index

Further, this study assesses the association between poverty ratios and access to the state's social safety nets. We captured access to social safety nets through the Human Opportunity Index (HOI). In its application, the HOI integrates two critical dimensions: firstly, it assesses the efficacy and prevalence of fundamental opportunities within a given society by quantifying the average coverage rate for specific opportunities. Secondly, it explores the equitable distribution of these opportunities, employing the 'dissimilarity index' as a metric. This dual-pronged approach captures the depth of societal disparities and provides a nuanced understanding in shaping the accessibility and fairness of essential opportunities (De Barros, 2009). Thus, the index by two stages; the first step used to estimate the 'dissimilarity index' for each welfare opportunities. It was obtained by following the formula:

$$\text{DI}= \frac{1}{2\bar{p}}\sum_{k=1}^{n}\alpha_k[P_k - \bar{P}] \quad (5)$$

Where, DI represents the dissimilarity index, and p represents coverage rates or average access. P_K is coverage for group k, and ∝k is the group's weight in the total population.

The second step is the estimation of the HOI. The following formula obtained it:

$$\text{HOI}=\bar{P}(1\text{-D}) \quad (6)$$

where P is the mean of the variable for population, and D is the dissimilarity index. HOI value represents the gap that should be reduced to reach the perfect equality in a given population for a given indicator.

3.2.3 Blinder-Oaxaca Decomposition Model

This study used the Blinder-Oaxaca linear decomposition model to systematically explain the relative contributions of factors underlying differences in wealth distribution among individuals stratified into the categories of poor and non-poor (Blinder, 1973; Oaxaca, 1973). Given its applicability to binary outcome variables, a binary variable was computed to represent poor households (coded as 1) and privileged non-poor households (coded as 0). The pivotal point of our analysis is the dependent variable, denoted as 'y,' representing the wealth index score. Then, the gap between the mean outcomes is as follows:

Now, the Blinder-Oaxaca decomposition equation 1 will be in breakdown terms;

$$\Delta Y = \left(\bar{X}_{Poor} - \bar{X}_{non-poor}\right)\beta_{non-poor} + \left(\bar{X}_{non-poor}\right)\left(\beta_{poor} - \beta_{non-poor}\right) + \Delta\varepsilon \quad (7)$$

Where $\bar{X}_{Poor}$ and $\bar{X}_{non-Poor}$ are vectors of explanatory variables evaluated at the means of poor and non-poor combined respectively. Further, we estimated how much of the overall gaps or the gap is specific to any one of the X's (also called the explained component) and differences in βs (also called the unexplained component). Mathematically, it is expressed as follows:

$$\underbrace{(\bar{X}_{Poor} - \bar{X}_{non-poor})\beta_{non-poor}}_{Explained\ by\ differecnes\ in\ Covariates} + \underbrace{(\bar{X}_{non-poor})(\beta_{poor} - \beta_{non-poor})}_{Explained\ by\ differecnes\ in\ cofficients} + \underbrace{\Delta\varepsilon}_{Unexplainded\ component} \quad (8)$$

3.2.4 Food Insecurity Index

Food insecurity denotes insufficient access to an adequate food supply for maintaining an active and healthy lifestyle. This predicament impacts numerous individuals and communities, particularly those residing in impoverished conditions characterised by limited income and insufficient access to credit (Goli et al., 2021). In assessing the extent of household food insecurity, the most knowledgeable female within the age bracket of 15 to 49 years was chosen based on her level of autonomy in decision-making regarding household purchases. Subsequently, this individual was queried with three specific questions related to food security status in the past 12 months, as outlined in Appendix Table 2. The food insecurity index was constructed by aggregating positive responses (indicative of food insecurity) to the posed questions.

3.2.5 Social Exclusion and Untouchability Index

Social exclusion has been defined as 'the process through which individuals or groups are wholly or partially excluded from full participation in the society within which they live' (Rawal, 2008). Social exclusion has been used differently by scholars, who often use it simultaneously with poverty and deprivation (S. Thorat & Lee, 2005). Untouchability is a distinct Indian social institution that legitimizes and enforces practices of discrimination against people born into particular castes and practices that are humiliating, exclusionary, and exploitative. It covers all spheres of life, including social, cultural, and economic, and derives its strength from the concept of purity, one of the important aspects of the caste system. In its classical form, the caste system considers 'untouchables' and keeps them outside the four-tier system (Jha, 1997). The practice is so vicious that mere touch or a shadow of an 'untouchable' falling on someone else pollutes them. The social exclusion and untouchability index were conceptualised based on series of questions asked to the socially excluded and untouchable households and their upper caste counterparts (Appendix Table 2).

3.2.6 Pyatt's Gini Decomposition Model

Pyatt (1976) explained the decomposition model using the Gini coefficient to calculate the change in inequality (measuring using the Gini index [G]) in a given economic variable attributable to 'within', 'between', and 'overlapping' components of sub-caste groups. We used the same approach to decompose the economic inequality or G in consumption or wealth by sub-castes to derive the contribution of 'between' and 'within group' inequalities. The steps of the decomposition procedure are explained as below:

Let a population of 'n' individuals, with a given consumption or wealth vector (y1, y2, y3 … y_n) and mean consumption or wealth 'y' is desegregated in 'k' sub-caste groups, with n= $\sum_{j\equiv 1}^{k} n_j$ and subgroups mean is $\bar{y}_j$.

The G between sub-caste groups *j* and *h* can be expressed as:

$$G_{jh} = \frac{1}{n_j n_h (\bar{y}_j + \bar{y}_h)} + \sum_{i=1}^{n_j}\sum_{i=1}^{n_h} |y_{ji} - y_{hr}|$$

If F(y) be the cumulative distribution function of consumption or wealth vector, then the expected consumption or wealth difference between sub-caste group *j* and *h* can be defined as:

$$d_{j_h}^1 = \int_0^x dF_j(y) \int_0^x (y - x)\, dF_h(x), for\ y_{ji} > y_{hr}\ and\ \ \bar{y}_j > \bar{y}_h$$

$$d_{j_h}^2 = \int_0^x dF_h(y) \int_0^x (y - x)\, dF_j(x), for\ y_{ji} > y_{hr}\ and \quad \bar{y}_j > \bar{y}_h$$

The relative consumption or wealth affluence is defined as:

$$D_{jh} = \frac{d_{j_h}^1 - d_{j_h}^2}{d_{j_h}^1 + d_{j_h}^2}$$

If the population shares in sub-caste group *j* is $p_j = \frac{n_j}{n}$ and consumption or wealth share in sub-caste group *j* is $s_j = \frac{p_j \bar{y}_j}{\bar{y}}$ then the contribution to total inequality attributable to the difference between the *k* population sub-caste group is defined as:

$$G_b = \sum_{j=1}^{k} \sum_{h=1\ j \neq h}^{k} G_{jh} D_{jh} \left(P_j S_h + P_h S_j\right)$$

The GI for sub-caste group *j* is given by:

$$G_{jj} = \frac{\sum_{i=1}^{n_j} \sum_{r=1}^{n_j} (y_{ij} - y_{rj})}{2 n_j^2 \bar{y}_j}$$

The within-group inequality index is the sum of Gini indices for all sub-caste groups weighted by the product of population shares and consumption or wealth shares of the sub-caste groups

$$G_w = \sum_{j=1}^{k} G_{jj} P_j S_j$$

If sub-caste groups are not overlapping, total inequality can be expressed as the sum of within-group and between-group indices. But, if sub-caste groups are overlapping, we can add another component, a part of between-group disparities stemming from the overlap factor between the two distributions, which measures the contribution of the intensity of trans-variation between the sub-populations of G:

$$G_t = \sum_{j=1}^{k} \sum_{h=1\ j \neq k}^{k} G_{jh} (1 - D_{jh}) \left(P_j S_h + P_h S_j\right)$$

Thus, G can be decomposed into three components: within-group inequality, between-group inequality and inequality due to group overlapping:

$$\mathrm{G} = G_w + G_b + Gt$$

4. Results:

4.1. Descriptive Statistics

Table 1 presents the description of the study variables. The analytical household sample of the study is 7,101. The sample's mean monthly per capita expenditure is Rs. 1313, with a standard deviation of 1281. Similarly, the average wealth value score is 147810, with a standard deviation 427540. Participation in welfare programs is relatively low, with only 18% of households using the Janani Suraksha Yojana (JSY) and less than 5% receiving old age or widow pensions, suggesting limited coverage or uptake of these benefits. Education levels are varied, with a significant portion of the population having less than secondary education, highlighting potential gaps in educational attainment. A large majority of households are rural (72%). The high rates of food insecurity (26%) and social exclusion (75%) underscore critical issues of poverty and marginalization

Table 1. Summary statistics of the study variables (N=7101)

Variables	Observation	Mean	Std. Dev	Min	Max
Monthly average per capita expenditure	7,101	1,313	1281	0	27748
Average wealth value of the households	7,101	147810	427540	0	9499000
Hindu General	7,101	0.15	0.36	0	1
Muslim General	7,101	0.09	0.28	0	1
Hindu OBC	7,101	0.33	0.47	0	1
Muslim OBC	7,101	0.18	0.38	0	1
Hindu Dalit	7,101	0.17	0.38	0	1
Dalit Muslims	7,101	0.08	0.28	0	1
PDS availability	7,101	0.11	0.31	0	1
PDS use (Yes/No)	7,101	0.15	0.36	0	1
Kisan @ Rural	5,086	0.18	0.38	0	1
MGNREGA @ Rural	5,086	0.26	0.44	0	1
ICDS @ rural	5,086	0.19	0.39	0	1
JSY	7,101	0.18	0.38	0	1
Old age pension	7,101	0.04	0.18	0	1
Widow pension	7,101	0.03	0.16	0	1
Household Age	7,101	44	12	44	86
Household Occupation	7,101	0.33	0.47	0	1
Urban	7,101	0.28	0.45	0	1
Rural	7,101	0.72	0.45	0	1
No Education	7,101	0.32	0.47	0	1
Below Primary	7,101	0.19	0.39	0	1
Below Secondary	7,101	0.38	0.49	0	1
Graduation & Above	7,101	0.10	0.30	0	1
Relatively Poor	7,101	0.40	0.49	0	1
BPL Poor	7,101	0.34	0.47	0	1
Food insecurity	7101	0.26	.44	0	1
Untouchability & Social Exclusion	7101	0.75	.43	0	1

4.2. Poverty by Castes

Poverty by castes is measured using headcounts, poverty gap, and squared poverty gap. Below, we have presented the results under three headings.

4.2.1. Headcounts

The poverty headcount ratios, described in Table 2, across various caste and sub-caste categories for Uttar Pradesh reveal a huge socio-economic disparity within the state. Brahmins, who have been historically positioned at the top of the traditional caste hierarchy, exhibited a relatively lower poverty headcount ratio, with 9% of their population experiencing poverty in the total scenario, 11.7% in rural areas, and a meagre 2.1% in urban settings. This suggests a notable economic advantage Brahmins enjoy in rural and urban settings. Conversely, the Kurmi caste faced a starkly contrasting reality, grappling with higher poverty rates. With an overall poverty headcount ratio of 43.3%. The poverty disadvantage is further accentuated in rural areas, where the ratio spiked to 56.04%, contrasted against a comparatively moderate ratio of 11.1% in urban settings. Intriguingly, religious affiliation adds another layer to these disparities. The Muslim General category contends with a substantial poverty headcount ratio, standing at 32.3% in the total population, 35.3% in rural localities, and 25.4% in urban settings. This sheds light on the unique economic challenges Muslim communities face in rural and urban contexts. Further disaggregation within the Muslim OBC category reveals disparities, with the Other Muslim OBC facing a significantly higher poverty headcount ratio in urban areas (44.9%) compared to rural areas (37%). The Dalit communities, traditionally marginalised, grapple with formidable poverty challenges, as evidenced by Chamaar's 41.2% overall poverty headcount ratio, 43.7% in rural settings, and 33.64% in urban areas.

4.2.2. Poverty Gap

The poverty gap ratio measures the percentage shortfall from the poverty line, as delineated in Table 2, across various caste and sub-caste categories in Uttar Pradesh. The poverty gap ratios suggest significant socio-economic inequalities within the state. Brahmins, positioned at the top of the traditional caste hierarchy, exhibited a relatively lower poverty gap ratio, with 2.5% of their population having experienced a poverty gap in the total scenario, and 3% in rural areas. Conversely, the Kurmi, Paasi, and Lodh castes faced a starkly contrasting reality, grappling with a higher poverty gap with an overall gap ratio of 13%, 13% and 15%, respectively. For Lodhs, a poverty gap ratio of 15% in rural areas against 9% in urban areas. Intriguingly, religious affiliation added another layer to these disparities. The Muslim General category contended with a substantial poverty gap ratio, standing at 8% in the total population, 9% in rural, and 7% in urban settings. This shed light on the unique economic challenges Muslim communities face both in rural and urban areas. Further disaggregation within the Muslim OBC category revealed a greater disadvantageous status for Other Muslim OBCs who have a poverty gap ratio of 9% in urban and 10% in rural areas (10%). The Dalit communities, traditionally marginalised, grappled with formidable poverty challenges. They have also shown a high poverty gap ratio. For instance, Chamaar's have a poverty gap ratio of 10% in rural areas and 8% in urban areas.

4.2.3. Squared Poverty Gap

The squared poverty gap ratios measured the depth of the poverty, as outlined in Table 2, across various caste and sub-caste categories in Uttar Pradesh, indicating significant socio-economic inequalities within the state. Hindu General, positioned at the top of the traditional caste hierarchy, exhibited relatively lower squared poverty or severity, with just 1% of their population experiencing poverty in the total population and 2% in the rural areas. Conversely, the Chamaar and Lodh castes faced a starkly contrasting reality, grappling with a higher squared poverty gap, with a ratio of 9% and 10%, respectively. Intriguingly, religious affiliation added another layer to these disparities. The Muslim General category contended with substantial severity in poverty ratio, with 3% of their total, rural and urban populations showing a squared poverty gap. This shed light on the unique economic challenges of Muslim communities in both rural and urban contexts. Further disaggregation within the Muslim OBC category revealed disparities, facing a significantly higher severity of poverty ratio in urban areas (2%) compared to rural areas (4%). The Dalit communities, traditionally marginalised, grappled with formidable poverty challenges in severe form, as evidenced by 6% overall. This highlighted persistent economic vulnerabilities faced by Dalit communities across both rural and urban contexts

Table 2. Absolute Poverty Ratios by Caste in Uttar Pradesh in 2014-15.

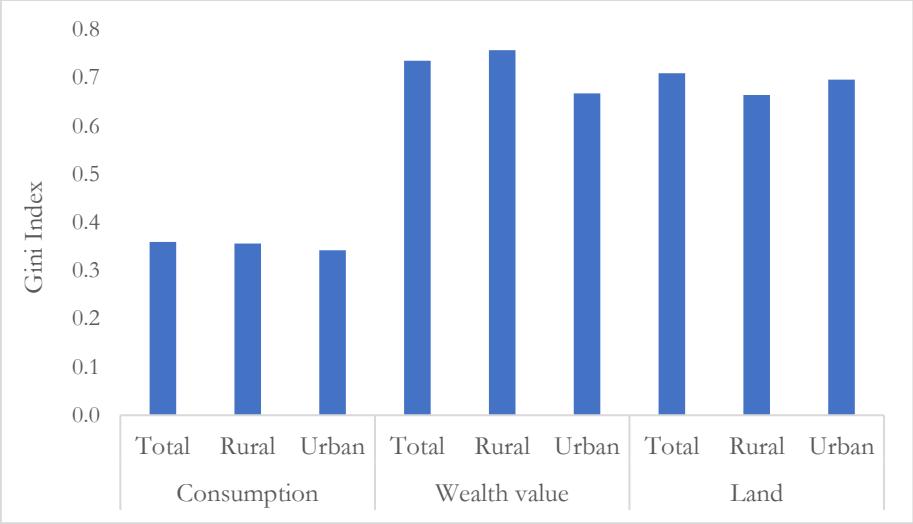
	Headcounts			**Poverty Gap**			**Squared Poverty Gap**		
Caste	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Brahmin	9.04	11.72	2.11	2.47	3.35	0.21	1.30	1.79	2.90
Thakur/Kshatriya	6.08	7.06	0.00	2.14	2.49	0.00	1.34	1.56	0.00
Other Hindu General	8.87	16.18	2.55	2.25	4.56	0.24	1.02	2.16	0.03
Hindu General	**8.20**	**10.95**	**2.06**	**2.32**	**3.28**	**0.20**	**1.2**	**1.78**	**0.02**
Muslim General	**32.28**	**35.32**	**25.41**	**7.91**	**8.46**	**6.67**	**3.13**	**3.05**	**3.29**
Yadav	32.09	32.85	28.92	7.45	7.63	6.69	3.01	3.23	2.07
Kurmi	43.31	56.04	11.11	12.69	17.49	0.56	5.39	7.51	0.06
Jaat	14.75	15.34	12.20	3.39	3.23	4.07	1.39	1.29	1.83
Lodh	47.90	56.45	38.60	12.42	15.31	9.27	4.13	5.47	2.68
Other Hindu OBC	37.39	38.77	33.51	9.30	9.73	8.11	3.44	3.71	2.68
Hindu OBC	**35.14**	**36.73**	**30.51**	**8.75**	**9.25**	**7.28**	**3.3**	**3.63**	**2.37**
Ansari Muslims	36.38	37.99	34.03	9.24	9.43	8.98	3.27	3.36	3.16
Other Muslim OBC	39.00	36.97	44.88	9.33	8.84	10.75	3.37	3.04	4.34
Muslim OBC	**38.03**	**37.30**	**39.65**	**9.30**	**9.03**	**9.90**	**3.3**	**3.14**	**3.77**
Chamar	41.15	43.73	33.64	9.96	10.38	8.73	3.63	3.70	3.44
Paasi	54.29	54.64	50.00	14.45	14.33	15.92	5.49	5.41	6.44
Other Hindu Dalit	49.32	59.50	27.17	14.55	18.22	6.57	6.26	7.93	2.64
Hindu Dalit	**44.19**	**48.31**	**32.05**	**11.44**	**12.51**	**8.32**	**4.4**	**4.80**	**3.30**

Dalit Muslims	**49.49**	**50.00**	**48.44**	**14.77**	**14.92**	**14.46**	**5.96**	**5.98**	**5.92**
All Hindu	31.16	34.11	23.11	7.94	8.80	5.60	3.11	3.53	1.96
All Muslim	39.37	39.80	38.42	10.27	10.27	10.26	3.91	3.79	4.19
Uttar Pradesh	34.01	36.00	29.00	8.75	9.29	7.38	3.39	3.62	2.82

4.3. Economic Inequality

In Figure 1, we analysed comprehensive economic inequality, as measured by the Gini Index (G), across various domains, including land holdings, wealth value score, and per capita consumption. Our estimates revealed that the highest degree of inequality was observed in wealth value (G=0.72), with a slightly lower magnitude in land holding (G=0.67) and the lowest in consumption expenditure (G=0.36). Notably, the estimation of consumption inequality indicated little difference between rural and urban settings, while wealth inequality exhibited considerable variation, particularly with a pronounced disparity in rural areas compared to urban counterparts. The Gini estimates for land holding underscored significant inequality in urban settings compared to the total consumption but are less pronounced than the inequalities observed in rural wealth value scores. In subsequent sections, we have discussed the vertical and horizontal economic inequalities across the sub-castes.

Figure 1. Economic Inequality in Uttar Pradesh



4.2.1. Vertical Economic Inequality

Consumption

Table 3 presents the level of consumption inequality across different sub-castes in rural and urban areas. The results reveal noteworthy variations in consumption inequality levels across the castes. Brahmins exhibit a relatively higher vertical economic inequality in consumption expenditure (G=0.37), with a noticeable urban-rural disparity of (G=0.30) and (G=0.39), respectively. Thakur/Kshatriya and Other Hindu General groups show vertical consumption inequality of (G=0.29), (G=0.34), and (G=0.34), respectively. The vertical inequality in consumption for Thakur/Kshatriya shows similar rural and urban areas, whereas Other Hindu General exhibits a stark rural-urban difference. Notably, the Kurmi caste displays a considerable inequality in consumption (G=0.42). Jaat, another prominent backward caste group, exhibits a high vertical inequality in consumption levels (G=0.42). Paasi caste presents the lowest vertical inequality in consumption level with a Gini value of 0.25, with marginal rural-urban differences of 0.23 and 0.26. By religious groups, the Muslim General category displays a slightly higher vertical inequality in consumption (G=0.35), while Ansari Muslim and Other Muslim OBC groups exhibit a lower Gini value of 0.27. Furthermore, the vertical inequality in consumption among Dalit Muslims is 0.29, with a noticeable urban-rural variation of 0.31 and 0.27, respectively. Overall, the vertical inequality in consumption among Hindus (G= 0.38) is slightly higher than their Muslim (G=30) counterparts.

Wealth

Table 3 also presents vertical inequalities in wealth distribution across various sub-castes in both rural and urban areas. The result suggests that among the Brahmins, the overall vertical inequality in their wealth value is G=0.67, slightly higher in rural areas G=0.7 compared to the urban areas G=0.56. Similarly, the Thakur/Kshatriya sub-caste exhibits an overall vertical wealth inequality of G=0.62, with rural areas having marginally higher than urban counterparts. Kurmi sub-caste has shown the largest gap in vertical wealth inequality in rural (G=0.76) and urban areas (G=0.44). Yadav sub-caste displays the highest vertical health inequality in their wealth distribution (G=0.75), followed by Chamaar Dalits (G=68). Among Muslims, the General category has the highest vertical wealth inequality of G=0.67. Overall, the vertical inequality in wealth among Hindus (G= 0.73) is slightly higher than their Muslim (G=69) counterparts.

Land

Further, Table 3 presents the level of vertical inequality in household landholding across different sub-castes in rural and urban areas. The results reveal striking heterogeneity in vertical inequality levels in landholding across the castes. Brahmins exhibit a relatively higher vertical economic inequality in landholding (G=0.65), with a noticeable urban-rural disparity of (G=0.75) and (G=0.58), respectively. Thakur/Kshatriya and Other Hindu General groups show vertical consumption inequality of (G=0.55) and (G=0.72), respectively. The vertical inequality in landholding for Thakur/Kshatriya and Other Hindu General exhibits a stark rural-urban difference. Muslim General, Yadav and Kurmi groups also displayed vertical inequality in land distribution patterns across rural and urban landscapes. Vertical inequality in landholding among Jats is lowest across all sub-castes. Except in urban areas, vertical inequality in landholding among Ansari Muslims, Other Muslim OBCs and Muslim OBC groups is also significant. Chamaar, Paasi, Other Hindu Dalit, Hindu Dalit, and Dalit Muslim groups demonstrated distinctive patterns in vertical inequality in land holdings across rural and urban areas. When considering the broader categories of All Hindus and All Muslims, the overall vertical inequality in land holding was estimated as G=0.68 and G=0.70, respectively, with urban and rural areas showing values of G=0.75 and G=0.62 for Hindus and G=0.40 and G=0.70 for Muslims, respectively.

Table 3: Vertical Economic Inequalities by Castes

	Consumption			**Wealth Value**			**Land**		
Sub Caste	**Total**	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**	**Rural**	**Urban**
Brahmin	0.37	0.39	0.30	0.67	0.70	0.56	0.65	0.58	0.75
Thakur/Kshatriya	0.29	0.34	0.34	0.62	0.62	0.55	0.55	0.54	0.84
Other Hindu General	0.34	0.45	0.30	0.57	0.78	0.59	0.72	0.56	0.69
Hindu General	**0.35**	**0.34**	**0.31**	**0.64**	**0.66**	**0.57**	**0.65**	**0.55**	**0.81**
Muslim General	**0.35**	**0.36**	**0.34**	**0.67**	**0.68**	**0.65**	**0.69**	**0.62**	**0.66**
Yadav	0.31	0.34	0.32	0.75	0.76	0.64	0.60	0.54	0.74
Kurmi	0.42	0.35	0.29	0.65	0.76	0.44	0.62	0.49	0.80
Jaat	0.42	0.28	0.35	0.67	0.68	0.73	0.52	0.50	0.61
Lodh	0.29	0.27	0.32	0.71	0.70	0.71	0.69	0.60	0.54
Other Hindu OBC	0.33	0.34	0.30	0.77	0.58	0.74	0.65	0.57	0.60
Hindu OBC	**0.35**	**0.35**	**0.30**	**0.76**	**0.77**	**0.70**	**0.66**	**0.60**	**0.69**
Ansari Muslim	0.27	0.27	0.23	0.65	0.68	0.65	0.57	0.63	0.00
Other Muslim OBC	0.27	0.32	0.28	0.65	0.55	0.46	0.65	0.68	0.10
Muslim OBC	**0.27**	**0.33**	**0.25**	**0.67**	**0.68**	**0.71**	**0.63**	**0.66**	**0.22**
Chamaar	0.34	0.29	0.27	0.68	0.62	0.64	0.69	0.68	0.35
Paasi	0.25	0.23	0.26	0.73	0.75	0.69	0.64	0.56	0.32
Other Hindu Dalit	0.30	0.30	0.24	0.63	0.68	0.53	0.61	0.63	0.27
Hindu Dalit	**0.33**	**0.27**	**0.28**	**0.68**	**0.70**	**0.64**	**0.67**	**0.65**	**0.49**
Dalit Muslim	**0.29**	**0.27**	**0.31**	**0.71**	**0.65**	**0.62**	**0.60**	**0.64**	**0.10**
All Hindus	**0.38**	**0.38**	**0.35**	**0.73**	**0.75**	**0.66**	**0.68**	**0.62**	**0.75**
All Muslims	**0.30**	**0.30**	**0.30**	**0.69**	**0.68**	**0.66**	**0.70**	**0.70**	**0.40**

4.2.2. Horizontal Economic Inequality

Figure 2 presents a comparative analysis of poverty ratio by various social and religious groups in relation to Hindu Generals clarified a distinct pattern. When compared with Hindu Generals (orange line), Muslim Generals, Hindu OBC, OBC Muslims, Hindu Dalits, and Dalits Muslims (in blue line) consistently showed higher poverty ratios. The gap continues to increase as we move towards lower social groups, such as Hindu Dalits and Muslim Dalits. Similarly, Figure 3 presents a comparative analysis of the poverty ratio by castes in relation to the Brahmin group, which exhibited the lowest poverty ratio. The results suggest that except for the Other Hindu General category and Jats, the gap between Brahmin and other castes continuously increases and is the highest for Lodh and Paasis. Figure 4 presents the ratio of poverty share to population share across castes. The results suggest that sub-castes falling below the equity threshold, such as Brahmin, Thakur/Kshatriya, Other Hindu Generals, Muslim Generals, and Jaat, exhibited lower poverty than their population share. While castes such as Dalit Muslims, Hindus, Passi, Chamar, and Ansari Muslims showed a higher prevalence of poverty relative to their proportional share of the population.

Figure 2. The ratio of poverty across the social groups with reference to Hindu general

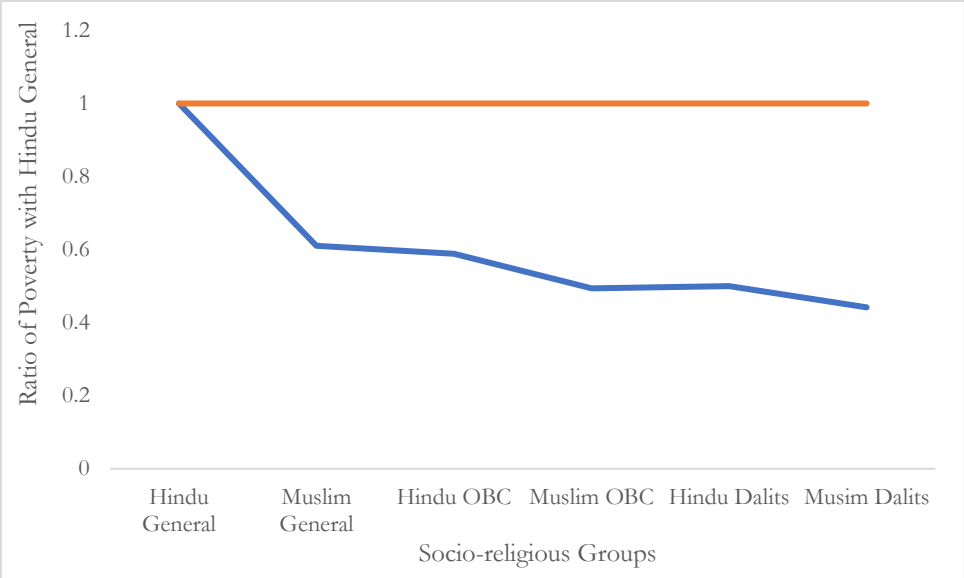


Figure 3. The ratio of poverty across the social groups with reference to Brahmins

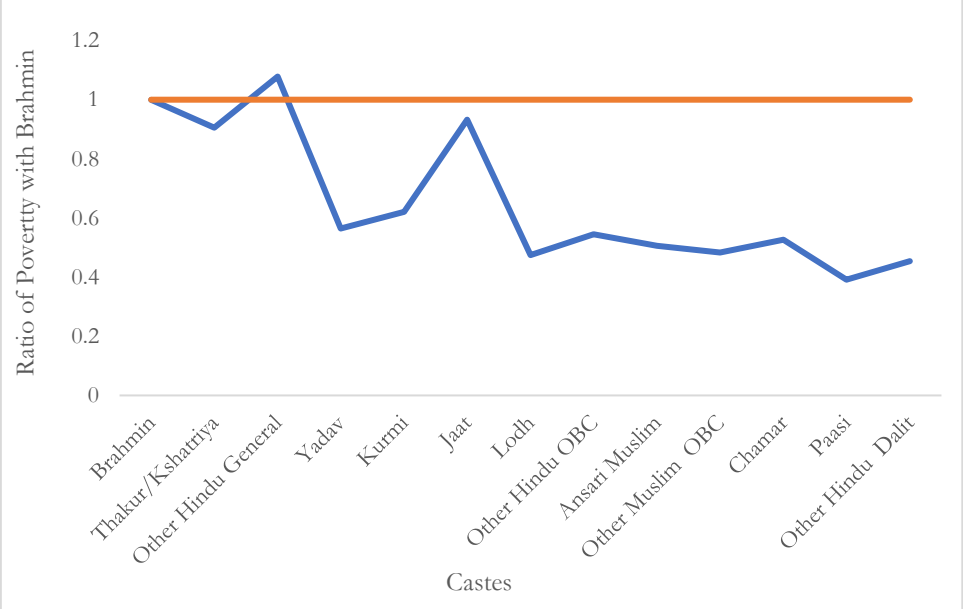
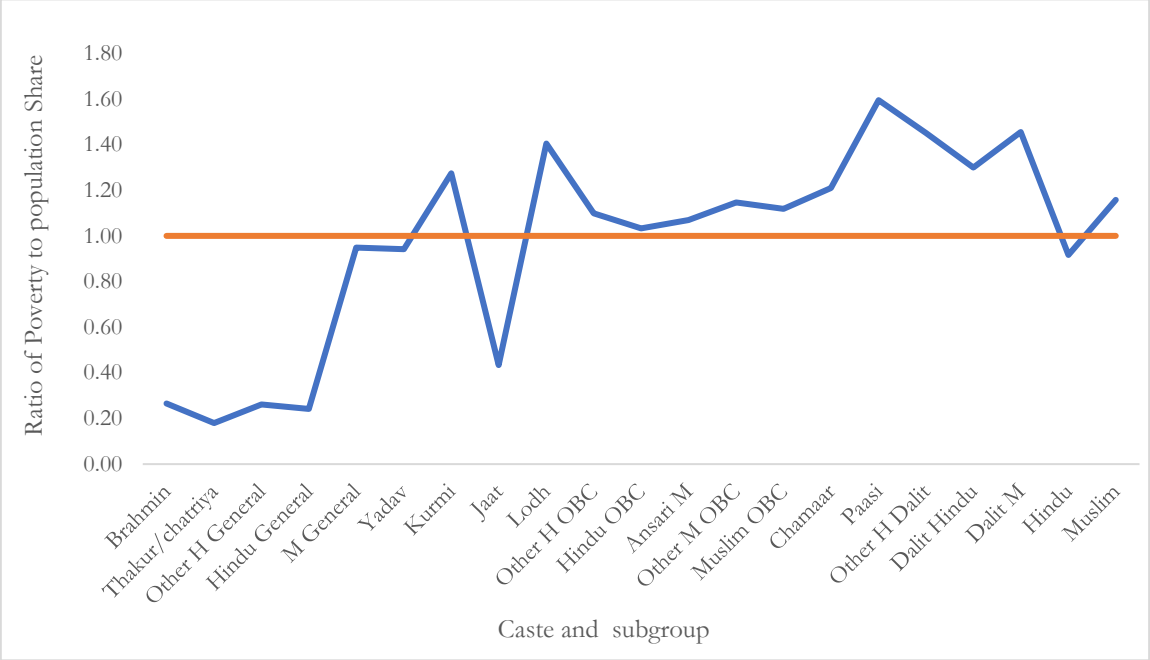


Figure 4. Ratio of poverty with reference to their population share across the castes



4.2.3. Decomposition Economic Inequality: 'Within' and 'Between' Caste Group Contributions

Figure 5 presents the estimates from Pyatt's decomposition of economic inequality to 'within' and 'between' social group contributions. Regarding consumption and wealth inequalities, within-group variations contribute the highest i.e. 44% and 41%, respectively. The contribution of overlap factors is minimal (19%) in case of consumption, but the same contributes 39% for wealth inequalities. Between-group variance by caste contributes the least in the case of wealth inequalities and the highest in the case of consumption inequalities. Caste inequalities in land distribution are explained more by overlapping factors between and within group variances. However, we found more interesting decomposition results of economic inequalities by sub-castes.

Figure 6 presented Gini decomposition estimates across different sub-castes, measuring 'within', 'between' and 'overlapping' factor contributions to economic inequality in consumption, wealth, and land ownership. Notably, 'between group' variance in consumption, wealth, and land distribution across sub-castes contributes 42%, 44%, and 53%, respectively. On the other hand, within-group inequalities exhibited distinct patterns: for consumption inequalities, they contribute the highest share at 50%, followed by wealth at 47%, but dropped to 39% in the case of land. The overlapped inequalities across consumption, wealth, and land are 9%, 10%, and 8%, respectively. The results suggest that inequalities estimated using social groups misleads the group-level distributions as 'between-group' inequalities make significantly lower contributions. However, the scenario is completely reversed when we use sub-castes to estimate and decompose economic inequalities.

Figure 5. Total, between-group, overlap, and within-group inequality by sub-caste group based on Pyatt's Decomposition

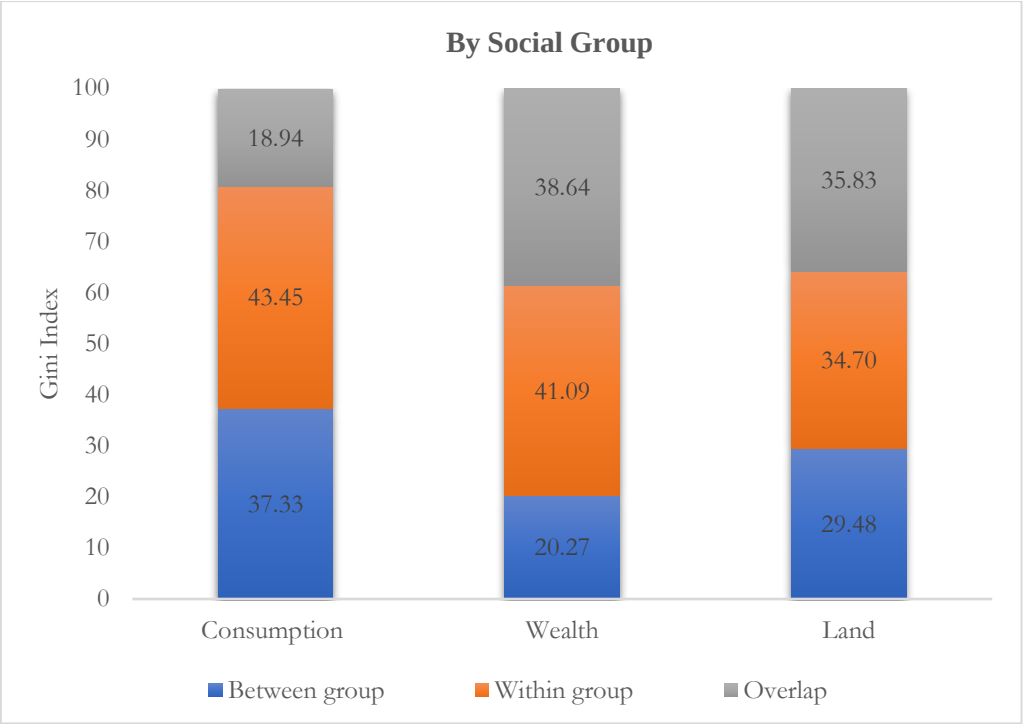
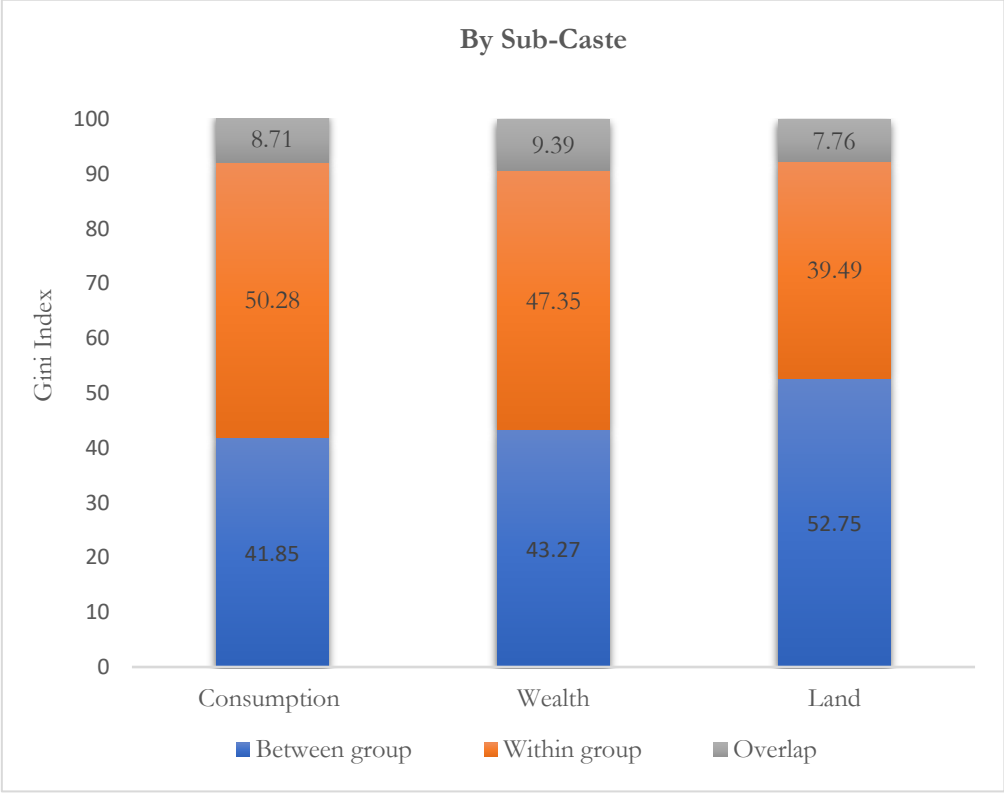


Figure 6. Total, between-group, overlap, and within-group inequality by castes groups based on Pyatt's Decomposition



4.3. Factors Explaining Poverty and Wealth Gap

Table 5 presents the findings derived from the Blinder–Oaxaca decomposition analysis, shedding light on the nuanced interplay of selected socioeconomic and demographic determinants in explaining the wealth inequality categorized as impoverished and those classified as non-poor. This analytical framework allowed for a comprehensive examination of the relative proportional contributions of various factors to the observed wealth gap. Remarkably, the combined influence of socioeconomic and demographic predictors accounted for a substantial 84% of the total differences in wealth observed between the impoverished and non-poor. The remaining 16%, constituting the residual component, remains a subject of inquiry, representing factors beyond the purview of the selected variables. Delving into the specific contributors, the analysis discerned that caste played a discernible role, contributing to 22% of the observed differences in the wealth gap between the impoverished and non-poor segments. A significant revelation emerges with the social safety net, standing out as a substantial factor responsible for 46% of the variations in wealth. This underscores the pivotal role of social support mechanisms in shaping wealth dynamics. Moreover, the occupational composition of respondents emerges as a noteworthy factor, elucidating 18% of the wealth gap distinctions between the two groups. Beyond these primary contributors, the study reveals that factors such as rural-urban residency (0.73%), the age composition of household heads (0.64%), and the educational attainment of household heads (13%) also played statistically significant roles in influencing wealth disparities.

Table 5: Oaxaca Decomposition results: Relative Contribution of selected characteristics to Wealth gap

	Wealth			Consumption		
Groups	**Total**	**Rural**	**Urban**	**Total**	**Rural**	**Urban**
Poor	168060	175716	150646	1515	1373	1844
Non-poor	108517	112324	96579	1009	977	1103
Difference	59543	63391	54066	506	396	741
Explained	50062	50589	49626	352	300	490
Unexplained	9481	12801	4440	153	96	251
% Explained	84.08	79.81	91.79	69.69	75.67	66.11
% Unexplained	15.92	20.19	8.21	30.31	24.33	33.89
Explanatory Factors: Relative Proportional Contribution						
Caste	21.86	21.55	13.72	27.70	21.34	37.92
Respondent Occupational Composition	17.59	23.10	6.02	5.27	9.43	2.00
Social Safety Programs	45.93	46.98	48.51	38.92	45.29	33.97
Household Head Education	13.26	8.19	29.27	24.53	22.48	27.17
Household Head of working age (15-49)	0.64	0.19	2.47	0.87	1.46	-1.06
Place of Residence	0.73	N.A.	N.A.	2.71	N.A.	N.A.
Total Explained Part	100.00	100.00	100.00	100.00	100.00	100.00

Table 6: Oaxaca Decomposition results: Relative Contribution of selected factors to Wealth gap

Groups	Total	Rural	Urban
Hindu Muslim General	199661	198195	203248
Hindu Muslim Dalits	85628	81425	97341
Difference	114033	116771	105907
Explained	48	48	55
Unexplained	52	52	45
Explanatory factors: Relative Proportional contribution			
Older to respondent Education	0.43	0.35	1
Respondent Education	9	5	15
Respondent to Younger Education	3	2	5
Respondent Occupation	50	62	20
Father Occupation	13	34	3
Grandfather Occupation	25	-3	56
Total Explained Part	100	100	100

Table 6 explains the outcomes derived from the Blinder-Oaxaca decomposition analysis, a method employed to distinguish the contributions of distinct socioeconomic and demographic determinants to the wealth gap disparities between the Hindu Muslim General and Hindu Muslim Dalit populations. Within this analytical framework, the explanation of relative proportional contributions sheds light on the dynamics governing the wealth gaps among these subgroups. The results unveiled by Table 6 suggest that the merger of socioeconomic and demographic predictors accounts for approximately 48% of the total wealth gap variations between the Hindu Muslim General and Hindu Muslim Dalit. Interestingly, 52% of the wealth gap remains unexplained, constituting a residual component that permits further investigation into latent factors contributing to this unattributed variance. Delving deeper into the specific determinants, the decomposition analysis discerns that intergenerational education holds a visible role, clarifying 12% of the wealth gap differences between the Hindu Muslim General and Hindu Muslim Dalits. This underscores the significance of educational disparities in perpetuating economic distinctions within these communities. Conversely, the preeminent driver of wealth gap disparities appears to be intergenerational occupation, contributing a substantial 88% to the observed variations. The findings underscore the multifaceted nature of wealth disparities within the Hindu Muslim General and Hindu Muslim Dalit populations, attributing a significant proportion of these gaps to intergenerational educational and occupational dynamics.

4.3.1. Role of Social Exclusion and Untouchability in Poverty and Wealth Inequality

The empirical analysis depicted in Figure 9 revealed a discernible correlation between poverty, social exclusion, and the deeply entrenched issue of untouchability. Regions such as Kaushambi and Bahraich exhibit elevated levels of exclusionary poverty, substantiating the contention that poverty and social exclusion share a positive relationship. In stark contrast, locales including Bijnor, Meerut, Rae Bareilly, Muzaffar Nagar, Jhansi, and Buland Shahar demonstrate a comparatively lower prevalence of poverty concomitant with social exclusion, underscoring regional disparities in the manifestation of these socio-economic phenomena. It is noteworthy that the aforementioned pattern diverges notably in the cases of Mau and Etah, where a conspicuous surge in both exclusion and poverty is observed.

Figure 10 revealed a discernible positive correlation between poverty and social exclusion across the various districts under consideration. Notably, districts such as Rae Bareli, Meerut, Sant Ravidas Nagar, Kaushambi, and Bahraich exhibit both heightened consumption inequality and a pronounced prevalence of social exclusion and untouchability. In these districts, the confluence of elevated poverty rates and social marginalization is conspicuous. Contrastingly, districts like Jhansi, Etah, and Auraiya demonstrate a distinct pattern characterized by lower consumption inequality. However, despite the relatively equitable distribution of consumption, these districts exhibit elevated levels of social exclusion and untouchability. This intriguing phenomenon suggests that factors beyond economic disparities contribute significantly to the observed social exclusion trends in these regions. The nuanced interplay between economic inequality and social dynamics underscores the multifaceted nature of poverty and social exclusion.

Figure 9 Relationship with Poverty and Social Exclusion and Untouchability

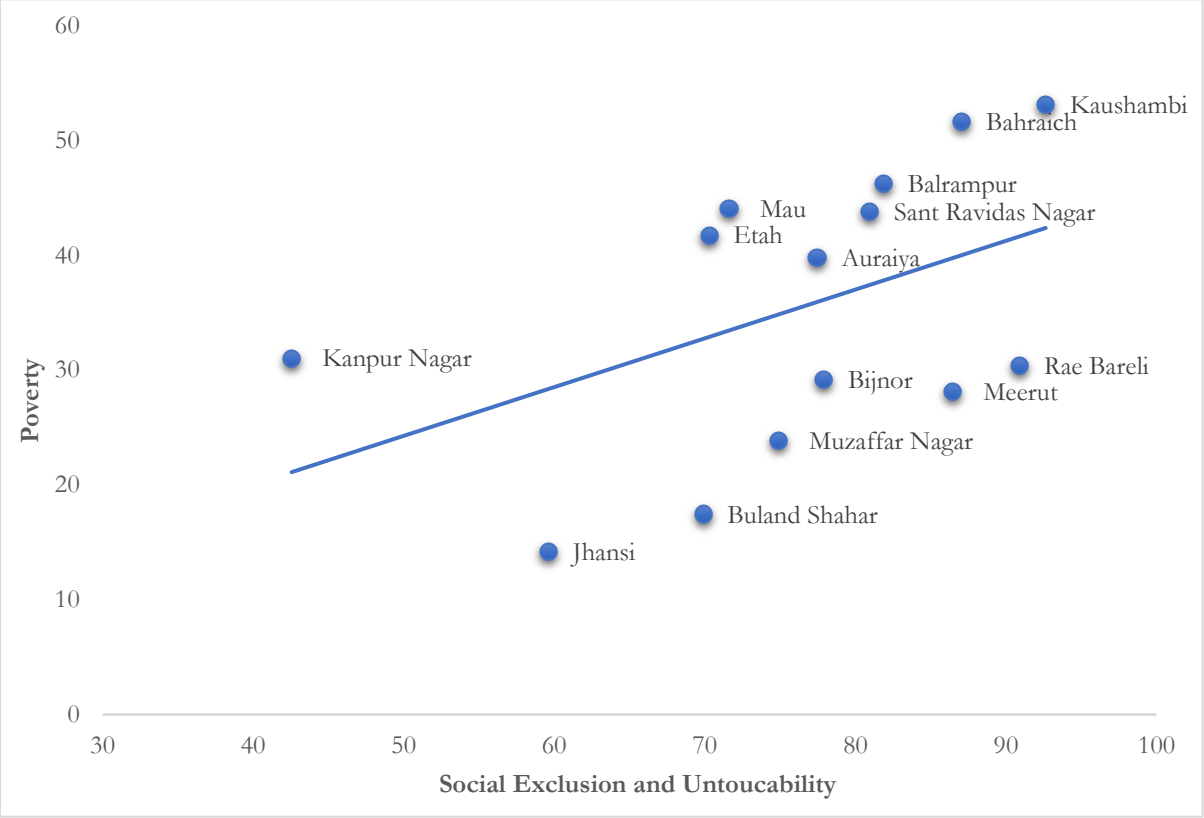


Figure 10 Relationship with Consumption Inequality and Social Exclusion & Untouchability

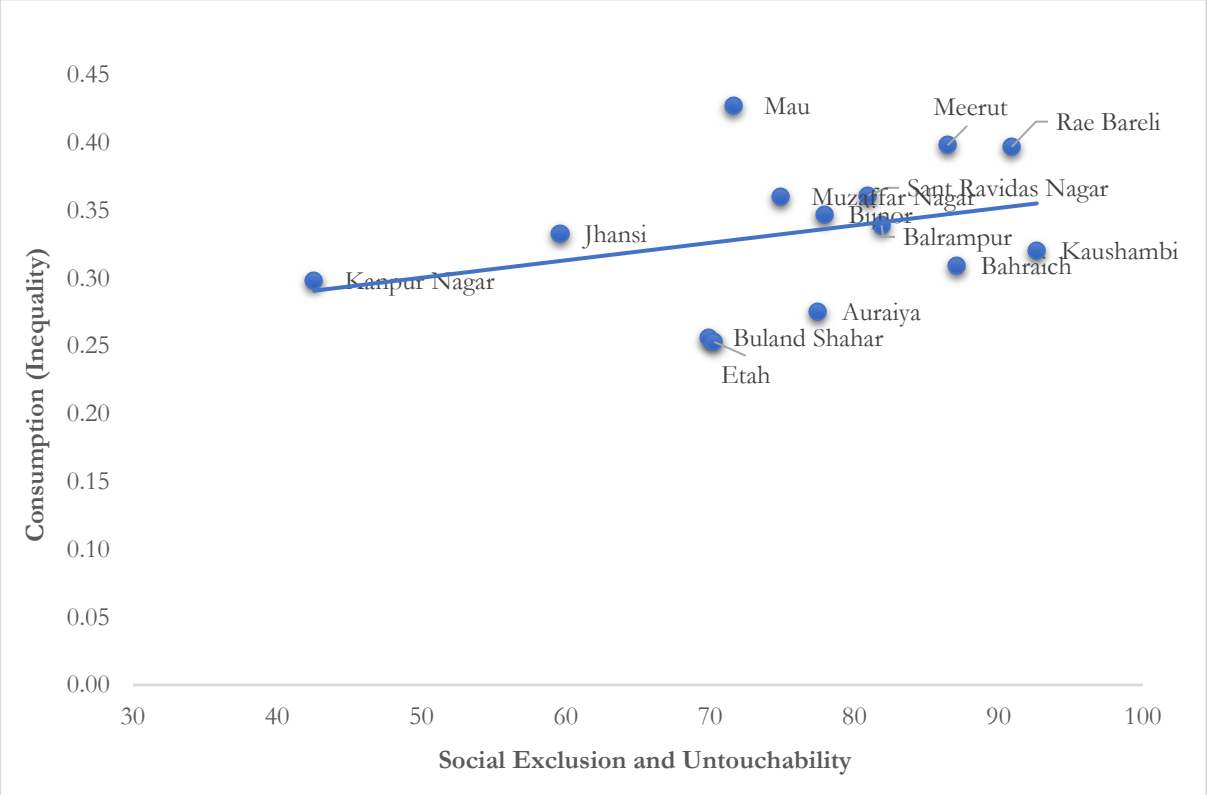


Figure 11 Relationship with Food Insecurity and Social Exclusion and Untouchability

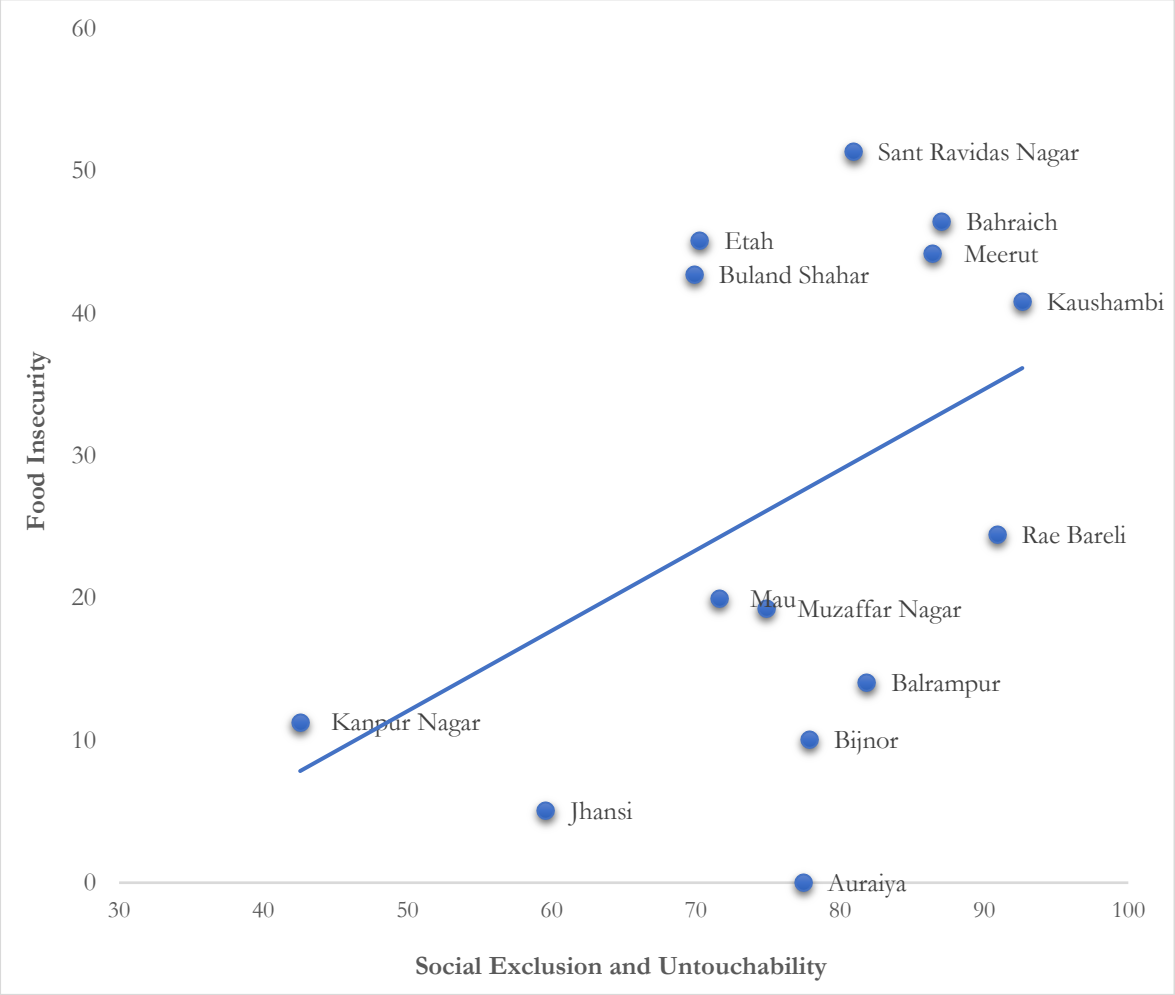


Figure 11 presented a compelling illustration of a discernible positive correlation between the incidence of food insecurity and the prevalence of social exclusion across diverse districts. The observed relationship underscores a noteworthy association between these two variables, shedding light on the interplay between food insecurity and social exclusion within the specified geographical regions. Within the districts examined, a discernable variation in the prevalence of social exclusion is evident, corresponding to the spectrum of food insecurity levels. Notably, districts such as Sant Ravidas Nagar, Bahraich, Meerut, and Kaushambi exhibited a heightened susceptibility to social exclusion, particularly with higher food insecurity. Examining these districts explained the complicated dynamics, emphasizing the multifaceted relationship between food insecurity and social exclusion.

4.4. Elasticity of Social Safety Net Programs in Reduction of Poverty and Wealth Inequality

The Human Opportunity Index, a metric designed to condense individuals' well-being and socio-economic progress, reflects an inherent commitment towards the enhancement of overall human welfare and the improvement of living standards. The efficacy of social safety programs, as indicated by the HOI, depends upon the accessibility and proper utilization of the services.

Figure 12 distinctly revealed an apparent inconsistency in the Human Opportunity Index (HOI) across the various districts under scrutiny, ranging from a lower to a higher percentage. The HOI, in this context, is predicated upon the theoretical framework that underscores unimpeded access to government-provided services within the state of Uttar Pradesh. Remarkably, districts characterized by a heightened percentage of service availability and utilization, namely Auraiya, Rae Bareli, and Kaushambi, compared with districts such as Meerut, Bijnor, and Buland Shahar, exhibited a lower coverage of social safety programs, as described in the supplementary information provided in Appendix Table 1.

Figure 12 Human opportunity index in terms of access to social safety programs by districts

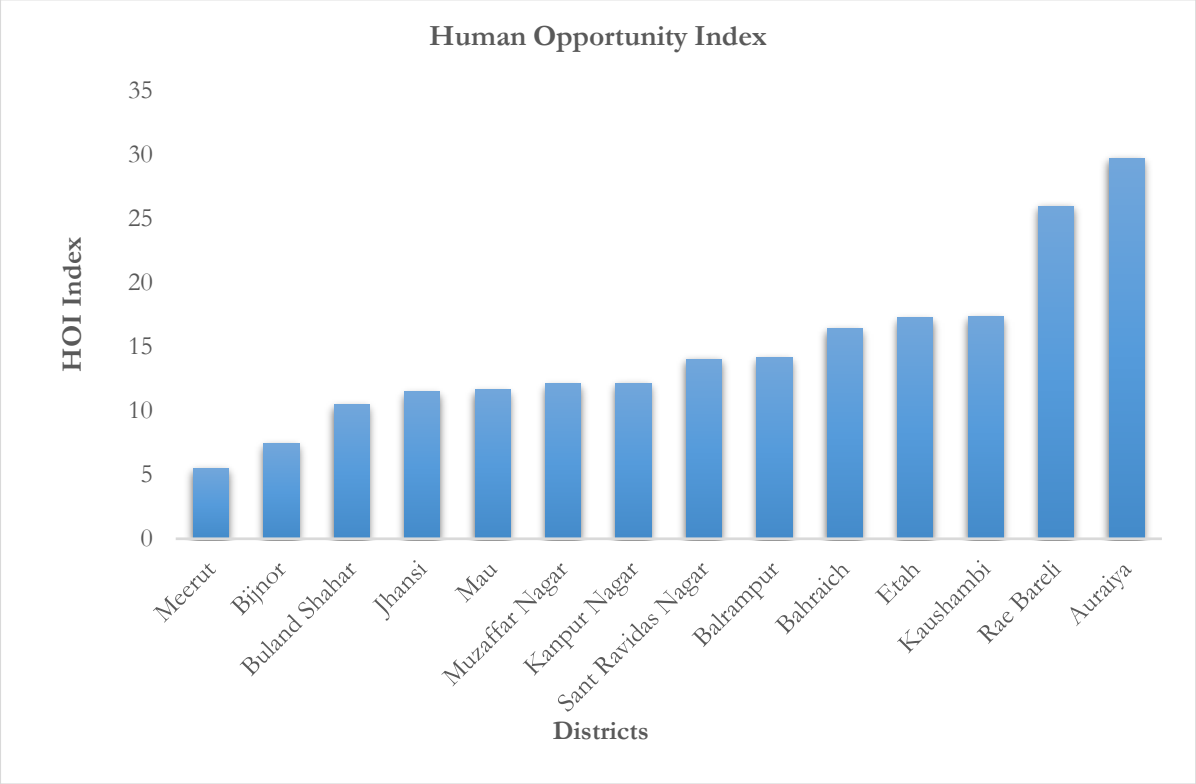
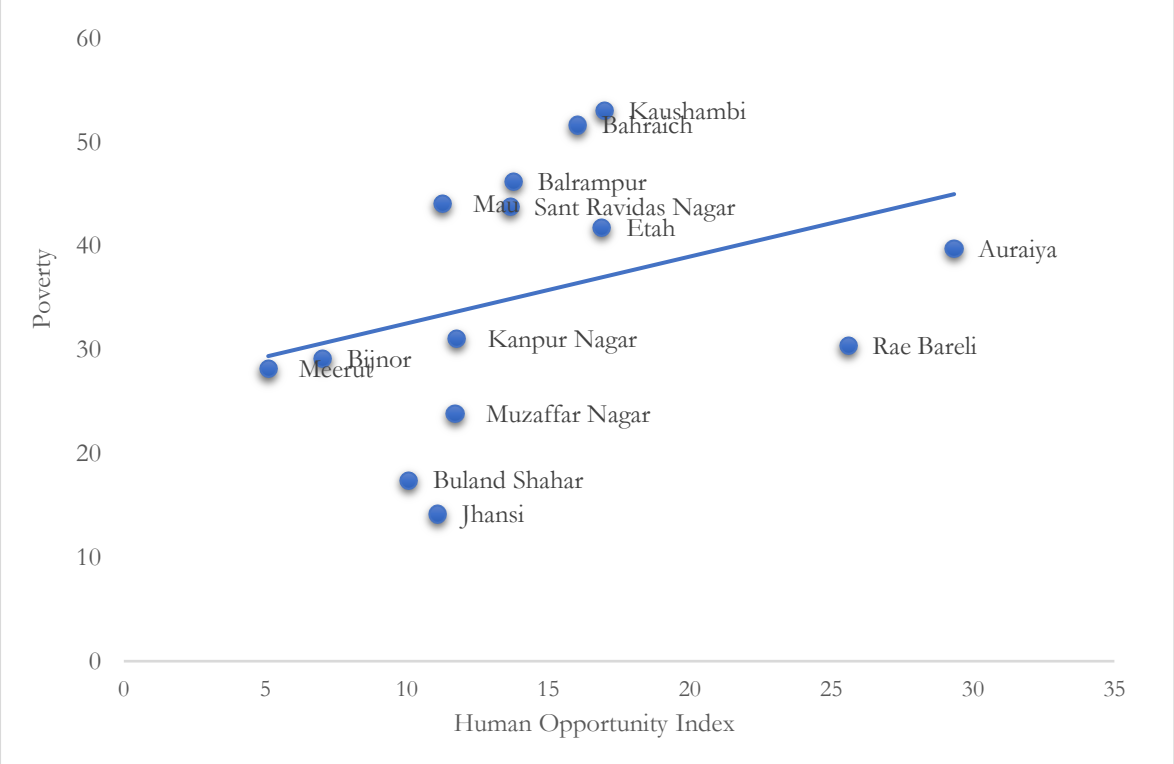


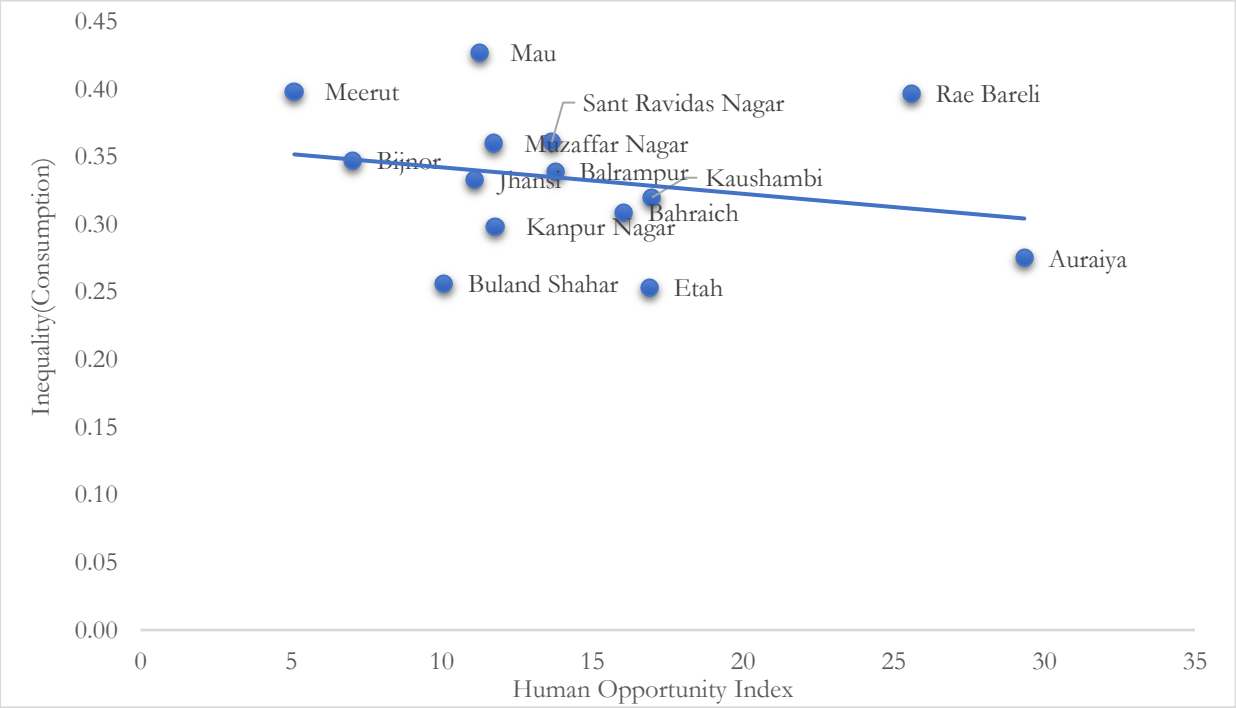
Figure 13 Relationship Between Poverty and Human Opportunity Index



In the presented graphical representation signified as Figure 13, an overview of the Human Opportunity Index (HOI) is provided earlier, accompanied by a brief discussion of its efficient distribution across various districts. Recognizing the potential linkage between service utilization and societal prosperity, it becomes evident that a judicious distribution of these services holds the promise of fostering economic well-being. In this context, the Human Opportunity Index across districts exhibiting higher levels of poverty manifests a positive correlation. This correlation implies that a higher HOI is associated with an increase in poverty levels. However, analysis reveals that despite this positive correlation, there exists a notable distinction. Specifically, the population accessing and effectively utilizing the available services does not necessarily find itself incapable of breaking free from the shackles of poverty. This underscores the complicated relationship between the HOI and poverty, wherein the dynamics of access and utilization play a pivotal role in determining the ultimate impact on socio-economic conditions. Turning our attention to specific districts, Rae Bareli and Auraiya emerge as noteworthy examples, exhibiting elevated HOI percentages alongside high levels of poverty. In these instances, the coexistence of heightened HOI and prevalent poverty highlights the complexity of the relationship between human opportunity and economic deprivation. Conversely, districts such as Meerut and Bijnor present a contrasting scenario, characterized by lower HOI percentages compared with moderate levels of poverty.

In Figure 14, an evident positive correlation emerges between the Human Opportunity Index (HOI) and consumption inequality across diverse districts. This empirical observation assisted as a cornerstone for explaining the nuanced interplay between composite social amenities with poverty. Notably, the findings explain a counterintuitive negative association between the HOI and consumption inequality, thereby substantiating the premise that increased opportunities create a mitigating effect on consumption disparities across the districts. The district-level analysis unveils compelling insights into the complex relationship between the HOI and consumption inequality. It is evident that regions characterized by high human opportunity indices correspondingly exhibit a reduction in consumption inequality. For instance, Meerut and Bijnor stand out as districts manifesting high consumption inequality associated with diminished access to basic services. Conversely, Auraiya and Rae Bareli, despite benefiting from more substantial access to social services, grapple with persistently high levels of consumption inequality, offering a nuanced perspective on the multifaceted determinants of socioeconomic disparities. Moreover, a deeper exploration of specific districts, such as Muzaffar Nagar, Balrampur, Kaushambi, Bahraich, and Kanpur Nagar, unveils a fascinating divergence. Despite sharing comparable levels of consumption inequality, these districts exhibit marked variations in their opportunities to access essential services.

Figure 14 Relationship Between Consumption Inequality and Human Opportunity Index



4.5. Robustness Checks

Sensitivity Analyses of Poverty Estimates

By the findings presented in Table 3, sensitivity analysis examining the effects of adjusting the poverty line downwards and upwards by 50%, 25%, and 15% for different sub-castes in Uttar Pradesh (UP), distinct patterns emerge. The Brahmin sub-caste witnessed a relative decrease in poverty headcount ratios from 9% to less than % with (50% adjustment), 4% (25% adjustment), and 6% (15% adjustment), while increment in poverty ratio 13% with (15 adjustment), 18% (25% adjustment) and 28% (15% adjustment) in poverty line. Lodh sub-caste was positioned as strongly sensitive to changes in the poverty line, with poverty headcount ratios increasing from 48% to 78% (50% adjustment), revealing an alarming vulnerability, while Chamaar and Passi emerged from 41% and 55% to 74% and 84% (50% adjustment). In stark contrast, the Muslim General sub-caste emerged as vulnerable to downward shifts in the poverty line, experiencing substantial decrement in poverty headcount ratios from 32% to 2% (50% adjustment), 15 (25% adjustment), and 20.03 (15% adjustment), while incrementing in poverty ratio from 32% to 45% with (15 adjustments), 52% (25% adjustment) and 65% (15% adjustment) in poverty line. Within Dalit communities, Hindu Dalits and Muslim Dalits showed a more sensitive change to the poverty line as (a 50% adjustment), for Hindu Dalits 5% and 75%, while for Dalit Muslims with (50% adjustment) 7% and 80% respectively.

Table 4. Sensitivity Analysis of poverty Lines with different cut-off points.

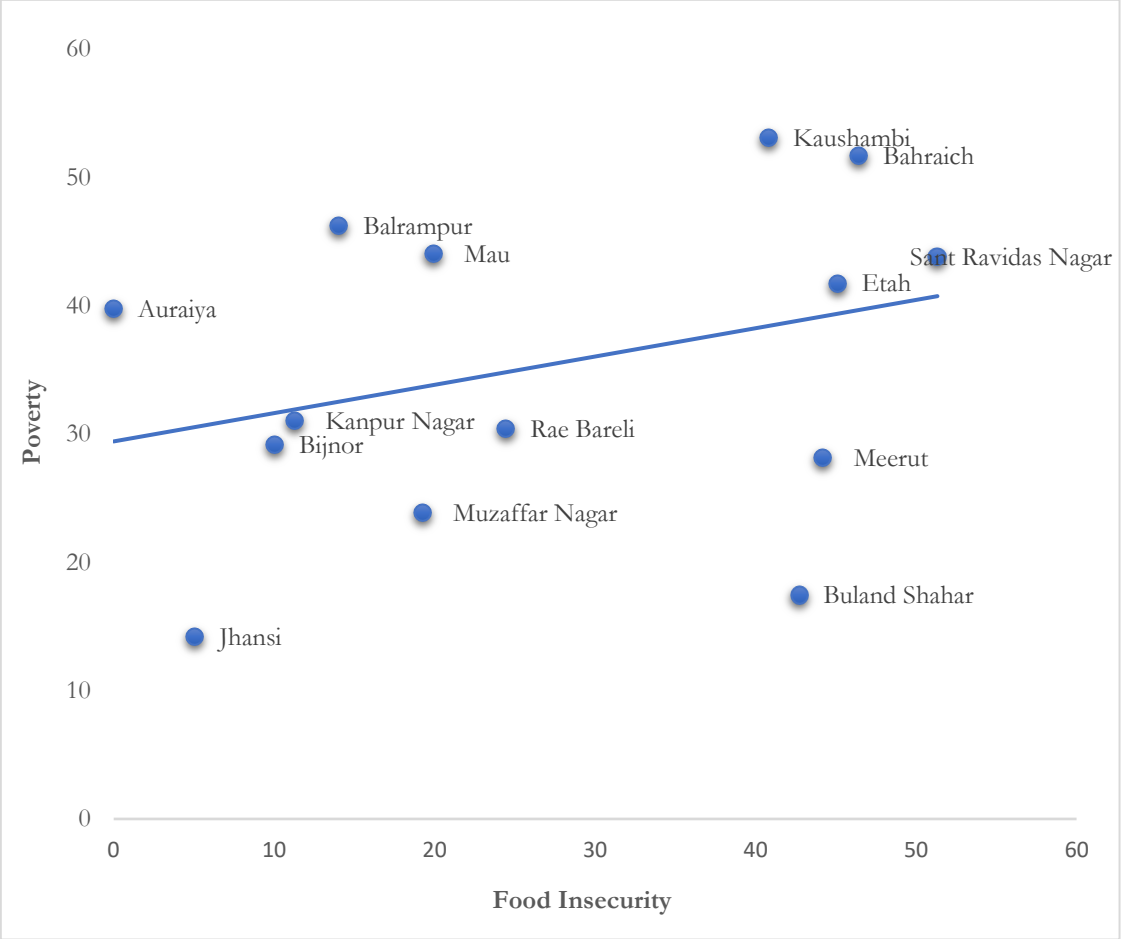
	Moving Poverty Line Down by			**Moving Poverty line Up by**		
Sub castes	50	25	15	15	25	50
Brahmin	0.79	4.32	5.50	13.95	17.68	27.70
Thakur/Kshatriya	1.01	3.38	4.39	10.81	14.19	24.32
Other Hindu General	1.02	3.41	5.46	14.33	17.06	26.62
Hindu General	**0.91**	**3.83**	**5.19**	**13.21**	**16.58**	**26.50**
Muslim General	**2.32**	**14.57**	**20.03**	**45.36**	**52.15**	**64.90**
Yadav	1.86	13.02	19.77	44.19	50.70	65.58
Kurmi	6.30	24.41	32.28	50.39	*55.12*	65.35
Jaat	1.84	4.15	8.76	20.74	27.19	41.01
Lodh	1.68	26.89	36.97	64.71	66.39	78.15
Other Hindu OBC	2.83	16.47	25.30	50.60	57.10	69.75
Hindu OBC	**2.69**	**15.64**	**23.70**	**47.31**	**53.47**	**66.46**
Ansari Muslim	2.55	18.09	25.96	49.79	59.15	73.62
Other Muslim OBC	2.75	17.25	26.13	53.13	61.12	73.38
Muslim OBC	**2.68**	**17.56**	**26.06**	**51.89**	**60.39**	**66.46**
Chamaar	3.72	18.35	26.86	53.00	60.19	73.38
Paasi	6.67	26.67	38.10	68.57	72.38	83.81
Other Hindu Dalit	6.16	27.05	36.30	61.64	67.12	77.74
Hindu Dalit	**4.55**	**21.12**	**30.06**	**56.38**	**62.88**	**75.30**
Dalit Muslim	**7.12**	**29.49**	**38.31**	**62.03**	**68.81**	**80.51**
All Hindu	2.76	14.30	21.00	41.64	47.23	59.35
All Muslim	3.65	19.68	27.52	52.72	60.39	73.05
UP	3.07	16.17	23.26	45.49	51.80	64.10

Relationship Between Poverty and Food Insecurity

The empirical analysis presented in Figure 7 explained a noticeable positive relationship between poverty and food insecurity, underscoring the nuanced dynamics of their interplay. The observed trend explains that an increase in food insecurity is accompanied by a associated rise in poverty levels. Noteworthy regional disparities are evident in the examination of specific districts, where exhibit a heightened susceptibility to the dual challenges of poverty and food insecurity. In particular, the districts of Sant Ravidas Nagar, Bahraich, and Kaushambi manifest a notable concentration of impoverished and food-insecure households,

thereby amplifying the vulnerability of these regions to the deleterious effects of poverty and inadequate access to nourishment. Conversely, a distinct pattern emerges in Bijnor, Kanpur Nagar, and Auraiya, where a significant proportion of the population experiences poverty, albeit with a comparatively lower incidence of food insecurity. Moreover, the districts of Rae Bareli, Muzaffarnagar, Mau, and Balrampur exhibit a persistent condition characterized by low food insecurity and prevalent poverty.

Figure 7 Poverty and Food Insecurity

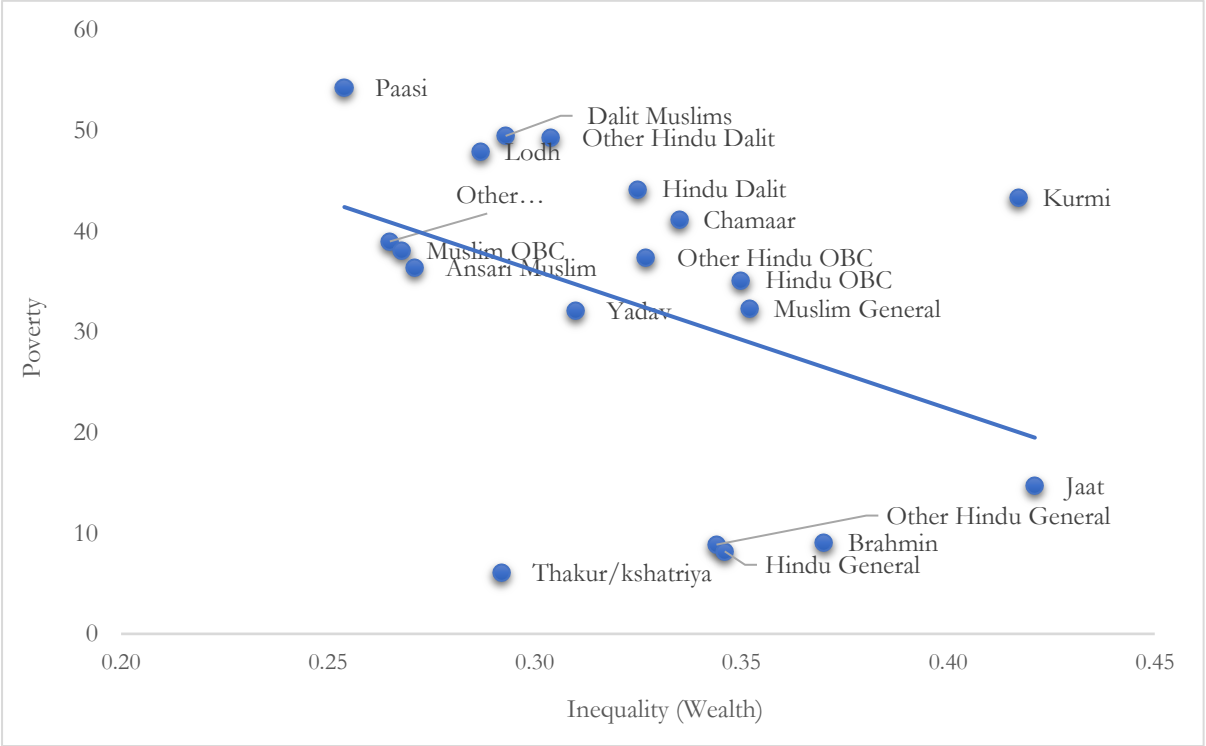


Relationship Between Poverty and Wealth Inequality

Figure 8 vibrantly illustrated the elaborative dynamics underlying the socioeconomic landscape, specifically clarifying the nuanced relationship between poverty and wealth inequality. The visible trend within the depicted data reveals a compelling negative linear correlation, wherein an increase in wealth advances a corresponding lessening in poverty. Digging into the stratified analysis of social groups, it is discerned that Jaat, Brahmin, and Kurmi exhibit elevated levels of wealth inequality. However, paradoxically, these groups concurrently manifest lower instances of poverty within their respective spheres. It suggests that despite the distinct economic disparities within these communities, the incidence of poverty remains relatively passive. Contrastingly, Paasi and Lodh emerge as outliers, characterized by a disproportionately high prevalence of poverty compared with a comparatively lower degree of wealth inequality. This disjuncture posits a distinctive socioeconomic standard wherein these groups face with a heightened vulnerability to impoverishment despite a more equitable distribution of wealth. A moderate yet noticeable pattern is observed among Thakur/Kshatriya and Chamar, wherein these social strata exhibit moderate levels of wealth inequality, associated with varying degrees of poverty. This intermediary position on the spectrum suggests a complex interplay between economic stratification and poverty dynamics within these communities. Further scrutinizing the Muslim social groups, it becomes apparent that Ansari Muslims, OBC Muslims, and other Muslim OBCs share similar levels of wealth inequality and poverty. This

convergence underscores a common socioeconomic experience among these Muslim communities, reflecting a parallelism in the distribution of resources and the incidence of poverty. In contrast, Hindu General and Other Hindu General groups demonstrate comparable levels of wealth inequality, although with a notably lower prevalence of poverty.

Figure 8 Poverty and Wealth Inequality



5. Conclusion

The data presented in this paper potentially represents only the preliminary insights into the wealth of evidence. It marks a pioneering effort to compare distinct economic indicators at the sub-caste level within both Hindu and Muslim religious communities in the state of Uttar Pradesh, India. Preceding studies, adopting major caste groups as the primary unit of analysis, tended to underestimate the intra-group dimensions of economic disparities. In contrast, our investigation reveals that within-group inequalities are substantial across all economic indicators when examined at the sub-caste level. A ground-breaking side of this study emerges from the integration of the current value of wealth for comparative economic assessments across social groups. Finally, our research provides a comprehensive analysis of the economic standing of diverse caste and socio-religious groups, encompassing additional indicators such as per capita household consumption, economic wealth measured in terms of assets and land ownership, food insecurity, social exclusion, and untouchability, along with the Human Opportunity Index.

Noteworthy previous studies (Tiwari et al., 2022) have significantly contributed to the discourse on financial inclusion and poverty within subgroups and socio-religious entities, offering practical implications. In this context, our current study emphasizes the enduring influence of inter-caste hierarchies and pronounced within-caste inequalities in shaping patterns of poverty and economic entitlements. General castes within the Hindu and Muslim communities exhibit a higher economic status compared to their counterparts. Within-group inequalities are notably less distinct among General castes, in contrast to the observed disparities among Other Backward Classes (OBCs) and Dalits within both Hindu and Muslim populations. Despite the dominant focus on group hierarchies in current governmental policies, this study underscores the imperative for both state and central authorities to undertake decisive measures aimed at mitigating both inter-group and intra-group hierarchies. It is crucial to prevent further marginalization of the most disadvantaged individuals within identified 'deprived groups.' Existing literature underscores that

marginalized communities within specific caste groups often do not reap the benefits of various welfare schemes and programs designed for their amelioration (S. Deshpande et al., 2014; Kumar et al., 2009; Trivedi et al., 2016b, 2016a). A crucial policy implication stemming from this research pertains to the vulnerable Dalit Muslims, who, despite being equally or more deprived than Hindu Dalits, are unnoticed by favourable government actions. Consequently, policy initiatives should guarantee the extension of welfare schemes to encompass the most deprived groups, thereby minimizing the rooted nexus between social and economic hierarchies. Empirical scrutiny of the nexus between caste, untouchability, and food insecurity underscores the substantial influence of caste on deprivation in accessing social safety programs. Furthermore, caste-based disparities in wealth distribution and their consequential impact on poverty are robustly validated. The study advocates an examination of inequalities within broad social groups on a national scale. The findings reveal significant heterogeneity across various social groups and religions in Uttar Pradesh, suggesting their potential applicability to other states. The escalating income and wealth disparities underscore the need for urgent attention. The state must implement comprehensive measures for income and wealth redistribution, targeting poverty eradication, dismantling caste-based discrimination, and fostering inclusivity. Lastly, the study highlights the necessity for future research endeavours to unravel the underlying causes of the persistent trend of increasing inequality and enduring poverty among the most deprived castes in the nation. Acknowledging the limitations of the survey's cross-sectional nature, identifying factors contributing to either escaping or succumbing to poverty and delineating intra-group inequalities remain essential paths for examination."

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