

Caste and Religion Matters in Access to Housing, Drinking Water, and Toilets: Empirical Evidence from National Sample Surveys, India

Vinod Kumar Mishra¹

Abstract

This article aims to provide a systematic analysis of inter-group inequality in access to good quality housing and basic amenities. It also attempts to discuss the socio-economic determinants of accessing housing and basic amenities. The article provides evidence of social identity-based discrimination by implying econometric analysis of decomposition methods. The findings of the article demonstrate that social group identities such as caste and religion play a significant role in determining the sufficiency, continuity and quality of housing and basic amenities. Inter-group inequality in accessing these essential services is significantly high in both rural and urban areas. The results of logistic regression model and decomposition method used in the article shows that social identity-based discrimination reduces the sufficiency and quality of housing and basic services availed by marginalized social groups such as scheduled caste, scheduled tribe and religious minorities. It can be argued from the analysis that right to adequate housing in terms of good quality dwelling and access to drinking water and sanitation is adversely affected by social exclusion and discrimination experienced by marginalized social groups.

Keywords

Inequality, discrimination, exclusion, adequate housing, inclusive policies

Introduction

Provision of basic amenities available to the households define the standard of living of the households and greatly determines the quality of life and wellbeing. Thus, right

¹Assistant Professor, Indian Institute of Dalit Studies, New Delhi, India
Email: vinodcsrd217@gmail.com

to adequate housing, one of the fundamental human needs does not comprise mere housing but also decent minimum housing which meets households concerns (Young & Lee, 2014; Myers, 2016). Adequate housing has a significant effect on the socio-economic well-being of the household (Aizawa et al., 2020; Kenna, 2008). Access to sufficient drinking water and sanitation is a basic human need. However, as per the UN World Cities Report 2022, more than one and half billion people are living in inadequate housing conditions and lack access to safe drinking water and sanitation facilities. In Asia, approximately 57 per cent of urban households lack proper access to toilets (Asian Development Bank, 2016). Goal 6 of the United Nations Sustainable Development Goal (SDGs) recognised basic human rights to water and sanitation and aims to ensure availability and sustainability of water and sanitation. Similarly, Article 11 and 12 of the International Covenant of Economic, Social and Cultural Rights (ICESCR) provides obligation at the international level with respect to sanitation while recognizing the right to an adequate standard of living. Human rights to water and sanitation emphasizes that irrespective of social-economic background, access to adequate services should be equal (Cullet, 2019). Poor quality housing and basic amenities to scheduled castes and scheduled tribes remain a critical issue of concern. Poor and vulnerable social groups often lack access to good quality housing and basic amenities due to low and irregular income and therefore lack of affordability.

Although, economic factors such as income, poverty and inequality determines access to basic amenities and good housing, social stratification of caste and religion also affect access to public goods like water and sanitation. Thus, caste and religion based social stratification affect access to good quality housing and better civic amenities (Balasubramanum et al., 2013). Due to social exclusion and discrimination, marginalised social groups are wholly or partially denied access to civic amenities which often has adverse consequences on the households well-being, particularly health (Borooah et al., 2015; Thorat & Newman, 2007). Caste-based discrimination causes inaccessibility or limited accessibility to good quality and basic amenities. Social identity-based discrimination and structural inter-group inequality causes higher poverty among marginalised social groups. Empirical studies suggest that the quality and nature of basic amenities available to the people depend upon the social composition of the locality. Substantial inequality in distribution of good housing and basic amenities persists in rural as well urban areas (Bansode & Swaminathan, 2021).

As indicated by various empirical studies conducted on housing market discrimination (Thorat et al., 2015; Vithayathil et al., 2016; Mishra, 2020), marginalised households have limited access to basic amenities and are at the receiving end of unfriendly behaviour from a majority of social groups living in their locality. These vulnerable social groups not only experience discrimination in accessing housing—both rental and owned—but are also forced to vacate their houses and suffer other unpleasant consequences and compromises in the form of higher prices for similar units in comparison to dominant social groups, long commuting distance for work, access to poor basic amenities and other social and psychological consequences. Thus, denial of housing due to social identity-based discrimination imposes a social as well

as an economic cost to the disadvantaged groups (Thorat et al., 2015; Mishra, 2020). Inadequate access to water and sanitation to the socially excluded groups causes adverse consequences on health and social well-being. Vulnerable social groups, particularly migrants living in informal settlements like slums, face difficulties in accessing water and sanitation at an affordable cost. Despite public policies on housing, water and sanitation, inter-group inequality in access to housing and basic amenities continue to persist. The gradual withdrawal of the government as a supplier of housing to the poor and marginalised had diverse implications on socially excluded communities. Poor design, limited coverage and poor implementation of public policies on housing and basic amenities have further increased the inter-group inequalities. Residential segregation also has a significant impact on the disparities in the quality of housing and basic amenities (Krivo & Kaufman, 2004).

Access to adequate housing is an important determinant of household well-being and it encompasses the quality of the dwelling unit, basic amenities such as water, sanitation and bathing facilities. Lack of access to adequate safe drinking water and sanitation facilities not only has an adverse impact on the health of the households but also compromises dignity and quality of life (Murthy, 2012). Accessing safe sanitation not only prevents disease but is also essential for privacy and self-dignity. Lack of adequate sanitation and bathroom amenities increases vulnerability for women and gender-based violence (Mishra, 2021). Lack of access to safe and private sanitation makes women unsafe and they are often victims of violent sexual assaults while accessing public sanitation facilities (Sharma et al., 2015; Rauch, & Helgegren, 2014; Ellis & Feris, 2014; Collender, 2011). Households without access to water and sanitation for the exclusive use of the household, leads to dependency on public sources of water and on-site sanitation. Social equity in accessing water and sanitation is essential to reduce inter-group inequality in access to these civic amenities (Alankar, 2013). However, discrimination is often practiced by the state agencies, which are the main supplier of water and sanitation in urban areas. There are biases in favour of a higher income locality. Not only is the duration and quantity of water supply less but the quality is also very poor in low income locality in comparison to high income locality. In most urban centres, intra and inter-locality difference in supply of drinking water is high. Thus, inequities in distribution of water to the marginalised social groups and economically poor locality are not accidental but institutionalized (Alankar, 2013).

The article analyses the inter-group disparity in access to good quality housing and basic amenities. The determinants and discrimination in access to basic amenities for marginalised social groups have been analysed through regression and decomposition analysis. The article is structured into four major sections. Section 1 details the inter-social group inequality in access to good quality housing and basic amenities. The results of logistic regression models have been discussed in section 2 which explains the determinants affecting access to housing basic amenities. Analysis of social discrimination in accessing good quality housing, water and sanitation has been done through decomposition method in section 3. The last section of the article summarises major findings of the data analysis and offers recommendations to the policy makers.

The analysis of the article is based on unit level data from National Sample Survey, 76th round on Drinking Water, Sanitation, Hygiene and Housing Conditions. The statistical methodology of the article is explained in the next section.

Methodology

Logistic Regression Model

In this article, the determinant of access to basic amenities has been analysed using logistic regression model. Let $Y = 1$ if household have access to basic amenities and $Y = 0$ if the household does not have access to basic amenities. X_i represents explanatory variables, such as rural-urban, gender, household size, household head's education, monthly per capita consumption expenditure for the i^{th} individual and income.

$$Y_i = \beta_1 + \beta_2 X_i + U_i \quad (1)$$

In this model, it can be assumed that every household has two alternatives – access to basic amenities or not. Let us assume that U_{i1} and U_{i0} are the utilities a household 'i' attaches with access to amenities or not.

If the household has access to basic amenities, then $U_{i1} > U_{i0}$

Otherwise, $U_{i1} < U_{i0}$

Similarly, if a rational household maximizes its utility, in that case:

$$\text{Probability } [Y_i = 1] = \text{Probability } [U_{i1} > U_{i0}]$$

$$\text{Probability } [Y_i = 0] = \text{Probability } [U_{i1} < U_{i0}]$$

In such a situation, the probability for the household can be written as (McFadden, 1974): $\text{Probability } [Y_i = 1] =$

This is a reduced form of the binomial logit model, where x_i represents the vector of independent variables for the i^{th} individual and the stochastic term \tilde{u} follows a logistic distribution.

Decomposition Method

In this article, the discrimination based on social identity in accessing basic amenities has been measured through decomposition method. In this method, the gap in the outcome variable for two social groups is decomposed to measure how much proportion of the gap is due to the social group identity. For adequate housing, the probability of accessing basic amenities has been calculated for the two social groups. The gap in the probability is disaggregated into two components. The first component explains the proportion of gap due to endowment/economic factors. Thus, this part of the gap will be removed if both social groups have similar endowment. However, the second component, the remaining gap will not be covered even if there is improvement in endowment or economic variable. The second component is termed as unexplained gap which is due to discrimination based on social identity. Thus, the decomposition analysis helps to measure the role of discrimination in explaining the inter-group inequality (Khan, 2022).

The Fairlie method (1999) helps to explain the decomposition method. The differences in the coefficients of the two groups in the regression equation can be used as a measure of discrimination. The gap in the outcome variable can be attributed to the discrimination or endowment gap. In this model the coefficients of the privileged groups obtained from the regression analysis are assigned to the marginalized social groups to estimate the predicted probability of accessing basic amenities among them. If there is no discrimination, this predicted probability should be the same as their actual probability of accessing better quality basic amenities. The gap between this estimated probability and actual probability of accessing good quality basic amenities among the marginalized social group is a measure of discrimination. However, the gap between this predicted probability and the actual probability among privileged groups is a measure of the gap in the outcome variable attributed to the difference in the endowment. In this article, the decomposition method is used to estimate the difference in the probability of accessing good quality basic amenities between privileged and marginalised social groups (Hindu High Castes/Scheduled Castes, Hindu High Castes/Muslims, Hindu High Castes/Other Backward Classes). The household size, gender, location, household head’s education, monthly per capita expenditure and income are used as explanatory variables in the model for the decomposition analysis.

To calculate the decomposition of gap in the outcome variable between two groups (say A for privileged group and B for marginalized social group), define \bar{Y}^j (where j = A or B) the average probability of the binary outcome for group j and F as the cumulative distribution function from the logistic distribution. Following Fairlie (1999), the decomposition for a non-linear equation, $Y = F(X\hat{\beta})$, can be written as:

$$\bar{Y}^A - \bar{Y}^B = \left[\sum_{i=1}^{N^A} \frac{F(X_i^A \hat{\beta}^A)}{N^A} - \sum_{i=1}^{N^B} \frac{F(X_i^B \hat{\beta}^A)}{N^B} \right] + \left[\sum_{i=1}^{N^B} \frac{F(X_i^B \hat{\beta}^A)}{N^B} - \sum_{i=1}^{N^B} \frac{F(X_i^B \hat{\beta}^B)}{N^B} \right],$$

Where N^j is the sample size for social group j. $\hat{\beta}^B$ and $\hat{\beta}^A$ are the coefficients for marginalized and privileged groups respectively, X_i^B and \bar{X}^A are the endowments for marginalized and privileged groups, respectively. The first term in brackets represents the part of the gap attributed to differences in distributions of X , and the second term represents the part due to differences in the identity-based processes determining levels of Y . The second term also captures the portion of the gap due to group differences in immeasurable or unobserved endowments (Khan, 2022).

An equally valid expression for the decomposition is:

$$\bar{Y}^A - \bar{Y}^B = \left[\sum_{i=1}^{N^A} \frac{F(X_i^A \beta^B)}{N^A} - \sum_{i=1}^{N^B} \frac{F(X_i^B \beta^B)}{N^B} \right] + \left[\sum_{i=1}^{N^A} \frac{F(X_i^A \beta^A)}{N^A} - \sum_{i=1}^{N^A} \frac{F(X_i^A \beta^B)}{N^A} \right],$$

In this case, the marginalized social groups’ coefficient estimates, $\hat{\beta}^B$ are used as weights for the first term in the decomposition, and the privileged groups’ distributions of the independent variables, \bar{X}^A are used as weights for the second term.

Unequal Access to Quality Housing

Quality of housing is an essential component of adequate housing and determines the household well-being. The national sample survey data provides information on quality of housing into three categories—good, satisfactory and bad. Analysis of inter-group inequality in terms of quality of housing suggests that Scheduled Caste (SC) and Scheduled Tribe (ST) households have lower access to good quality housing in comparison to dominant social groups. This trend is witnessed both in rural and urban areas.

Table 1: Quality of housing by social groups: 2018

Social Groups	Rural			Urban		
	Good	Satisfactory	Bad	Good	Satisfactory	Bad
ST	26.2	52.1	21.7	49.3	36.8	13.9
SC	27.2	53.4	19.4	44.6	43.0	12.4
HOBC	36.9	50.1	13.1	59.4	34.9	5.8
HHC	44.4	46.1	9.5	67.3	28.5	4.2
Muslims	33.6	52.2	14.3	47.9	43.1	9.0
Rest	55.4	37.0	7.5	68.7	28.2	3.1
Total	34.7	50.4	14.9	58.2	35.0	6.9

Source: NSSO, 76th Round, 2018

Table 1 also shows that proportion of households living in bad quality housing is highest among scheduled caste households. Analysis based on Table 1 also indicates rural-urban disparity, as the proportion of good quality housing is higher in urban areas than in rural areas. This trend is witnessed for all social groups.

Unequal Access to Drinking Water

Availability of adequate and continuous supply of water at affordable prices is essential for household well-being (Aizawa et al., 2020). Since Independence, varied plans and programmes have been initiated in India to provide safe drinking water to rural as well as urban households. *Har Ghar Jal (access to water for all the households)* is one of the recent initiatives by the government to provide drinking water to all households in India. Physical accessibility of water in terms of exclusive use for the households is crucial. The availability of drinking water in the premise of the house and for the exclusive use for the households is considered most convenient and suitable. NSSO provides information regarding the nature of availability of water sources such as: for exclusive use of households, for common use in the housing units, access to water source in the neighborhood, restricted use for public, unrestricted use for public, restricted community and unrestricted private source.

In this section, inter-group inequality in access to water source has been analysed with respect to three types: exclusive use for household, common use in the building

and unrestricted public source. The data given in Table 2 indicates that exclusive use for households, unrestricted public and common use in the housing unit are the main sources of water for households. Table 2 shows that the inter-social group inequality in accessing exclusive water source is quite high. At aggregate level, while high castes have highest proportion (61 per cent) of households having access to source of water for exclusive use of households, the corresponding figure for scheduled tribe and scheduled caste households is 28 per cent and 45 per cent respectively. Further, the data analysis from Table 2 also indicates that unrestricted public source of water is higher for marginalized households particularly those residing in rural areas. The proportion of households depending upon common water source in the housing structure is higher in urban areas for all social groups. In comparison to scheduled caste and scheduled tribes, inter-group inequality is lower for Muslim households.

Table 2: Principal source of water by social groups

Social Groups	Rural			Urban			Total		
	Exclusive	Common use	Unrestricted Public	Exclusive	Common use	Unrestricted Public	Exclusive	Common use	Unrestricted Public
ST	25.4	6.9	54.7	43.9	19.8	17.7	28.3	8.9	49.1
SC	44.1	9.2	35.4	46.9	18.1	16.9	44.8	11.4	30.9
HOBC	51.9	8.5	27.7	53.5	18.5	9.3	52.4	11.6	22.0
HHC	56.7	9.1	22.0	66.3	13.4	7.4	61.7	11.3	14.4
Muslim	55.0	14.2	20.3	57.6	16.8	11.4	56.0	15.2	16.9
Rest	74.6	7.1	10.9	69.8	11.2	6.3	72.3	9.1	8.6
Total	48.6	9.2	30.5	57.5	16.3	10.3	51.7	11.6	23.6

Source: NSSO, 76th Round, 2018

For urban households in India, the pattern of access to water source is different from rural areas. The data in Table 2 shows that the proportion of households accessing water source exclusive to the households is higher in urban areas than rural areas for all social groups and the proportion of unrestricted public source is lower for urban households. However, inter-social group inequality still persists in urban areas as the highest (nearly two-thirds) proportion of households from high caste has access to water sources for the exclusive use of households. In urban areas, more than half of the scheduled caste and scheduled tribe households do not have access to water sources for exclusive use of households. More than half of the proportion of Muslim and OBC households has provision of water sources in their housing units. Access to water source for common use in the dwelling units in urban areas is highest for scheduled tribes, scheduled caste and OBC households.

Unequal Access to Drinking Water by Tenure Status of Housing Unit

Tenure status of housing unit also affects the provision of basic amenities. Security of tenure and provision of essential services are inter-linked. Security of tenure enables

the resident to invest their income in upgrading the quality of basic amenities in the dwelling unit. In this section the difference in the availability of water source in the owned and rented housing unit has been analysed. Based on the data given in Table 3, it can be argued that the households living in owned housing unit have higher access to exclusive source of drinking water than rental housing.

Table 3: Source of drinking water by tenure status

Social Group	Owned			Rental		
	Exclusive	Common use	Unrestricted Public	Exclusive	Common use	Unrestricted Public
ST	58.5	5.0	22.29	31.0	33.2	8.0
SC	57.8	8.2	19.65	30.8	34.0	10.7
HOBC	68.6	8.0	10.55	32.5	32.2	7.2
HHC	77.6	6.4	7.62	45.6	25.8	6.5
Muslim	67.0	11.0	11.42	37.5	29.0	10.5
Rest	80.6	4.3	5.91	41.3	30.2	5.5
Total	70.1	7.7	11.13	37.1	30.1	7.8

Source: NSSO, 76th Round, 2018

However, inter-group inequality still persists in owned housing unit. While the highest, 77.6 per cent high caste households, have access to water source for exclusive use of households, this is significantly lower for scheduled caste and scheduled tribe (58 per cent). Approximately two-thirds of OBC and Muslim households have access to drinking water for exclusive use of households. Thus, we can argue that despite owning a housing unit in urban areas more than 40 per cent scheduled caste and scheduled tribe households do not have provision of water for exclusive use of households and depend on other sources. The availability of water sources for the households living in the rented accommodation in urban areas shows a significant pattern as more than half of the households among all social groups do not have access to exclusive water sources. However, among social groups high caste households have highest, 45 per cent access to exclusive water source. Among the households living in rented accommodation, access to common source of water in the housing unit is significant among all social groups and highest, where 34 per cent scheduled caste households reported to depend on this.

Unequal Access to Sufficient Drinking Water throughout the Year

Access to sufficient drinking water throughout the year is very significant for the household well-being and essential component of right to adequate housing. The inter-group inequality in accessing sufficient drinking water throughout the year has been analyzed for rural, urban, slum and non-slum.

Table 4: Access to sufficient drinking water throughout the year

Social group	Access to sufficient drinking water throughout the year				
	Rural	Urban	Slum	Non-slum	Total
ST	81.1	85.0	72.5	87.0	81.7
SC	88.2	89.3	84.9	89.9	88.4
HOBC	87.6	91.6	86.6	91.9	88.8
HHC	86.9	92.9	89.6	93.1	90.0
Muslim	93.4	88.3	78.2	89.3	91.4
Rest	90.8	91.7	81.9	92.1	91.3
Total	87.6	90.9	84.0	91.5	88.7

Source: NSSO, 76th Round, 2018

Table 4 indicates that access to safe drinking water throughout year is lowest for scheduled tribe households. In urban areas, 15 per cent scheduled tribe and 10 per cent scheduled caste households do not have access to sufficient water sources throughout the year. Further, if we analyse the availability of sufficient water for different social groups living in slums, the findings indicate that among all social groups, the high caste have better access to drinking water throughout the year. It can be argued that in comparison to other social groups, scheduled caste and scheduled tribe face highest deprivation in getting access to sufficient water throughout the year. Interestingly, urban households have better access to drinking water than rural households.

Unequal Access to Quality Toilet Facilities

Accessing safe and private toilet facilities are essential for a secure and healthy life of household members particularly women, elderly and adolescents (Pearson & Mephedran, 2008). Access to sanitation for exclusive use of households also saves time and energy which brings economic and other benefits in terms of utilizing the saved time in economic and other essential activities. In this section, inter-group inequality in access to toilet has been analysed.

Availability of Toilet for Exclusive Use of Households

Access to toilet can be analyzed in terms of its availability for the exclusive use of households, for common use of households in the building, public/ community latrine without payment. Among these categories, availability of toilet for exclusive use for households is considered the most suitable for privacy, dignity and well-being of the households. The data given in Table 5 clearly indicates that nearly 77 per cent urban households have access to toilet for exclusive use of households which is higher than rural households. However, nearly 50 per cent households living in slums do not have access to toilet for exclusive use of households and have to depend upon common or public toilets.

Table 5: Access to toilet for exclusive use of households

Sector	Exclusive use of Household	Common use of Household in the building	Public/community toilet without payment	Other
Rural	63.2	7.3	0.24	28.71
Urban	77.6	15.6	1.5	3.8
Slum	50.9	15.6	12.0	10.6
Non-slum	79.6	15.6	0.69	3.23

Source: NSSO, 76th Round, 2018

Analysis of inter-group inequality in access to toilet shows a significant trend. The data given in Table 6 suggests that at aggregate level, proportion of households having toilet facilities is highest for high caste households. Nearly 80 per cent high caste households have access to exclusive toilet in their houses. While only 57 per cent scheduled caste and scheduled tribe and nearly 67-68 per cent OBC and Muslim households have access to toilet for exclusive use of households. Using common toilet in the dwelling unit or sharing with other households in the building is highest among Muslim households.

Table 6: Inter-group inequality in access to toilet for exclusive use of households: 2018

Social Group	Rural			Urban			Total		
	Exclusive use of Household	Common use of Household in the building	Other	Exclusive use of Household	Common use of Household in the building	Other	Exclusive use of Household	Common use of Household in the building	Other
ST	56.0	6.4	36.7	67.6	17.4	11.6	57.8	8.1	32.8
SC	54.4	7.4	37.3	66.2	19.9	8.9	57.3	10.5	30.4
HOBC	63.4	5.0	31.1	76.9	17.1	4.0	67.6	8.7	22.6
HHC	76.8	7.8	14.7	84.0	12.2	0.77	80.5	10.1	7.4
Muslim	64.1	15.3	19.3	76.1	16.6	3.5	68.7	15.8	13.1
Rest	85.4	4.9	9.3	87.4	9.7	1.4	86.4	7.3	5.4
Total	63.2	7.3	28.7	77.6	15.6	3.8	68.1	10.1	20.2

Source: NSSO, 76th Round, 2018

Inter-group inequality in accessing the toilet for rural households shows a similar pattern. Although, access to toilet for exclusive use of households is lower for marginalized social groups, it is highest for high caste households. In comparison high castes have nearly 75 per cent households with access to toilet for the exclusive use of households, the corresponding figure for scheduled caste and scheduled tribe is nearly 54 per cent. However, in rural areas, the dependence of households for other sources is higher for all social groups. For urban households, the availability of toilet for exclusive use of households is higher than the rural households. Inter-group inequality in access to toilet is significantly high in urban areas as well. In urban areas, highest 84 per cent high caste households have access to exclusive toilet while nearly one-third of scheduled caste and scheduled tribe households do not have access toilet for exclusive use of households. Similarly, 76 per cent urban Muslim households have access to

latrine facilities for exclusive use of households. Using common toilet in the building is quite high for the marginalized social groups such as scheduled caste, scheduled tribes and Muslims in urban areas. Use of public or community toilet is quite low for all social groups in urban areas. Thus, based on the discussion in this section, we can conclude that inter-social group inequality is significantly high in both rural and urban areas, which intends to suggest that social group identity plays a very significant role in determining the quality of essential services accessed.

Unequal Access to Bathroom

Availability of bathroom in the housing unit is considered essential for maintaining privacy to the household members and improving quality of life. Access to bathroom is an important component for right to adequate housing. The availability of bathroom can be studied in various categories: bathroom for exclusive use of households, common use of households in the building, public/community with and without payment, others and no bathroom facilities. Access to bathroom has been analysed for rural, urban, slum and non-slum. In the next section, inter-social group inequality in access to bathroom has been also analysed. The data in Table 7 illustrates significant rural-urban and slum-non-slum disparity. The analysis suggests that while nearly half of the proportion of rural households does not have access to exclusive bathroom, the corresponding figure for urban areas is 75 per cent. In rural areas, more than 43 per cent households do not have specific bathroom facilities but depend upon other sources such as make-shift structures for bathing. In slum areas as well, nearly one-fourth of the households do not have well-defined bathrooms and depend upon other types such as temporary arrangement, etc.

Table 7: Access to bathroom

Sector	Access to Bathroom					
	Exclusive use of Household	Common use of Household in the building	Public/community use without payment	Public/community Use with payment	Others	No bathroom
Rural	50.3	6.1	0.07	0	43.4	0.25
Urban	75.0	15.9	0.15	0.01	8.8	0.16
Slum	59.3	13.2	1.26	0.04	25.9	0.25
Non-slum	76.2	16.1	0.05	0.01	7.5	0.15

Source: NSSO, 76th Round, 2018

Analysis of inter-group inequality for bathroom shows that like other basic amenities, marginalized social group households have lower access to bathroom for exclusive use of households than high caste households. This trend can be observed for aggregate, rural and urban level. However, in comparison to rural households, urban households have better access to bathroom. Thus, inter-social group disparity is noticed in urban areas as well. The data given in the table clearly shows that 82 per cent of high caste households in urban areas have bathroom for exclusive use of households which is

highest among all social groups whereas more than 40 per cent scheduled tribes and more than 35 per cent scheduled caste do not have bathroom for exclusive use of households.

Table 8: Access to bathroom for exclusive use of households

Social Groups	Rural			Urban			Total		
	Exclusive use of Household	Common use of Household in the building	Others	Exclusive use of Household	Common use of Household in the building	Others	Exclusive use of Household	Common use of Household in the building	Other
ST	35.5	5.9	58.3	59.7	20.4	19.2	39.2	8.1	52.4
SC	41.7	5.8	52.2	63.4	19.9	15.9	47.0	9.2	43.3
HOBC	53.6	5.0	41.1	74.0	17.9	7.9	60.0	9.1	30.7
HHC	65.4	6.7	27.7	82.4	12.4	4.9	74.2	9.7	15.8
Muslim	45.2	9.3	45.2	72.2	15.8	11.7	55.7	11.8	32.2
Rest	81.0	5.8	12.7	87.8	9.8	2.3	84.3	7.8	7.7
Total	50.3	6.1	43.4	75.0	15.9	8.8	58.7	9.4	31.5

Source: NSSO, 76th Round, 2018

Quite a significant proportion of scheduled caste and scheduled tribe households in urban areas depend upon sharing the common bathroom in their dwelling. In comparison to scheduled caste and scheduled tribe, Muslim households have better access to bathroom. In rural areas, except high caste households, other social groups have very poor access to bathroom. More than half of the proportion of rural scheduled caste households does not have access to bathroom. Thus, based on the analysis of this section, it can be argued that similar to other amenities, inter-group inequality persists in access to bathroom as well. The analysis manifests that in comparison to urban areas, inter-group inequality is higher in rural areas.

Factors Affecting Access to Basic Amenities in India: Logistic Regression Analysis

Multiple socio-economic factors determine essential amenities accessed by the households. In this section, the socio-economic determinants of access to three basic amenities, viz., drinking water, toilet and bathroom has been analysed through logistic regression model. As per the model, the determinants which impact the quality and quantity of basic services availed by the households are: geographical location of the dwelling unit, i.e. rural, urban, gender of the head of the households, household size, income and educational background of the head of the households. Besides, social identity such as caste, ethnicity and religious background play a significant role in access to basic amenities to the households.

Factoring Affecting Access to Safe Drinking Water: Results of Logistic Regression

In this section, socio-economic determinants of access to safe drinking water have been analysed through logistic regression model. The analysis of the logit model given in Table 9 shows that the odds of accessing water for exclusive use of households is 5 per cent lower for urban households than rural household.

The logit analysis also shows that if the education level of the head of the household is more than higher secondary, the probability of getting access to water source exclusively for the households would be 26 per cent higher. The logistic regression model also shows that the size of the households determines the odds of access to exclusive water source for the households. Muslim households have 8 per cent higher probability of getting access to exclusive water source. In comparison to high caste households, scheduled tribe households have 70 per cent lower probability of getting access to exclusive water sources. The gap is quite significant which indicates the pathetic condition of access to water resources for the tribal households in India. The logistic regression model also indicates that scheduled caste households have 34 per cent lower probability of accessing exclusive water source for the households. Similarly, OBC households also have 14 per cent lower probability of getting access to exclusive water source than high caste households. Income of the households has significant impact on the probability of accessing exclusive use of water source for the households. The logistic regression results are significant as shown in the model. Based on the analysis of logit model, it can be concluded that apart from the education and economic factors, social identity of the households play critical role in determining access to quality services.

Table 9: Result of the logistic regression: Access to exclusive water source

Access to Exclusive Source of water	Odd ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Urban (Ref: Rural)	0.95	0.0002	-237.4	0	0.95	0.95
Female (Ref: Male)	1.02	0.0002	140.1	0	1.02	1.03
Education	1.26	0.01	33.6	0	1.24	1.28
Household Size	1.36	0.0003	1513.8	0	1.36	1.36
Muslims (Ref: Hindu)	1.08	0.00	277.72	0.00	1.07	1.08
Other Religious Minorities (Ref: Hindu)	1.38	0.00	821.03	0.00	1.38	1.39
ST (Ref: HC)	0.30	0.00011	3311.1	0	0.30	0.30
SC (Ref: HC)	0.66	0.00018	1533.0	0	0.66	0.66
OBC (Ref: HC)	0.86	0.00019	-669.4	0	0.86	0.86
Income	1.96	0.00043	3034.0	0	1.96	1.96
_cons	0.00	0.00	3233.4	0	0.0033	0.0033
Prob > chi2	0.00					
Pseudo R2	0.0682					

Source: Author's calculation from NSSO, 76th Round, 2018

Logistic Regression Results for Access to Toilet

The results of logistic regression for access to toilet for exclusive use of households show that in comparison to rural households, urban households have 7 per cent higher odds of accessing exclusive toilet for the households. Similarly, female-headed households have 7 per cent higher odds of getting access to exclusive toilet. The education level of head of the households have a significant role in determining the quality of basic amenities. The head of households having education more than higher secondary have 68 per cent higher odds of getting access to toilet for exclusive use of the households than those households who have lower education level. Size of the households also determines the quality of toilet accessed by the households. The result of the logistic regression shows that in comparison to Hindu households, Muslims households have only 3 per cent lower odds of access to toilet for exclusive use of households. Among social groups, scheduled caste household have very low probability of getting access to toilet for exclusive use of households. In comparison to high caste households, scheduled caste households have 49 per cent lower probability of having toilet for exclusive use of household. Similarly, in comparison to high caste, scheduled tribe households have 38 per cent lower probability of accessing exclusive toilet for the households. The OBC households also have 29 per cent lower odds of accessing toilet for exclusive use of households.

Table 10: Result of the logistic regression: Access of household to exclusive toilet

Access to exclusive toilet	Odd ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Urban (Ref: Rural)	1.07	0.0003	244.3	0	1.066	1.067
Female (Ref: Male)	1.07	0.0002	369.7	0	1.07	1.08
Education	1.68	0.0004	2152.0	0	1.68	1.68
Household Size	1.17	0.00	3386.9	0	1.17	1.17
Muslims (Ref: Hindu)	0.97	0.0003	-87.1	0	0.97	0.98
ORM (Ref: Hindu)	1.68	0.0008	1048.2	0	1.67	1.68
ST (Ref: HC)	0.62	0.00024	1262.1	0	0.62	0.62
SC (Ref: HC)	0.51	0.00016	2173.1	0	0.51	0.51
OBC (Ref: HC)	0.71	0.00019	1294.8	0	0.71	0.71
Income	3.79	0.001	5058.7	0	3.790	3.794
_cons	0.00	0.00	4746.47	0	0.00	0.00
Prob > chi2	0					
Pseudo R2	0.107					

Source: Author's calculation from NSSO, 76th Round, 2018

The logistic regression model shows that income of the households has greater impact on the probability of accessing exclusive toilet for the household. The logistic regression results are significant as shown in the model. The analysis of the logit

model clearly shows that the social identity of the households greatly determines the access to toilet amenities despite targeted universal coverage of the public policy on sanitation.

Logistic Regression Results for Access to Bathroom

Logistic regression model for access to bathroom for exclusive use of households shown in Table 11 indicates that in comparison to rural households, urban households have 24 per cent higher probability of accessing bathroom for exclusive use of households. Education also has significant impact on the probability of accessing bathroom for the households. A larger household size also increases the odds of accessing bathroom as shown in Table 11. Similar to other basic amenities, access to bathroom for exclusive use of households is also determined by the social and religious identity. The logit model shows that in comparison to Hindu households, Muslim households have 19 per cent lower probability of accessing exclusive bathroom for the household. Apart from religious identity, the socio-ethnic identity of the households also plays a significant role in determining the access to bathroom. In comparison to high caste households, the probability of accessing bathroom is 49 per cent lower for scheduled tribe households while it is nearly 41 per cent lower for scheduled caste households. Similarly, OBC households have 15 per cent lower probability of accessing bathroom for exclusive use of households. As shown in the model, income of the households has stronger effect on the odds of accessing the exclusive bathroom facility in the housing unit. The logistic regression results are significant as shown in the model.

Table 11: Result of the logistic regression: Access of household to exclusive bathroom

Access to Exclusive Bathroom	Odd ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Urban (Ref: Rural)	1.24	0.00032	829.5	0	1.238	1.239
Female (Ref: Male)	1.09	0.0002	455.8	0	1.092	1.093
Education	1.73	0.0004	2378.8	0	1.73	1.73
Household Size	1.22	0.00	4195.4	0	1.21	1.22
Muslims (Ref: Hindu)	0.81	0.0002	-755.7	0	0.81	0.81
Other Religious Minorities (Ref: Hindu)	1.70	0.0008	1117.6	0	1.70	1.70
ST (Ref: HC)	0.51	0.00020	1746.2	0	0.51	0.51
SC (Ref: HC)	0.59	0.00018	1731.4	0	0.59	0.59
OBC (Ref: HC)	0.85	0.00021	-652.5	0	0.85	0.85
income	7.72	0.0022	7297.8	0	7.72	7.72
_cons	0.00	0.00	7235.9	0	0.00	0.00
Prob > chi2	0					
Pseudo R2	0.1876					

Source: Author's calculation from NSSO, 76th Round, 2018

Discrimination in Access to Basic Amenities: Decomposition Analysis

In this section, the discrimination in access to basic amenities such as water, sanitation and bathroom has been analysed by implying decomposition econometrics techniques. The decomposition analysis has been done for access to three basic amenities exclusive to the household: water, toilet and bathroom. As discussed in methodology section of this article, the decomposition method disaggregates the factors explaining the inter-group gap between different social groups. Apart from endowment factors such as income, geographical location, education, etc., social identity-based discrimination also determines the access to essential services to the households.

Discrimination in Access to Drinking Water: Decomposition into Endowment and Caste Discrimination

The decomposition results given in Table 12 explain the gap between scheduled caste and high caste as far as access to exclusive source of water for the household is concerned. The results show that 49 per cent gap in access to water source is explained by endowment factors while remaining 51 per cent is not explained by endowment factors. This means that the 51 per cent difference in access to exclusive source of water for scheduled caste in comparison to high caste is due to caste identity-based discrimination for scheduled caste households.

Table 12: Decomposition result for exclusive water: SC vs HC

Total Number of observation	1,69,080
Number of observation, HC	90072
Number of observation, SC	79008
Probability of access to water source for exclusive use of household, HC	0.654544
Probability of access to water source for exclusive use of household, SC	0.487127
Difference	0.167417
Total explained	0.081718
Percentage explained	48.8
Percentage not explained (discrimination)	51.2

Source: Author's calculation from NSSO, 76th Round, 2018

The decomposition results shown in Table 13 explain the gap between OBC household and high caste households. The analysis shows that the endowment factors explain nearly 62 per cent gap between OBC and high caste households as far as access to water source for exclusive use of households is concerned. The remaining gap of 38 per cent is not explained by the endowment factors. Thus, 38 per cent gap in accessing water source for the OBC and high caste is due to caste identity.

The decomposition results for the availability of water source for exclusive use of household between Muslim and high caste household is given in Table 14. The

result shows that the endowment factors explains nearly 88.4 per cent gap between Muslim and high caste households while remaining 11.6 per cent is not explained by the endowment factors. Thus, nearly 11.6 per cent gap between Muslim and high caste household is due to Muslim identity.

Table 13: Decomposition result for exclusive water: OBC vs HC

Total Number of observation	2,41,086
Number of observation, HC	90072
Number of observation, OBC	151014
Probability of access to water source for exclusive use of household, HC	0.654544
Probability of access to water source for exclusive use of household OBC	0.567094
Difference	0.08745
Total explained	0.054286
Percentage explained	62.1
Percentage not explained (discrimination)	37.9

Source: Author's calculation from NSSO, 76th Round, 2018

Table 14: Decomposition result for exclusive water: Muslims vs HC

Total Number of observation	1,57,528
Number of observation, HC	90072
Number of observation, Muslims	67456
Probability of access to water source for exclusive use of household, HC	0.654544
Probability of access to water source for exclusive use of household: Muslims	0.612137
Difference	0.042406
Total explained	0.037506
Percentage explained	88.4
Percentage not explained (discrimination)	11.6

Source: Author's calculation from NSSO, 76th Round, 2018

Thus, based on the decomposition results, it can be concluded that scheduled caste households have to face caste-based discrimination which reduces their access to water sources for exclusive use of households.

Discrimination in Access to Toilets: Decomposition into Endowment and Caste Discrimination

In this section, discrimination in access to toilet for exclusive use of households has been analysed. The decomposition results shown in Table 15 explain the difference in accessing toilet between scheduled caste and high caste household. The decomposition result shows the impact of discrimination in denying exclusive toilet for scheduled caste households. The result given in Table 15 shows that less than 24 per cent difference is explained by endowment factors while remaining 76 per cent is not explained by

endowment factors. The analysis based on the decomposition result clearly shows that more than three-fourth differences between scheduled caste and high caste household is due to discrimination experienced by the scheduled caste household due to their social identity.

Table 15: Decomposition result for exclusive toilet: SC vs HC

Total Number of observation	1,69,080
Number of observation, HC	90072
Number of observation, SC	79008
Probability of access to toilet for exclusive use of household, HC	0.832347
Probability of access to toilet for exclusive use of household, SC	0.594382
Difference	0.237964
Total explained	0.093949
Percentage explained	23.8
Percentage not explained (discrimination)	76.2

Source: Author's calculation from NSSO, 76th Round, 2018

The decomposition results shown in Table 16 explain the difference between Muslims and high caste households to endowment factors and non-endowment factors. The result clearly indicates that nearly 49 per cent difference is explained by endowment factors while more than 51 per cent difference is not explained by the endowment factors. This may be attributed to discrimination experienced by Muslim households in comparison to high caste households. Thus, more than half of the difference between Muslim households and high cast households is due to discrimination faced by Muslim in accessing toilet for the exclusive use of household.

Table 16: Decomposition result for exclusive toilet: Muslims vs HC

Total Number of observation	1,57,528
Number of observation, HC	90072
Number of observation, Muslims	67456
Probability of access to toilet for exclusive use of household, HC	0.832347
Probability of access to toilet for exclusive use of household, Muslims	0.722025
Difference	0.110322
Total explained	0.053623
Percentage explained	48.6
Percentage not explained (discrimination)	51.4

Source: Author's calculation from NSSO, 76th Round, 2018

Based on the decomposition analysis of this section, it can be argued that social identity-based discrimination experienced by scheduled caste and Muslim households adversely affects access to sanitation.

Discrimination in Access to Bathrooms: Decomposition into Endowment and Caste Discrimination

In this section, discrimination in accessing bathroom for exclusive use of households for marginalised social groups have been analysed through decomposition analysis. The results given in Table 17 explains the gap in accessing bathroom for exclusive use of households for scheduled caste households in comparison to high caste households. The decomposition results shows that nearly 54 per cent gap between these two social groups is explained by the endowment factors while remaining 46 per cent is not explained. Thus, 46 per cent difference between scheduled caste and high caste in accessing bathroom is due to the discrimination faced by scheduled caste for their caste-based identity.

Table 17: Decomposition result for exclusive bathroom: SC vs HC

Total Number of observation	1,69,080
Number of observation, HC	90072
Number of observation, SC	79008
Probability of access to bathroom for exclusive use of household, HC	0.768447
Probability of access to bathroom for exclusive use of household, SC	0.487997
Difference	0.28045
Total explained	0.152568
Percentage explained	54.4
Percentage not explained (discrimination)	45.6

Source: Author's calculation from NSSO, 76th Round, 2018

The decomposition results for difference in accessing bathroom for OBC and high caste households given in Table 18 shows that the endowment factors explain the 63 per cent difference between these two social groups while remaining 37 per cent is not explained by the endowment factors. Thus, 37 per cent difference may be attributed to caste-based identity for OBC households in comparison to high caste households.

Table 18: Decomposition result for exclusive bathroom: OBC vs HC

Total Number of observation	2,41,086
Number of observation, HC	90072
Number of observation, OBC	151014
Probability of access to bathroom for exclusive use of household, HC	0.768447
Probability of access to bathroom for exclusive use of household, OBC	0.606639
Difference	0.161808
Total explained	0.101943
Percentage explained	63.0
Percentage not explained (discrimination)	37.0

Source: Author's calculation from NSSO, 76th Round, 2018

Similarly, Table 19 explains the difference in access to bathroom for Muslims and high caste households. The decomposition results shown in the table indicate that endowment factors explain nearly 48 per cent difference between Muslims and high caste households. Thus, nearly 52 per cent difference is not explained by endowment factors.

Table 19: Decomposition result for exclusive bathroom: Muslims vs HC

Total Number of observation	1,57,528
Number of observation, HC	90072
Number of observation, Muslims	67456
Probability of access to bathroom for exclusive use of household, HC	0.768447
Probability of access to bathroom for exclusive use of household, Muslims	0.590784
Difference	0.177663
Total explained	0.085615
Percentage explained	48.2
Percentage not explained (discrimination)	51.8

Source: Author's calculation from NSSO, 76th Round, 2018

This may be attributed to the discrimination faced by Muslim households in accessing the bathroom for the exclusive use of household. Thus, more than half of the difference between Muslim and high caste household is due to discriminatory practices against Muslim household in comparison to high caste households.

Discussions and Conclusion

The article examines the provision of adequate housing for marginalised social groups in India. The essential components of adequate housing such as access to good quality dwelling unit and access to basic amenities such as drinking water, sanitation and bathroom for exclusive use of households have been systematically analysed. Apart from analysis of inter-group inequality in access to the above components of adequate housing, socio-economic determinants affecting their access have also been analysed. Based on the analysis, it can be argued that inter-group inequalities in access to good quality dwelling units and other basic amenities is alarmingly high in both rural and urban areas. Location of the dwelling units such as slum and non-slum also significantly affect access to good housing and basic amenities. Among all social groups, inter-group disparity is high for scheduled caste and scheduled tribe households followed by Muslim. This trend is observed in both rural as well urban areas. Scheduled caste and scheduled tribe households not only have lower access to safe drinking water, they also do not get sufficient drinking water throughout the year. Similarly, inter-group inequality in access to toilet and bathroom amenities is higher for marginalised social groups in comparison to high caste. It emerges from the analysis that apart from income and educational attainment of the households, caste, ethnicity and religious identity also determines the quality of housing and basic amenities accessed by the

households. The results of logistic regression model suggest that the probability of accessing good quality basic amenities such as water, sanitation and bathroom are lower for marginalised social groups in comparison to dominant social groups. The article also analyse the discrimination experienced by marginalised social groups while accessing basic amenities for exclusive use of households. The results of decomposition analysis disaggregate the role of endowment factors and discrimination in determining quality of basic services accessed by marginalised social groups. The decomposition analysis intends to suggest that apart from endowment factors which plays significant role in determining access to better and adequate housing for all social groups, discrimination and exclusion based on social group identity adversely affect marginalised social groups. Scheduled caste and Muslim households have lower access to good quality dwelling and basic amenities due to caste and religious identity based exclusion and discrimination. These vulnerable groups are often denied equal access to housing and basic amenities due to prejudices and biasness against their social identity. Based on the data analysis in this article, it can be argued that apart from the general public policies, it is imperative to formulate group specific public policies for housing and basic amenities. The public housing programmes should be formulated and implemented in such a manner which promotes inclusiveness in these programmes and reduces inter-group inequality. The right to adequate housing which is essential for dignified life and well-being should be guaranteed to all social groups. The right to access to clean water and hygienic living conditions must be regarded as basic rights to all human being irrespective of social and economic backgrounds.

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