**Roots and Routes to Income: Unveiling Socio-Economic Drivers among Gouli and Siddi Communities of Central Western Ghats, Karnataka**

**Abstract**

This study examines the determinants of family income among the Gouli and Siddi indigenous communities residing in the Central Western Ghats region, using primary data from 90 households (45 each) and employing multiple regression analysis. Key factors influencing income were identified as household labour force size, extent of livelihood diversification, landholding, number of productive livestock, and age of the household head. The analysis revealed that income generation is significantly supported by diversified livelihoods and active family participation in economic activities, while land and livestock ownership also contributed positively, though variably across communities. Formal education showed limited direct impact, highlighting a misalignment between educational outcomes and local livelihood realities. The findings stress the need for integrated policy approaches that strengthen land tenure security, promote livestock development, support diversified livelihood opportunities, and introduce skill-based education tailored to indigenous contexts. These measures are crucial for enhancing the economic resilience and autonomy of indigenous households, aligning with the broader vision of establishing sustainable **“Roots and Routes to Income.”**

**Key Words:** Indigenous communities, Gouli, Siddi, Western Ghats, NTFP

**Introduction**

The national leadership of Indian Government presently is aiming for an inclusive growth - *Sab ka Saath, Sab ka Vikaas.* All sectors, all states, districts, all sections of population (caste, creed, colour, urban/rural/indigenous communities *etc*) are aspired to enjoy the benefits of Indian growth story. Different schemes and programs of the government provide sufficient evidence of the same. Unfortunately, the lowest strata of the society seem to be still not a part of this episode, the country is going through. The indigenous community population, who are forest dwelling are governed by their own belief system, are mostly not educated in the way mainstream population is educated. Hence, their employment, income and living conditions are far below that of the mainstream population. Indigenous population accounts for a considerable portion of the country and their welfare and inclusiveness is of concern for the nation.

The Central Western Ghats region, particularly the district of Uttara Kannada is recognized for its ecological richness and cultural legacy, often referred to as a hub of tribal heritage in India. The district is endowed with diverse landscapes, including dense forests, perennial water bodies, rich biodiversity, and a coastal belt extending approximately 140 kilometers (Chaitra *et al.,* 2024, Yadava *et al.,* 2023). The majority of the population in this region resides in rural areas, where agriculture and horticulture serve as the primary means of livelihood (Kamble *et al.,* 2015, Yadava *et al.,* 2022). Additionally, many households engage in traditional practices such as animal rearing, collection of non-timber forest products, and artisanal crafts like beadwork. This region is also notable for being home to several indigenous groups, with the Gouli, Siddi, Kunabi and Halakki Vakkaliga communities forming a significant part of the demographic composition. However, for the study Gouli and Siddi indigenous communities were focussed as they are distinct in their livelihood sources.

***Gouli Community:*** The Gouli is a nomadic indigenous group believed to have migrated from Maharashtra (Chandrashekar and Bhat, 2015). Traditionally pastoralists, they primarily depend on cattle and goat rearing for their livelihood (Heggade, 2012). Their settlements are typically located on forest fringes or in remote interior regions, where they face limited access to education, social welfare, political inclusion, and economic development (Bijoy, 2003). While a few households have ventured into small-scale farming or horticulture, their main source of income remains dairy production. Goulis maintain distinct cultural practices and customs, which are reflected in their language, traditional attire, and community rituals (Xaxa, 1999; Munshi, 2007). These cultural traits reinforce their indigenous identity, even as they face increasing marginalization within the broader socio-economic framework (Saldanha, 2004).

***Siddi Community:*** The Siddi community in Karnataka traces its ancestry to the Bantu-speaking populations of East Africa. These people were brought to India centuries ago through the Indian Ocean slave trade facilitated by Portuguese colonial powers (Mahmood, 2016; Ali, 2009). Siddis today are primarily settled in areas like Yellapur, Haliyal, Ankola, Joida, Mundgod, Sirsi, taluks of Uttara Kannada district (Shah, 2007). Some communities related to Siddis are also found in Pakistan, particularly in Sindh and Makran coastal regions (Hirsch, 2011). Most of the Siddis residing in Central Western Ghats are adherents of Hinduism, Roman Catholics and Islam over time (Ali, 2009; de Souza, 2000). The community continues to face extreme poverty and social exclusion, with most members working as agricultural labourers and collecting non-timber forest products (NTFPs) for subsistence (Desai and Pillai, 2011; Fernandes, 2009). The Siddis remain marginalized both economically and socially, often lacking access to quality education, land rights, and welfare schemes (Basu, 2016).

Studies confirm that the indigenous communities in Western Ghats on the other hand, were more underprivileged than in other places (Nayak *et al.,* 2012; Gadgil and Guha, 1992). Their socio-economic strata is characterized by being mostly landless, not being able to practice even livestock farming, illiteracy, lack of awareness and even basic infrastructure facilities like supply of water (Reddy and Suresh, 2014; Hegde, 2016). With no medical facilities in place, they depended on forest medical collections for even serious health issues. These conditions perpetuate a cycle of poverty and exclusion, making them especially vulnerable to environmental, economic, and policy shocks (Upadhya, 2002; Kumar, 2008).

Considering these socio-economic conditions of Gouli and Siddi indigenous communities of Central Western Ghats, the present study was conducted to explore the foundational drivers of their livelihood and to propose actionable pathways for improving the well-being of these disadvantaged communities.

**Methodology**

The present study has analyzed socio-economic profile of Gouli and Siddi indigenous communities to understand their influence on family income. A mixed-methods approach was adopted to ensure comprehensive coverage of both quantitative and qualitative aspects of the study. To achieve the objectives of the present study, a systematic and context-appropriate methodological framework was adopted.

**Selection of the study area:** The Central Western Ghats region was purposively selected for this study due to its rich biodiversity, significant indigenous community population, and its critical ecological and socio-economic importance. Stretching across parts of Uttara Kannada the Central Western Ghats region is home to several distinct indigenous with unique livelihood practices, cultural traits, and levels of institutional integration which are much required for the study.

**Sampling design:** A multistage purposive and stratified random sampling technique was applied. In the first stage, the Uttara Kannada district of Central Western Ghats was purposively selected due to its ecological and socio-cultural significance. In the second stage, Yellapur and Mundagod blocks were chosen based on demographic concentration of indigenous population. In the third stage, two major indigenous communities Gouli and Siddi were selected for their diverse livelihood practices and regional relevance. Finally, in the fourth stage, stratified random sampling was employed to select 45 households from each community. This resulted in a total sample size of 90 households, which served as the empirical base for the study.

**Nature and sources of data:** The present study is exclusively grounded in primary data, collected directly from respondents across the study region. A structured household survey was administered using pre-tested interview schedules during the period 2022–2024, capturing comprehensive information on demographic profiles, livelihood composition, and income sources. To enhance accuracy and contextual appropriateness, interviews were conducted in local languages, facilitating better rapport and understanding. Data collection employed a face-to-face approach, allowing for in-depth engagement and real-time validation of responses. Notably, the study did not utilize any secondary data or published datasets; all findings are based entirely on empirical fieldwork, ensuring that the results are specific and directly relevant to the indigenous communities under investigation.

**Analytical tools and techniques:** The study has applied participatory tools for data analysis, such as descriptive statistics like averages, frequency distributions, and simple percentages to systematically summarize the socio-economic characteristics. Further, multiple regression analysis was applied to analyse determinants of family income among Gouli and Siddi communities. This method is well-suited for estimating the relationship between a continuous dependent variable annual family income and multiple independent socio-economic variables. The regression model is specified as follows:

Yi = β0 + β1X1i + β2X2i + β3X3i + β4X4i + β5X5i + β6X6i + εi

Where,

*Yi = Annual family income of the ith household*

*β0 = Intercept term*

*i = Corresponding household*

*β1, β2, ..., β6 = Coefficients measuring the marginal effects of the explanatory variables*

*X1, X2, ..., X6 = Vector of independent variables*

*X1 =* *Landholding size (in acres): Indicates access to productive agricultural land.*

*X2 =* *Family workforce (number of working members): Reflects household labor availability.*

*X3 =* *Age of the household head (in years): Captures life experience and decision-making maturity.*

*X4 =* *Literacy (years of education): Serves as a measure of human capital.*

*X5 =* *Number of productive livestock: Represents livestock-based asset ownership contributing to income.*

*X6 =* *Livelihood diversification: Used as a proxy binary variable, where*

0 = Household depends on a single income source,

1 = Household has multiple sources of income (diversified livelihood portfolio).

*εi = Random error term accounting for unexplained variance*

**Results and Discussion**

The results are structured to reflect variations in socio-economic characteristics. The insights generated in this chapter provide the analytical foundation for drawing policy implications and strategies for sustainable livelihood enhancement.

**Socio-economic profile of the indigenous communities:** The socio-economic characteristics of the Gouli and Siddi communities examined in this study provide valuable insights into their living standards, access to resources, and livelihood patterns. Core indicators such as gender, educational attainment, family size, land ownership, income generation and dwelling status are analyzed to understand the broader structural context that shapes their day-to-day existence and development opportunities.

Table 1 presents the gender, age and education composition of respondents across two indigenous communities in the Central Western Ghats of Karnataka. The gender-wise distribution of respondents reveals a predominant male representation across both communities, with 84.44% of Gouli and 82.22% of Siddi respondents being male, resulting in an overall male proportion of 83.33%. Female representation remains significantly low, accounting for only 15.56% among the Goulis and 17.78% among the Siddis. The gender disparity highlights the limited participation of women in household-level decision-making and external livelihood activities, which may be due to traditional norms, mobility restrictions, or socio-cultural obligations (Xaxa, 2004; Sharma & Singh, 2015). This pattern also reflects broader trends in indigenous communities, where male dominance in community-level engagements and public life is well-documented (Kumar et al., 2020).

The majority of respondents fell within the 46 to 55 years age group (37.78% for Gouli and 26.67% for Siddi), indicating that middle-aged individuals play a central role in livelihood and household management. Notably, only 13.33% were in the younger 26–35 age group, suggesting possible youth migration or reduced involvement in traditional activities (Reddy & Mishra, 2018). The presence of elderly respondents, especially in the 66–85 years range, was relatively low (Gouli: 11.11%, Siddi: 15.55%), reflecting either lower life expectancy or under-representation in active community roles. Such age compositions have implications for labour availability and generational transmission of indigenous knowledge (Basu, 2016), as younger members may increasingly disengage from traditional livelihoods due to education or urban exposure (Fernandes, 2009).

**Table 1: Gender, age and education of the respondents**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Gouli**  **(n=45)** | **Siddi**  **(n=45)** | **Pooled**  **(n=90)** |
| Gender | Male | 38 (84.44) | 37 (82.22) | 75 (83.33) |
| Female | 7 (15.56) | 8 (17.78) | 15 (16.66) |
| **Total** | **45 (100)** | **45 (100)** | **90 (100)** |
| Age of respondents (years) | 26 to 35 | 5 (11.11) | 7 (15.56) | 12 (13.33) |
| 36 to 45 | 9 (20.00) | 10 (22.22) | 19 (21.11) |
| 46 to 55 | 17 (37.78) | 12 (26.67) | 29 (23.22) |
| 56 to 65 | 9 (20.00) | 9 (20.00) | 18 (20.00) |
| 66 to 75 | 3 (6.67) | 6 (13.33) | 9 (10.00) |
| 76 to 85 | 2 (4.44) | 1 (2.22) | 3 (3.33) |
| **Total** | **45 (100)** | **45 (100)** | **90 (100)** |
| Education (No.) | Illiterate | 25 (55.56) | 15 (33.33) | 40 (44.44) |
| Lower Primary | 14 (31.11) | 13 (28.89) | 27 (30.00) |
| Higher primary | 6 (13.33) | 16 (35.56) | 22 (24.44) |
| Pre-university | - | 1 (2.22) | 1 (1.11) |
| **Total** | **45 (100)** | **45 (100)** | **90 (100)** |

Note: Values in parenthesis indicates per cent to respective column totals of each parameter

Educational attainment among the respondents presents a stark contrast between the two communities. Illiteracy remains high among the Gouli (55.56%), while the Siddi community shows relatively better educational access, with only 33.33% illiterate. Higher primary education was more prevalent among the Siddis (35.56%) compared to the Goulis (13.33%), and only one respondent from the Siddi group had attained pre-university education. These differences may be attributed to the greater outreach of missionary schools and NGO programs among the Siddi population in Uttara Kannada, particularly in Joida and Mundgod taluks (Desai & Pillai, 2011). In contrast, the Gouli community owing to its nomadic and pastoral background remains isolated from formal schooling systems, consistent with findings that nomadic tribes often lag in literacy due to lack of access and mobility (Maharatna, 2005; Heggade, 2012). The overall low literacy rates (44.44% illiterate pooled) underscore the urgent need for targeted educational interventions in tribal regions of the Western Ghats.

Table 2 draws the status of land holding by Gouli and Siddi communities. The data reveal that, a significant portion of both the Gouli (66.67%) and Siddi (60%) households are landless, compared to the pooled average of 45.33% across all indigenous communities. Among those who do own land, the majority fall into the marginal landholding category, 22.22% of Gouli and 37.78% of Siddi respondents. Very few own small or semi-medium holdings, and no respondents owned medium or large holdings. These findings highlight a persistent structural disadvantage in land access, a key asset in agrarian economies (Xaxa, 2003; Sharma, 2016). Landlessness among indigenous populations is often the result of historical alienation, displacement, and lack of land rights, particularly in forested regions such as the Western Ghats (Fernandes, 2007; Baviskar, 2005). The relatively higher incidence of marginal landholding among Siddis may be attributed to recent government land allocations, though most of this land remains of poor quality and ecologically fragile (Deshpande, 2010). The absence of medium and large holdings emphasizes the lack of upward mobility in agrarian capital among these communities.

**Table 2: Land holding status of respondents across indigenous communities**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Gouli**  **(n=45)** | **Siddi (n=45)** | **Pooled**  **(n=90)** |
| Land holding families (No.) | Landless | 30 (66.67) | 27 (60.00) | 102 (45.33) |
| Marginal (<2.5 acres) | 10 (22.22) | 17 (37.78) | 89 (39.56) |
| Small (2.5 – 5.0 acres) | 4 (8.89) | 1 (2.22) | 26 (11.56) |
| Semi-medium (5.0 – 10.0 acres) | 1 (2.22) | - | 7 (3.11) |
| Medium (10.0 – 25.0 acres) | - | - | 1 (0.44) |
| Large (>25 acres) | - | - | - |
| **Total** | **45 (100)** | **45 (100)** | **225 (100)** |
| Average size of land holding (acres) | Landless | - | - | - |
| Marginal | 0.65 | 0.82 | 0.74 |
| Small | 3.88 | 3.00 | 3.46 |
| Semi-medium | 6.00 | - | 6.00 |
| Medium | - | - | - |
| Large | - | - | - |
| **Total** | **0.62** | **0.38** | **0.43** |

Note: Values in parenthesis indicates per cent to respective column totals of each parameter

The total average landholding was 0.62 acres for Gouli, 0.38 acres for Siddi, and 0.43 acres pooled. These averages are drastically lower than the national average of 1.08 hectares (approx. 2.67 acres) for rural households (GoI, 2022). Such extremely limited land resources, coupled with poor soil fertility and lack of formal land titles, constrain the possibility of agricultural improvement and restrict eligibility for institutional credit and subsidy schemes (Deshpande, 2010; Rao, 2011). These patterns underline the urgent need for policy interventions like land allocation, titling, and targeted indigenous community land development programs.

**Determinants of family income for indigenous communities**: Table 3 reflects determinants of family income of the studied indigenous communities in Central Western Ghats region. Landholding size showed a statistically significant positive effect on family income in the Siddi community at the 5% level and in the overall model at the 1% level, whereas it was insignificant among the Gouli households. The regression coefficient for landholding was ₹43,677.58 for Siddi and ₹56,467.03 for the pooled sample, indicating that land access enhances income potential through crop production or leasing arrangements. This finding aligns with earlier studies by Deshpande (2010) and Singh *et al.* (2020), which highlight land ownership as a fundamental asset that shapes livelihood opportunities among indigenous communities. The insignificance in the Gouli model may be due to their greater dependence on non-farm income reducing land's contribution to income.

The number of economically active members in the household emerged as the most influential determinant of income, highly significant at the 1% level across the communities. The income effect was strongest in the overall sample (₹66,727.24), followed by Siddi (₹59,578.80) and Gouli (₹34,935.23). This trend is consistent with labor-intensive livelihood patterns among indigenous populations, where increased workforce size translates to more participation in wage labor, forest product collection, or diversified jobs (Basu, 2016; Xaxa, 2003). These results support the human capital perspective that larger household labor capacity can buffer against livelihood vulnerability (Rao, 2011).

Age had a positive and significant impact on family income at 10% for both communities and 5% for the overall sample. This suggests that older household heads may possess accumulated experience, social capital, and familiarity with institutions and livelihood networks that enable better income outcomes (Fernandes, 2007). However, its lower coefficient in the pooled model (₹1,738.50) compared to community-level regressions indicates that age benefits are moderated when controlling for other variables such as literacy and livestock ownership (Kumar & Pankaj, 2016).

Literacy did not show a statistically significant relationship with income. This could be attributed to the poor quality of education, limited employment opportunities linked to formal education, and the predominance of informal or subsistence livelihoods among these communities (Sharma, 2016; Baviskar, 2005). Moreover, the mismatch between tribal education and labor market demands has been widely documented as a barrier to social mobility (GoI, 2022).

Ownership of productive livestock showed a significant positive effect on income in the Gouli model (₹28,745.43 at 1% level) and the overall model (₹11,478.44 at 10% level), but not among the Siddi households. Livestock, especially dairy animals and small ruminants, serve as a liquid asset, income stabilizer, and food source in tribal economies (Hanstad *et al*., 2005). The stronger impact among Goulis is likely due to their livestock integration, while Siddi households maintain fewer animals (Basu, 2016).

**Table 3: Determinants of family income for indigenous communities in Central Western Ghats region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables/ Parameters** | | **Gouli** | **Siddi** | **Overall** |
| **Variables** | Intercept | -1589632.22  (-1.12) | -1681071.74  (-3.69) | -2567836.83  (-11.99) |
| Land (ac) | -5540.75  (-0.18) | 43677.58\*\*  (1.99) | 56467.03\*\*\*  (8.60) |
| Family work force | 34935.23\*\*\*  (6.73) | 59578.80\*\*\*  (4.15) | 66727.24\*\*\*  (7.77) |
| Age of the household head | 3873.44\*  (2.10) | 2822.34\*  (1.97) | 1738.50\*\*  (2.86) |
| Literacy (years) | 9218.37  (0.79) | 4898.41  (0.85) | 564.21  (0.19) |
| Productive livestock (No.) | 28745.43\*\*\*  (4.88) | 6784.43  (0.63) | 11478.44\*  (2.47) |
| Livelihood Diversification | 20102.18\*\*  (1.10) | 20087.46\*\*\*  (3.53) | 33459.99\*\*\*  (13.38) |
| **Parameters** | Multiple R | 0.74 | 0.78 | 0.82 |
| R Square | 0.71 | 0.73 | 0.76 |
| Adjusted R Square | 0.67 | 0.70 | 0.72 |
| Observations (n) | 45 | 45 | 90 |

*Note:*\*\*\*,\*\* and\* indicates one, five and ten per cent significance level, respectively; Values in parenthesis indicates t – statistic.

Livelihood diversification emerged as a consistently significant positive determinant of income across all models, significant at 5% for Gouli, 1% for Siddi, and 1% for the pooled model. The coefficient was highest in the overall sample (₹33,459.99), indicating that households engaged in multiple livelihood activities (e.g., agriculture, wage labor, NTFP collection, petty trade) are better equipped to stabilize and increase income. This supports existing literature suggesting that livelihood pluralism is a critical strategy among indigenous populations to mitigate environmental and economic uncertainties (Singh *et al.,* 2020; Baviskar, 2005).

**Conclusions**

The conclusion should be shortened. Some details in the conclusion should be included in the results and discussion sections

Based on the findings, family income among the Gouli and Siddi communities in the Central Western Ghats is primarily shaped by household labour availability, livelihood diversification, landholding size, and ownership of productive livestock. The significant role of the family workforce highlights the reliance on human capital in sustaining household economies. Livelihood diversification, observed as a key income enhancer, reflects the communities adaptive strategies in response to environmental and economic uncertainties. The influence of landholding, especially among the Siddi, indicates that secure and productive access to land remains a cornerstone of rural income generation. Ownership of livestock, particularly among the Gouli, contributes significantly to income, emphasizing the role of integrated farming systems. The age of the household head also positively affects income, suggesting that accumulated experience and decision-making capacity improve economic outcomes. In contrast, formal education does not show a strong direct effect, pointing to a disconnect between educational content and local livelihood relevance. These insights call for policies that enhance multi-livelihood capabilities, ensure land rights, improve livestock productivity, and promote skill-based education tailored to local contexts. Strengthening these domains can empower indigenous communities to optimize both traditional and emerging income avenues, resonating with the vision of fostering sustainable **“Roots and Routes to Income.”**

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