Extended Abstract

The Demography of Changing Economic Inequality in India

1. Introduction

How does demography factor in within the realm of economic inequality? A vast expanse of literature has forayed into the intersection of demography and economics; for example, Notestein (1945), Bloom and Williamson (1998), Coale and Hoover (1958), Lam (1984) etc. Conventionally, these investigations have dealt with the effect of demography on economic growth and development. Often times, demographic outcomes have even been explained through the lens of economic configuration of the entity in question. However, this study seeks to detangle the effect of the demographic profile of a population upon the economic inequality prevailing in that particular population across time. In addition to this, the inequality literature itself has majorly adopted either the institutionalist school of thought or the natural school of thought. In this regard, demography arises as one of the key mechanisms through which policy choices and natural course of economic growth affect the inequality outcomes of a population.

This study has been conceptualised at a time when concerns over rising economic inequality have been thrust back into the limelight in recent decades. The current economic inequality discourse has extensively discussed the persistent nature of a world economic system that has contributed to the growing income, consumption and wealth share of the richest rich (Chancel & Piketty, 2021). Against this backdrop, India presents an unparalleled scenario where the levels of income inequality seem to be declining over the course of time (World Bank). Consequently however, a stream of economic inequality literature points towards the widening gap between the richest rich and other economic classes in the country (Bharti, 2018; Ghatak, Raghavan and Xu, 2022; Bharti et al., 2024; Singh, 2023). The World Inequality Report (2022), drawing from a series of historic national accounts, estimates that the top 10% and the top 1% of the country hold 57% and the 22% of the national income share respectively.

This paradoxical nature of economic inequality trends in India needs to be understood with an additional layer of demographic composition of the country. The Indian demographic scenario finds itself at a crucial juncture as it enters the final stages of its demographic transition (James, 2011) and has achieved the replacement level of fertility. In this regard, a vast expanse of robust economic and demographic literature has reliably established the demographic contribution to patterns on earnings, consumption and wealth (Pfeiffer, Gross & Schoeni, 2019; Shorrocks, 1984; Schultz, 1982; Lam, 1997). Extending this argument while contextualising the shifting economic manifestations of changing household age structure in the country, several questions arise; How does one reconcile the parallel trends of falling Gini index and rising economic share of the rich? How is the shifting household age structure of the country contributing to these economic inequality dynamics? Do these contributions significantly differ when accounting for state specific heterogenies?

This paper tackles these questions in three sections. Section I seeks to understand the trajectories of income and consumption inequality in the country by assessing the Income and Consumption

Gini Index as well as the Income and Consumption shares of specific percentile groups. Section II decomposes the change in economic inequality according to the contributions from household age structure typologies. Section III assesses for the consistency of these contributions, when studied across state specific heterogeneities in economic inequality.

1.1. Motivation

1. *Philosophical Foundations of Inequality and the Ground Portrait*
   Sen (1973), terms economic inequality as an 'exceedingly complex subject matter' that involves a considerable level of technical and theoretical rigour. In essence, economic inequality is the difference in economic outcomes among different groups of population. This implies that it is a measure of division of economic outcomes among the different segments of society, justifying its 'relative' underpinnings. This positional nature of inequality ensures that there are certain moral connotations associated with the concept (Sen, 1973). This is adequately reflected when the Greek philosopher Plutarch opines that "An imbalance between rich and poor is the oldest and most fatal ailment of all the republics" (Hacker & Pierson, 2010). This theoretical understanding, however often fails to translate into an adequate technical reflection of the ground portrait as evidenced by the economic inequality scenario observed in India. This paper shall seek to study the theoretical adequacy of one of the most widely used measures of inequality – the Gini coefficient.
2. *Demography is Destiny*
   The demographic structure of a nation essays considerable influence over the socio-economic trajectories experienced by that particular nation as advocated by August Comte, with his phrasing of "Demography is Destiny" . However, the nature of this deterministic stance is widely contested (Harper, 2018). If conventional approaches to studying economic inequality falter in their supposed adequacy, a demographic purview of economic inequality offers a viable avenue of scholastic investigations. This paper forays into the demographic underpinnings of economic inequality in India by assessing the within group and between group inequalities observed within population subgroups categorised by household age structures.

3. Background and Literature Review

3.1. The Intersection of Demography and Economic Inequality

"Inequality is a choice" was echoed in the inaugural issue of the international edition of New York Times (Stiglitz, 2015). It implied that the perceived levels of inequality were a direct consequence of the policy choices espoused by a nation. However, a stream of inequality literature points towards the indirect influences of the policy environment on economic inequality observed within a country (Atkinson, 2015; Piketty 2014).

One of the mechanisms through with the policy environment experienced by a population impacts the economic inequality observed is the demographic trajectory of a country. Western, Bloome and Percheski (2008) have successfully established the demographic contribution to growing income inequality. Pfeiffer, Gross and Schoeni (2019) also highlight the role of demography in increasing wealth inequality which presents a separate dimension of inherited prosperity (Killewald et al., 2017). Schultz (1982) provides a microscopic view of the intersection of inequality and demography by pointing out that family composition in itself is based on the economic distribution of endowments between and within families. However, since families are identified as distinct

recipient units of economic benefits, the existence of their different typologies bear considerable influence on the distribution of income observed within families and between families.

Atkinson (2015) extends this argument to the questions of intergenerational wealth which bear a considerable amalgamation of lifetime earnings of posterior generations on the current endowments present within a family. This amalgamation as well passes through the channels of demographic shift as proposed by Schultz (1982). This marks a notable difference in the levels of inequality observed within labour outcomes and capital endowments. Piketty (2014) indicates that labour outcomes have always remained more equal than capital endowments passed within families.

This intersection of economics and demography is manifested through the emergence and subsequent decline of the middle class (Banerjee & Duflo, 2008). They enunciate that the demographic drivers of the fertility decline consisted primarily of the middle class. The middle - class typology lives in small families with considerably low fertility, which according to Banerjee and Duflo is the distinguishing feature of economic outcomes observed within this class. The assessment of the middle class provides great insights into the growth of economic inequality in the face of a positively skewed consumption distribution (Mishra and Joe, 2010). The interjunction of these three aspects of the present economic scenario of the country, i.e. changing economic inequality, demographic shift and the state of the middle class form the premise of this study's investigation into the demographic contribution to economic inequality.

4. Theoretical Framework

4.1. *The Inequality Possibility Frontier and Malthusian Cycles*

Malthusian cycles are instrumental in explaining the increase in inequality through a change in the denominator population. They depict the process of Malthusian Checks through its impact on economic inequality. A scenario of increased average income and lowered economic inequality, precipitated by an increase in real wages shall be followed by population increase of the poorest. This reduces their wages and pushes inequality up (Milanovic, 2016). However, the Inequality possibility frontier subsumes a relation between the average income and inequality such that with growing average income larger inequality becomes feasible. The frontier assumes a concave shape while attaining an asymptomatic nature towards higher levels of average income. Figure 1 presents the inequality possibility frontier constructed for mean income levels and the Gini coefficient for the period 2014 to 2021.

The Indian Inequality Possibility frontier produces vestiges of Malthusian cycles and the subsequent increasing feasibility of inequality with growing average income level. Two key takeaways become apparent here. The Malthusian cycles are not being observed dude to a subsequent fall and rise in population. Rather the shift in demographic structure of the country is dictating the levels of inequality observed against rising average income. This is because the age structure of the households wields an influence over the magnitude of income earned and its inter-households' distribution (Schultz, 1982). Essentially shifting household age structure is dictating the change in inequality at lower levels of average income. Secondly, with gaining surplus above a theoretically conceived subsistence level (Milanovic, Lindert and Williamson, 2011), the IPF assumes an accelerated slope owing to the distributional stagnation observed within the surplus gain. This implies that a shift across the household age structure parallel to a section of a society

having attained a considerable surplus above the theoretical subsistence levels accelerates the growth of inequality with rising average income levels.

4.2. *Kaldor Hicks Compensation Criteria within a Stable Population Model*

This intrinsic association between changing household age structure and changing economic inequality, contextualised against the growth of prosperity raises questions over the implications of the stabilisation of the age structure of a population. With the advent of a consistent household age structure. If the changing population age structure is unable to produce a socially optimal inequality outcome as observed under the Inequality Possibility Frontier, it indicates towards a model of redistributive mechanisms following the changing household age structure.

In line with this motivation, the Kaldor Hicks Compensation criteria dictates that this redistributive process to address inequality shall continue until the gainers could hypothetically compensate the loser (Bromley, 1990; Fuigitt & Wilcox, 1999). The isolation of household age structures in assessing their contribution to changing economic inequality allows for the identification of potential gainers and losers from increasing prosperity. The stabilisation of the household age structure as envisioned by Lotka (1925) shall ensure that shift experienced by a population across household age structures will attain a constant magnitude (Preston, 1988). This produces a stable equilibrium within the Kaldor Hicks Compensation Criteria, wherein the redistributive process of gains acquires a constant nature, thereby addressing economic inequality.

5. Research Question

The following critical research questions are addressed in this study:

1. Is the decline in Gini Index of India reflecting the economic inequality scenario of the country?
2. Does the household age structure of the country contribute to the changing economic inequality in the country?
3. Does the contribution of household age structure to changing economic inequality differ according to state specific heterogeneities?
4. Can the demographic profile of a country contribute to reducing its economic inequality?

6. Objectives

1. To assess the level and trends of economic inequality in the country
2. To assess whether alternative measures of economic inequality produce consistent results
3. To examine the contribution of changing household age structure to the change in economic inequality in the country
4. To examine the state specific heterogeneities present within the linkages between demography and inequality
5. To assess the viability of demographic contribution in reducing income inequality

6. Data & Method

6.1. Data Source

To address these research questions and objectives, the study will primarily use Centre for Monitoring Indian Economy's Consumer Pyramids Household Survey (CPHS) Data from wave 1 to wave 24. The Centre for Monitoring Indian Economy (CMIE) has been conducting these surveys from 2014 onwards. It provides anonymized record-level data at the level of individual households and members of households. The survey delivers data collected from an all-India representative sample of over 170,000 households. This is a panel sample that is surveyed repeatedly over time. Consumer Pyramids Household Survey is a continuous survey. Data is collected in Waves. There are three Waves every year. Each Wave is completed over a four-month period, wherein the completed sample is distributed equally across each week and month

6.2. Study Population

The age structure of a population is one of the key variables that differentiates populations across time and space. Therefore, it naturally wields an influence over the distribution of income and consumption within a population (Lam, 1997). In line with this argument, the World Bank (1984) warns of the undesirable consequences of population growth and the subsequent change in age structure towards growing inter-households and intra-households' distribution of economic well-being. Building on this, the inclusion of households as the unit of analysis, provides a more accurate reflection of economic inequality as economic endowments and well-being are jointly owned and experienced by the members of a household. The difference in size and composition of households thereby exudes a considerable effect on the economic outcomes experienced by it as a joint recipient (Lam, 1997). This intersection of age structure and the inter-household distributions serves as the rationale for considering households categorised by their age structure as the unit of analysis within this study. Figure 1 presents the shift in the household age structure of the population in the country within the years 2014-2021. The study includes 1,70,000 households surveyed across the time period of 2014-2021, recorded through continuous waves spanning across four months each.

6.3. Methods

This study involves a quantitative and multidisciplinary approach yet remains within the traditional boundaries of demography. The methodology adopted has been described in the following sections: Variables, Models and Conceptual Framework.

6.4. Variables

The study employed the following variables to assess the level and trends of economic inequality and its linkages with demographic composition

1. Economic Outcomes: Income and Consumption expenditure, adjusted for household size and inflation
2. Economic Inequality Indicator: Gini coefficient for Income and Consumption expenditure
3. Demographic composition: Household Age Structure

6.5. Models

6.5.1. Pyatt's Decomposition Model

Pyatt (1976) has given the decomposition model of Gini coefficient. The Gini index was decomposed to derive the contribution of between and within group inequalities.

Let a population of 'n' individuals, with income and consumption expenditure vector (y 1, y 2, y 3……. y n) have a mean income desegregated in 'k' subgroups, with $n = \sum_{i=1}^{k} n_i$ and subgroup mean denoted by $\overline{y_i}$

The Gini index between two population subgroups i and j can be expressed as

$$G_{ij} = \frac{1}{n_i n_j (\bar{y}_i \bar{y}_j)} \sum_{a=1}^{n_i} \sum_{b=1}^{n_j} |y_{ji} - y_{ab}| \quad (1)$$

The relative economic affluence is defined as

$$D_{ij} = \frac{d_{ij}^1 - d_{ij}^2}{d_{ij}^1 + d_{ij}^2} \quad (2)$$

If the population share in subgroup i is $p_i = n_i/n$ and income and consumption expenditure share in subgroup i is $s_i = (p_i \bar{y}_i/\bar{y})$, then the contribution to total inequality attributable to the difference between the k population subgroup is defined as:

$$G_b = \sum_{i=1}^{k} \sum_{j=1}^{k} G_{ij} D_{ij} (p_i s_j + p_j s_i) \quad (3)$$

The Gini index for subgroup j is given by

$$G_{ii} = \frac{\sum_{a=1}^{i} \sum_{b=1}^{j} (y_i - y_j)}{2 n_i^2 \bar{y}_i} \quad (4)$$

The within group inequality index is the sum of Gini indices for all subgroups weighted by the product of population shares and landholding shares of the subgroups:

$$G_w = \sum_{i=1}^{k} G_{ii} p_i s_i \quad (5)$$

If subgroups are not overlapping, total inequality can be expressed as the sum of within group and between group indices. But, if subgroups are overlapping, we can add another component which is a part of between-group disparities issued from the overlap between the two distributions which measures the contribution of the intensity of trans-variation. The contribution of the trans-variation between the subpopulations to G is:

$$G_t = \sum_{i=1}^{k} \sum_{j=1, i \neq k}^{k} G_{ij} (1 - D_{ij}) (p_i s_j + p_j s_i) \quad (6)$$

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

6.5.2. Shorrock's Decomposition Model

The Shorrock's Decomposition Model is used to express inequality in income and consumption expenditure as the sum of inequality contributions from each of the household types categorised by their age structure for a given class of Generalised Entropy Measures of Inequality.

$$S = \frac{\rho p_i . sd(p_i)}{sd(T)} \quad (7)$$

Where S is the slope coefficient of the regression of population subgroup i (p_i) upon the total income and total consumption expenditure, denoted by T respectively; sd stands for the standard deviation of the population subgroup i (p_i) and total income and total consumption expenditure (T). Essentially S denotes the contribution of population subgroup, $p_i \ldots p_8$ (classified according to household age structure) to the inequality in total income and total expenditure respectively.

It must be noted that

$$\sum_{i=1}^{8} S = 1 \tag{8}$$

Which implies that the sum of population subgroups' contribution to the inequality observed in the total income and total consumption expenditure must equal 1.

6.5.3. Oaxaca Blinder Decomposition Model

The Oaxaca Blinder Decomposition Model has been used to decompose the change in economic inequality according to the change in household age structure in the country. The Oaxaca Blinder decomposition model employed here involved two linear regressions:

$$T_{2014} = \beta_{i,2014} p_{i,2014} + \xi_{2014} \tag{9}$$

$$T_{2021} = \beta_{i,2021} p_{i,2021} + \xi_{2021} \tag{10}$$

Where T_{2014} and T_{2021} are the mean income and consumption expenditure for the years 2014 and 2021 respectively; $p_{i,2014}$ and $p_{i,2021}$ are the population subgroups classified according to household age structure in the year 2014 and 2021 respectively. $\beta_{i,2014}$ and $\beta_{i,2021}$ are the coefficients for the population subgroups in the respective years. ξ_{2014} and ξ_{2021} are the error terms of the regression models for the years 2014 and 2021.

The difference between the mean outcome between the two years is therefore expressed as

$$T_{2021} - T_{2014} = \beta_{i,2021} p_{i,2021} - \beta_{i,2014} p_{i,2014} + (\xi_{2021} - \xi_{2014}) \tag{8}$$

This difference can be broken down into

$$\text{The explained component: } \beta_{i,2014} p_{i,2021} - \beta_{i,2014} p_{i,2014} \tag{11}$$

$$\text{The unexplained component: } p_{i,2021} (\beta_{i,2021} - \beta_{i,2014}) \tag{12}$$

Where Eq. (9) captures the difference in average income and consumption expenditure being factored by the shift of households from across the age structures between the period 2014 to 2021; Eq. (10) refers to the difference contributed by the differences in the coefficient.

6.5.4. Lerman and Yitzhaki Decomposition Model

The Lerman and Yitzhaki Decomposition model builds upon the Shorrocks' Decomposition Model that decomposes total inequality into contribution from factor components of income and consumption by estimating the marginal effect of these factor components on change in total inequality. In this study, the Lerman and Yitzhaki model has been used to decompose the change in total household income and consumption expenditure using change in the total income and consumption expenditure of population subgroups categorised by household age structure.

$$G = \sum_{i=1}^{8} S_i G_i R_i \quad (13)$$

Where, G is the Gini index; S_i is the the share of the population subgroup i in total income and consumption expenditure; G_i is the within-group Gini corresponding to the distribution of income and consumption expenditure from population subgroup I; R_i represents the correlation between income and consumption expenditure from the population subgroup i with the distribution of total income and consumption expenditure.

If ΦY_i denotes a change in household income from a population subgroup,

$$\frac{\delta G}{\delta \Phi} = S_i(G_i R_i - G) \quad (14)$$

Eq. 12 denotes the partial derivative of the overall Gini with respect to the percentage change in household income by population subgroup i.

Dividing Eq. 12 by the overall Gini,

$$\frac{\delta G/\delta \Phi}{G} = \frac{S_i G_i R_i}{G} - S_i \quad (15)$$

This provides the marginal effect of a change in population subgroup as percentage of the overall Gini less the subgroup's share of total income and consumption expenditure.

7. Organisation of Paper

This paper has been organised into five chapters.

Chapter 1: This chapter includes an introduction, review of literature, need for the study and objectives of the study along with the source of data and methodology used in the study.

Chapter 2: This chapter assess the levels and trends of economic inequality in the country

Chapter 3: This chapter decomposes the change in economic inequality into contributions from the changing household age structure of the country.

Chapter 4: This chapter assess the contribution of changing household age structure to changing economic inequality while accounting for state-specific heterogeneities.

Chapter 5: This chapter provides the discussion, summary and conclusion

8. Results and Discussion

Chapter 2: Trends in Economic Inequality

The first objective of the study seeks to assess the level and trends of economic inequality in the country for the period 2014-2021. To address this objective the Gini index has been calculated for the income of the household and the consumption expenditure of the household. Both the income and consumption expenditure have been adjusted for household size and inflation. The calculated Gini Indices provide similar results to those observed by the World Bank Poverty and Inequality estimates (Figure 2). Between the period of 2014 to 2021, it can be observed that the Gini indices for income and consumption have fallen to minimal extent. This observation is at contradiction with the growing concerns over increasing economic inequality (World Inequality Database; Oxfam, 2021; Chancel & Piketty, 2021).

To further assess the level of economic inequality in the country, the income and consumption inequality trends have been charted for income consumption percentiles (Table 2). Table 2A depicts that the income shares of the top 1% increased from 2% to 5%. In fact, across Income and Consumption shares (Table 2B), the Top 1%, 5%, 10 % and the Upper middle class have gained in their respective shares whereas those belonging to the lower middle-income group and the bottom 10% have experienced a decline in their respective income and consumption share.

This can be further corroborated by assessing the ratios of three groups of interests the Top 10%, the Top 50% and the Bottom 90% (Figure 4). The results depict that the gap between the ideal ratio and observed ratios for both consumption and income has been widening with increasing time. An exception is observed in Figure 3C, where the observed ratios of the bottom 90% against the top 50% have been moving closer to the ideal ratio across the period. This finding provides a reconciliation between falling Gini indices and rising share of the wealthy. The Gini coefficient is a measurement of the distribution of a variable. Table 2 and Figure 3 demonstrate that although the divergence between economic classes is increasing, this is taking place in clusters. The upper middle-income class is moving closer to the lower middle-income shares which are incidentally, mimicking those of the bottom 10%. Thus, the distribution of income is equalising towards the opposite ends of the income and consumption distribution, thereby creating a perceived sense of equality as reflected within the fall in the Gini indices.

Chapter 3: The Decomposition of Economic Inequality: The Demographic Contribution to Changing Economic Inequality

Having established that economic inequality is indeed on the rise despite falling economic indices, this chapter turns to explaining this rise in economic inequality through the lens of Demographic change. Figure 1 presents the shift in the household age structure of the population in the country within the years 2014-2021. It is evident that the share of the grown-up dominant households has considerably increased during the period. This increase is also accompanied by an increase in the share of balanced households with no seniors, youngster dominant households and other households of the grown-ups. At the same time, a subsequent decline has been observed in the share of children dominant households, senior dominant households and other households of the youngsters. Not surprisingly, the Gini coefficient for the Children dominant household age structure has increased between 2014 and 2021 (Table 3).

However, figure 5 and figure 6 suggests that the rise in economic inequality is observed consistently across all household age structure typologies. What differs considerably however is the magnitude of the economic inequality observed within these households age structure with consistently high levels being observed in the grown-up dominant category of households. Between 2014 and 2021, the farthest distance from the ideal ratios of the percentile groups of interest has been observed in the grown-up dominant category.

In line with these findings, the Pyatt's decomposition for income and consumption inequality presents that the share of between group inequality to overall inequality has dropped between 2014 to 2021 while the share of within group inequality to overall inequality has been on a consistent rise during the same period (Figure 8). Intuitively, these findings point towards the increasing contribution of grown-up dominant households to change in economic inequality along with balanced households with no seniors. In line with these results the share of grown-up dominant

households and households with similar age structure typologies have observed an increase in their income share over the years. Figure 9 ascertains the contribution of shifting population age structures towards change in economic inequality. The explained component of the change in income over the period 2014 to 2021 is dominated within the children-dominant category. Since this household typology has seen the largest shift towards the grown-up dominant household over the period. Similarly, grown-up dominant households along with senior dominant households have observed negative contribution to change in income over the years because of their shift towards non – productive typologies of household age structure.

Chapter 4: Demographic Structure and Economic Inequality – State Specific Heterogeneities

Objective 4 seeks to examine the state specific heterogeneities present within the stablished linkages between economic inequality and demographic shift. Table 6 and 7 map the income and consumption share of households classified according to their age structure across the states of the country while also controlling for their respective population share. The tables depict a clear impoverishment among the children dominant and senior dominant households in terms of share of income and consumption. In line with the results deduced at the aggregate level, a gradual increase across the age structure typologies of families is observed in income and consumption patterns across all the states with tapering ends of falling shares at the extreme levels of children dominant and senior dominant families. This signifies that even though within group inequality has a larger contribution in overall inequality, between group inequalities continue have stark differences amongst them.

Building on this, the Lerman – Yitzhaki decomposition model has been estimated to assess the change in income inequality for a given change in the income of the households classified according to their age structure (Table 7). In line with the Pyatt's decomposition model as well as Shorrock's and Oaxaca Blinder decomposition, it can be observed that a percentage increase in income of the grown-up dominant households will reduce income inequality by 3.5%. However, even though a between group inequality has been on the decline across the years, its after effects are yet to evaporate entirely, as an increase in the income of children dominant and senior dominant households will decrease income inequality by 0.02% in both the cases.

Chapter 5: Conclusion

The demographic purview of economic inequality provides novel insights into the shifting dynamics of economic inequality in the country. India, finds itself at a crucial juncture of its demographic trajectory (James, 2011) and is faced by a multitude of economic perils in terms of inequality and matters of distributive justice (Dreze' & Sen, 2012). This paper strived to amalgamate the intersections of these two crucial junctures in India's economic-demographic scenario.

Our analysis highlights not only conspicuous increase in economic inequality within the country but also points towards the pertinent role essayed by the household age structure typologies, especially the grown-up dominant households. Essentially, this study was motivated by the twin principles of ethical foundations of inequality measurement as well as the demographic harness available to bridge the gap between prevailing and ideal scenarios of inequality in the country. The theoretical precepts explored in this paper not only unearth the philosophical leanings involved in

the measurement of inequality and prosperity but also seek to find a solution to the moral peril of inequality within the process of demographic transition. The envisioning of a Kaldor Hicks Compensation criteria within the framework of a stable population model will aid this objective. Therefore, demographic transition offers a starting point for the redressal of economic inequality experienced within a population.

9. References

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Figure 1: Proportion of Households Classified by Age Structure, 2014-2021

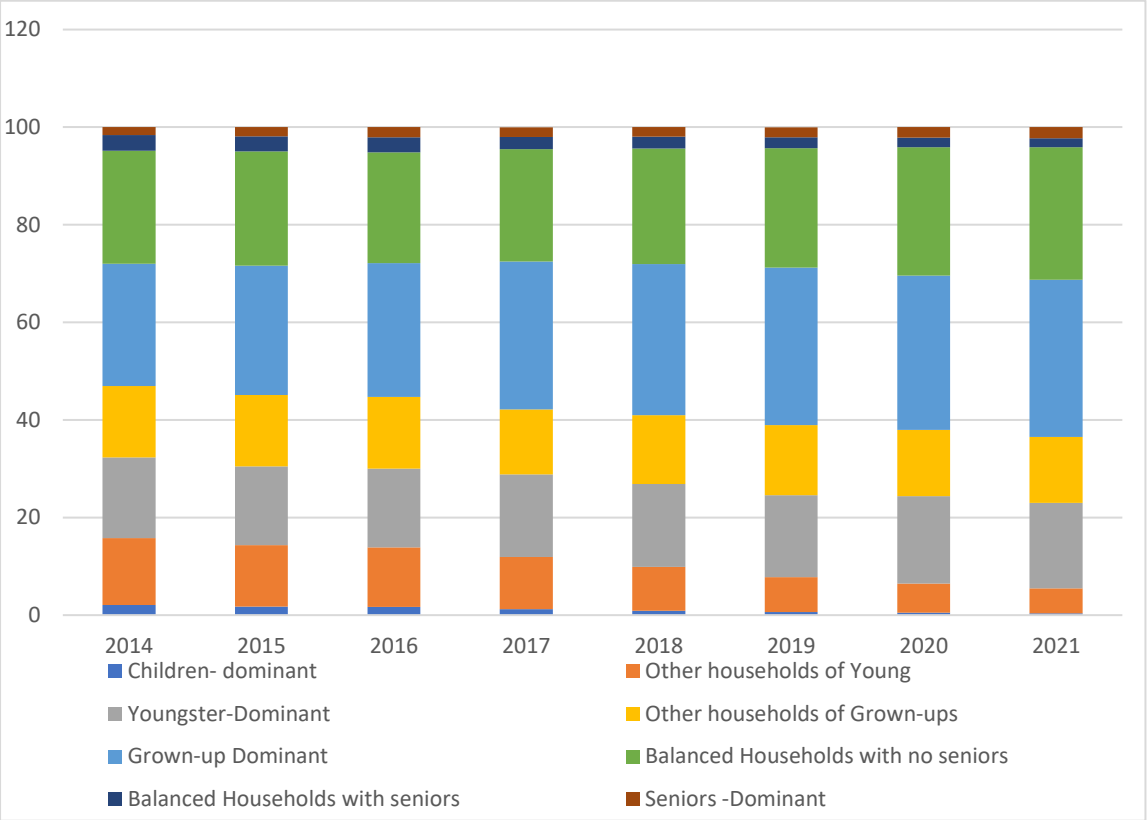


Table 1 - Summary Statistics

(A) Household Income (Adjusted for Household Size and Inflation)

	2014	2015	2016	2017	2018	2019	2020	2021
Mean	4208	5366	3174	6050	6479	7771	6892	5563
Median	2750	3500	2100	4121	4563	5515	5166	4000
Range	300000	255000	255000	300019	750038	809583	339716	483250
Variance	21300000	39800000	14200000	42900000	47800000	55900000	34700000	28400000
Std. Dev	4617	6310	3766	6547	6911	7476	5892	5331
N	1624249	1198530	1152511	1553088	1700736	1672220	1246174	606537

(B). Household Consumption Expenditure (Adjusted for Household Size and Inflation)

	2014	2015	2016	2017	2018	2019	2020	2021
Mean	2327	3091	2012	3504	3,593	4250	3716	2935
Median	1866	2394	1544.167	2756.25	3024.167	3640.417	3302.083	2402
Range	153055	158149	504450	133267.8	133746.2	173439.2	120581.3	171128.3
Variance	3444315	6784034	3874184	7641898	6794706	6701808	4013449	4172889
Std. Dev	1855	2604	1968	2764	2606	2588	2003	2042
N	16,24,249	1198530	1152511	1553088	1700736	1672220	1246174	606537

Figure 2: Trends in Economic Inequality over the Period 2014-2021

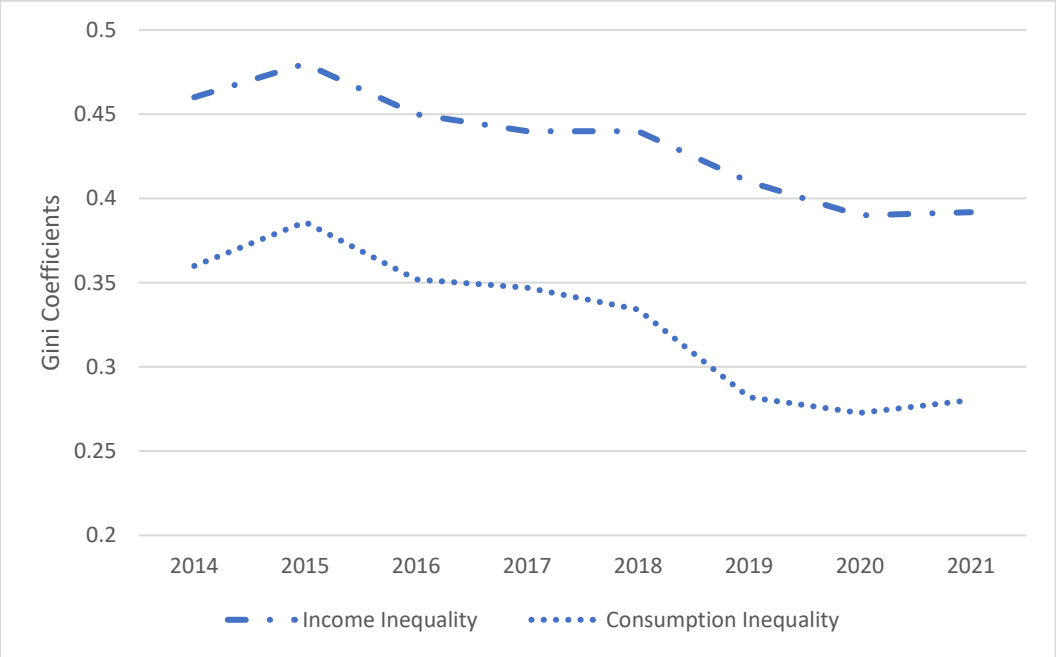


Table 2: Trends in Economic Inequality

(A). Income Inequality Trends, 2014-2021

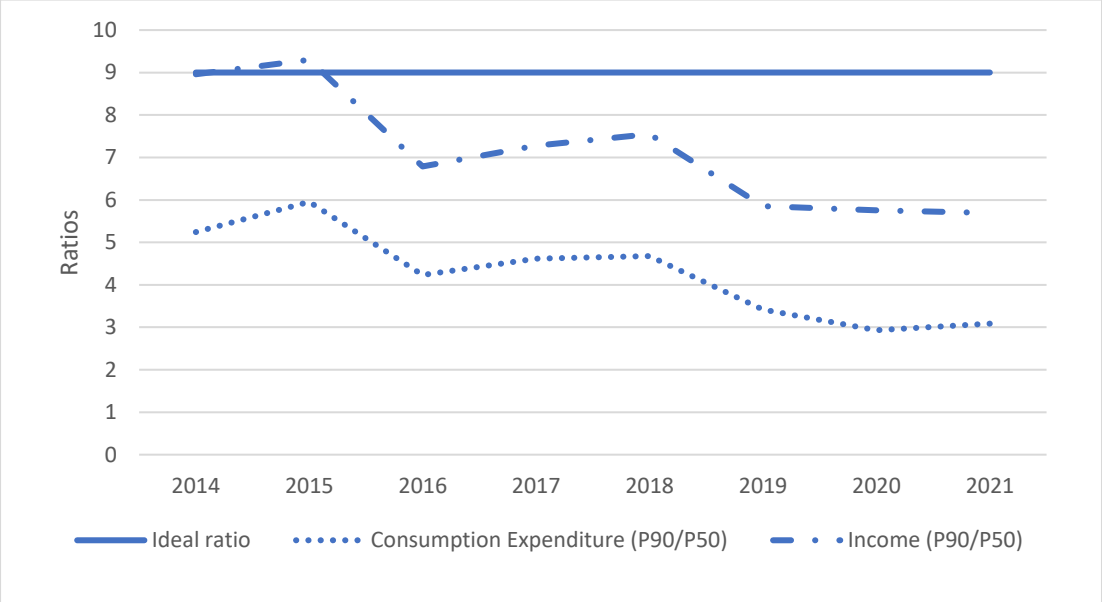
Household Age Structure	Year							
	2014	2015	2016	2017	2018	2019	2020	2021
Top1%	2.02	5.02	2.10	5.21	4.20	5.99	5.17	5.09
Top5%	10.39	18.43	7.45	18.43	17.40	21.98	20.18	18.96
Top10%	19.21	30.25	12.83	29.93	30.17	36.34	34.25	32.03
Upper Middle Class	47.25	46.28	38.89	48.99	51.45	51.15	52.72	51.50
Lower Middle Class	28.85	20.37	39.09	20.09	17.54	12.34	12.82	16.18
Bottom 10%	4.68	3.10	9.19	0.99	0.85	0.17	0.20	0.29

(B). Consumption Inequality Trends, 2014-2021

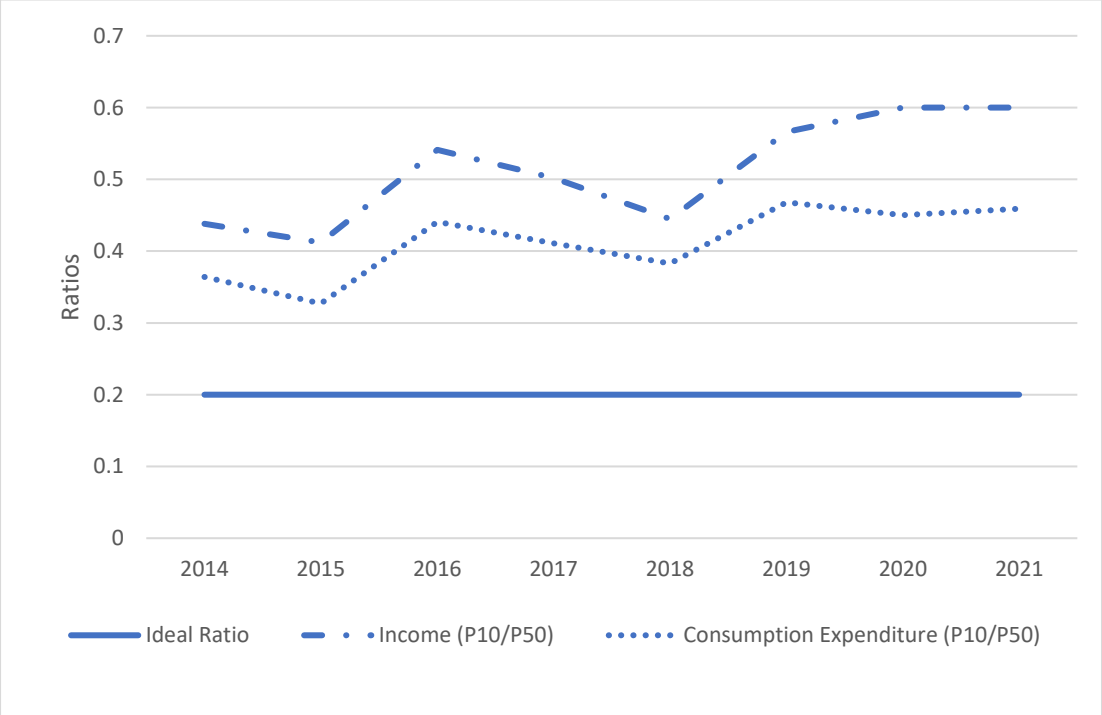
Household Age Structure	Year							
	2014	2015	2016	2017	2018	2019	2020	2021
Top1%	1.01	2.46	1.88	3.21	2.54	2.31	1.93	1.98
Top5%	5.03	11.10	6.59	12.75	11.75	12.45	10.69	10.76
Top10%	11.19	22.45	11.53	25.11	23.25	26.52	23.30	23.23
Upper Middle Class	41.01	48.72	28.03	48.11	54.21	59.72	61.34	59.45
Lower Middle Class	39.02	24.12	48.18	25.46	21.00	13.57	15.15	17.04
Bottom 10%	8.78	4.71	12.26	1.33	1.54	0.19	0.21	0.29

Figure 3: Consumption and Income Share Ratios, 2014-21

(A). Share of Bottom 90% against Top 10%



(B). Share of Top 10% against the Top 50%



(C). Share of Bottom 90% against the top 50%

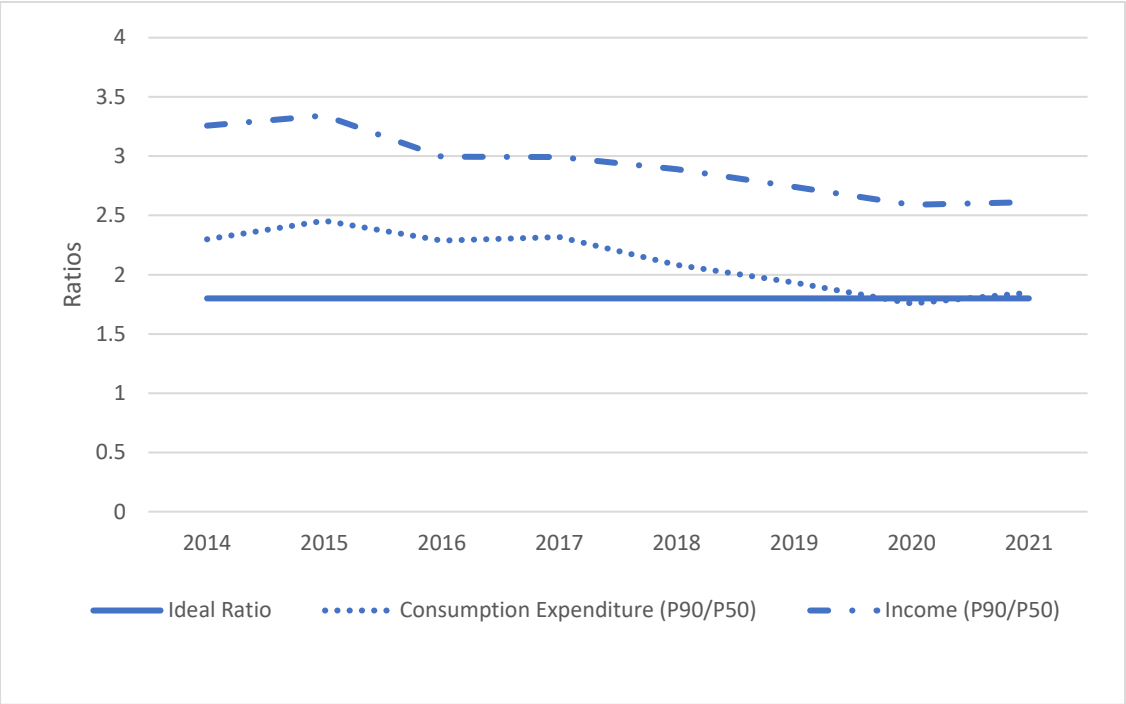


Figure 5: Inequality Possibility Frontier – Theoretical Maximum Possible Inequality

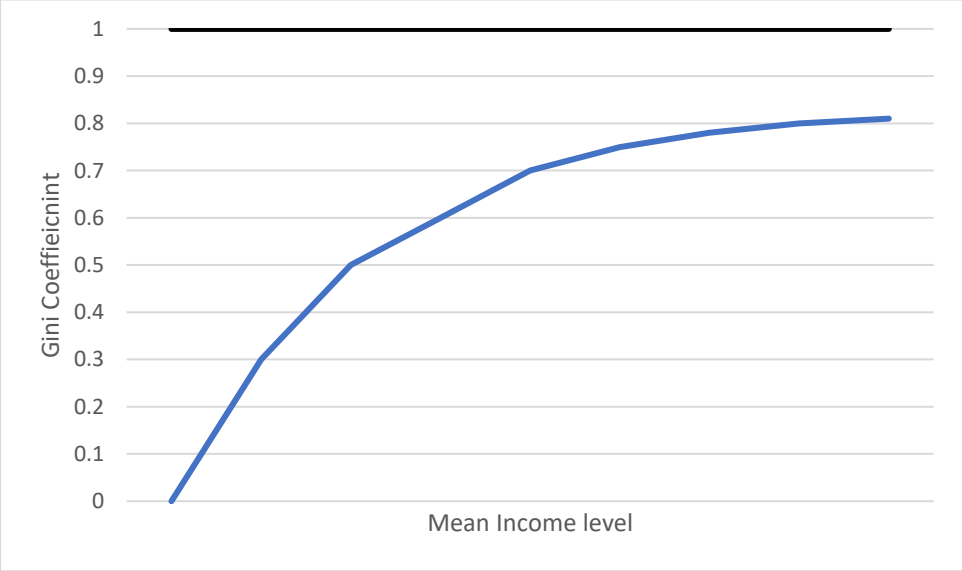
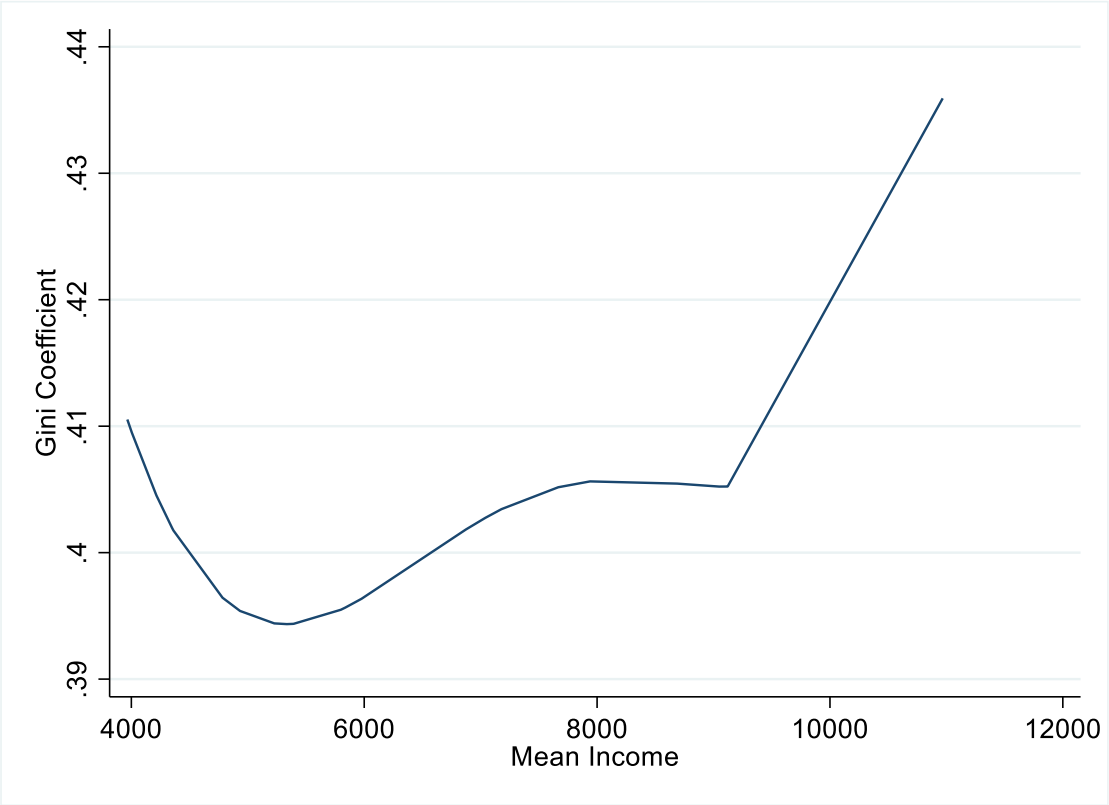


Figure 6: Inequality Possibility Frontier in India



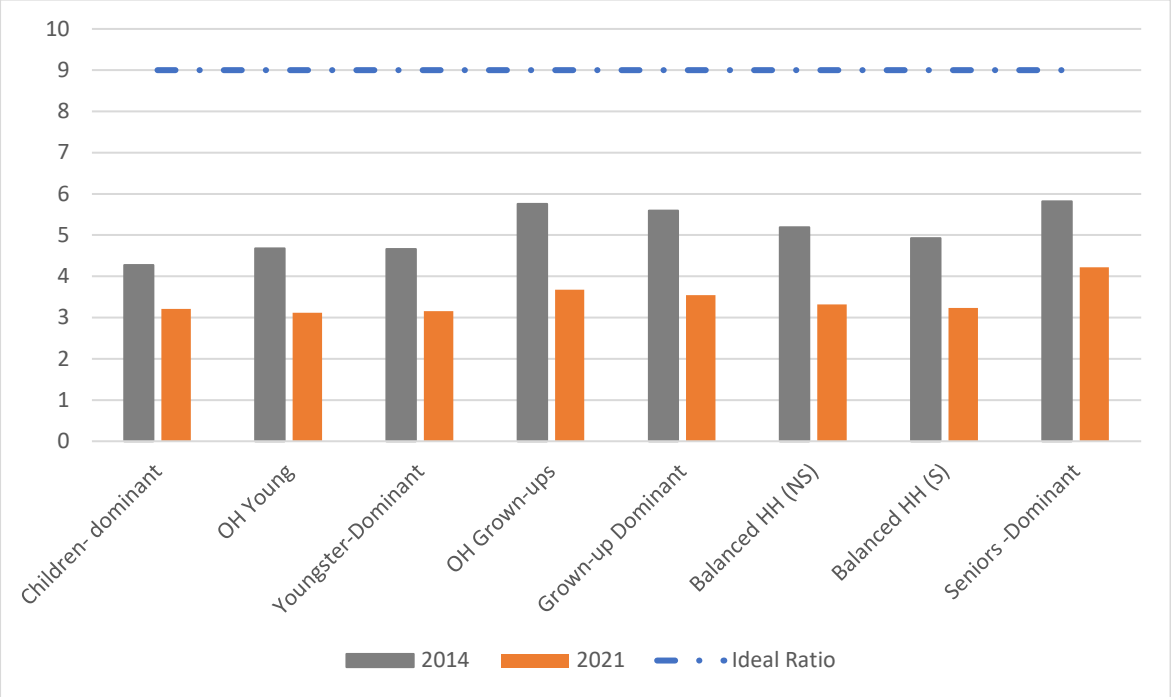
Note: Estimated for a Pooled Sample of States, 2014-2021

Table 3: Changes in the Household Age Structure and Compositional Changes

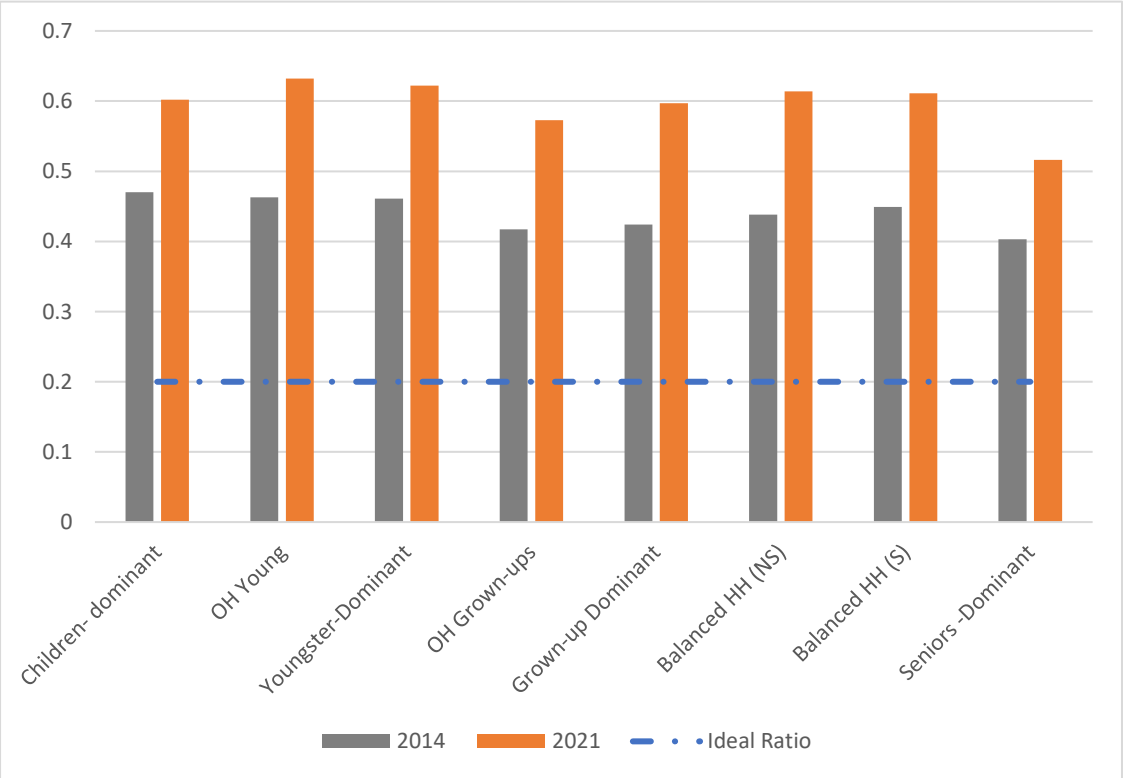
	2014			2021		
		Per Capita Income			Per Capita Income	
Household Age Structure	Distribution	Median	Gini	Distribution	Median	Gini
Children- dominant	2.09	1666.67	0.32	0.36	2764.38	0.32
OH Young	13.68	2100.00	0.37	5.13	3200.00	0.38
Youngster-Dominant	16.52	2300.00	0.34	17.51	3312.50	0.36
OH Grown-ups	14.68	2500.00	0.37	13.52	3547.00	0.43
Grown-up Dominant	25.05	2599.19	0.37	32.23	3875.00	0.41
Balanced HH (NS)	23.17	2750.00	0.35	27.16	3891.50	0.38
Balanced HH (S)	3.21	3443.75	0.36	1.81	4449.60	0.38
Seniors -Dominant	1.60	3666.67	0.34	2.28	4451.00	0.43

Figure 7: Consumption Share Ratios According to Household Age Structure

(A). Share of Bottom 90% against the Top 10%



(B). Share of Top 50% against the Top 10%



(C). Share of Bottom 90% against the Top 50%

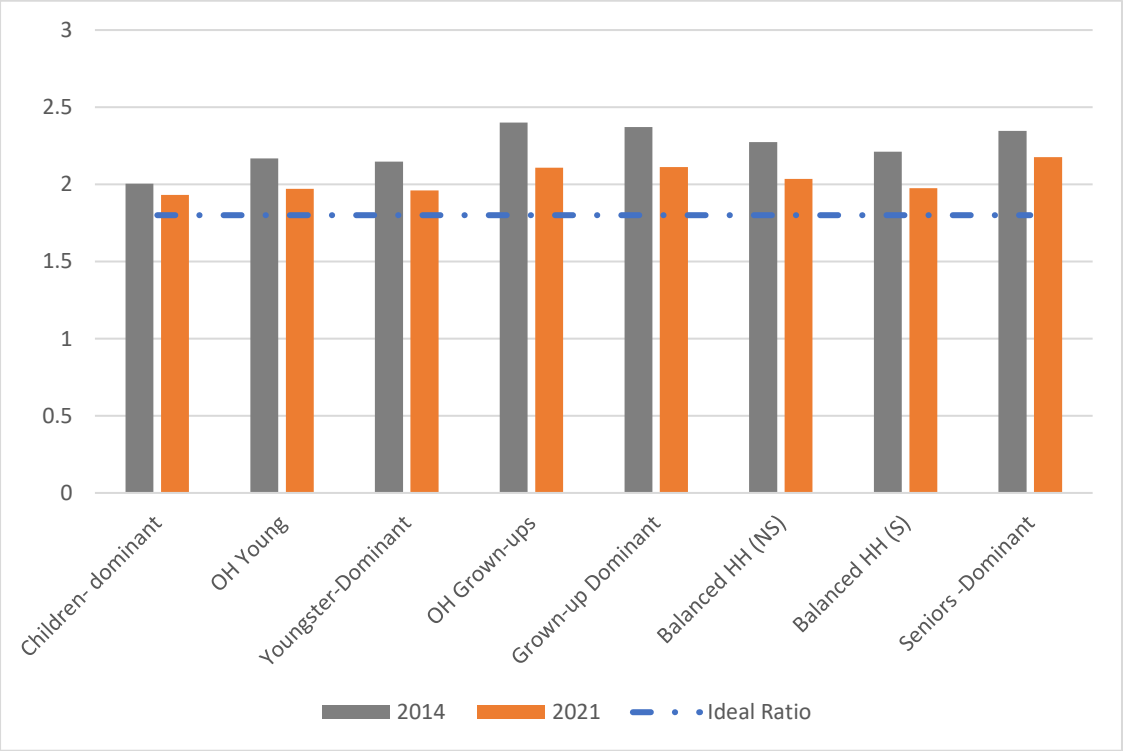
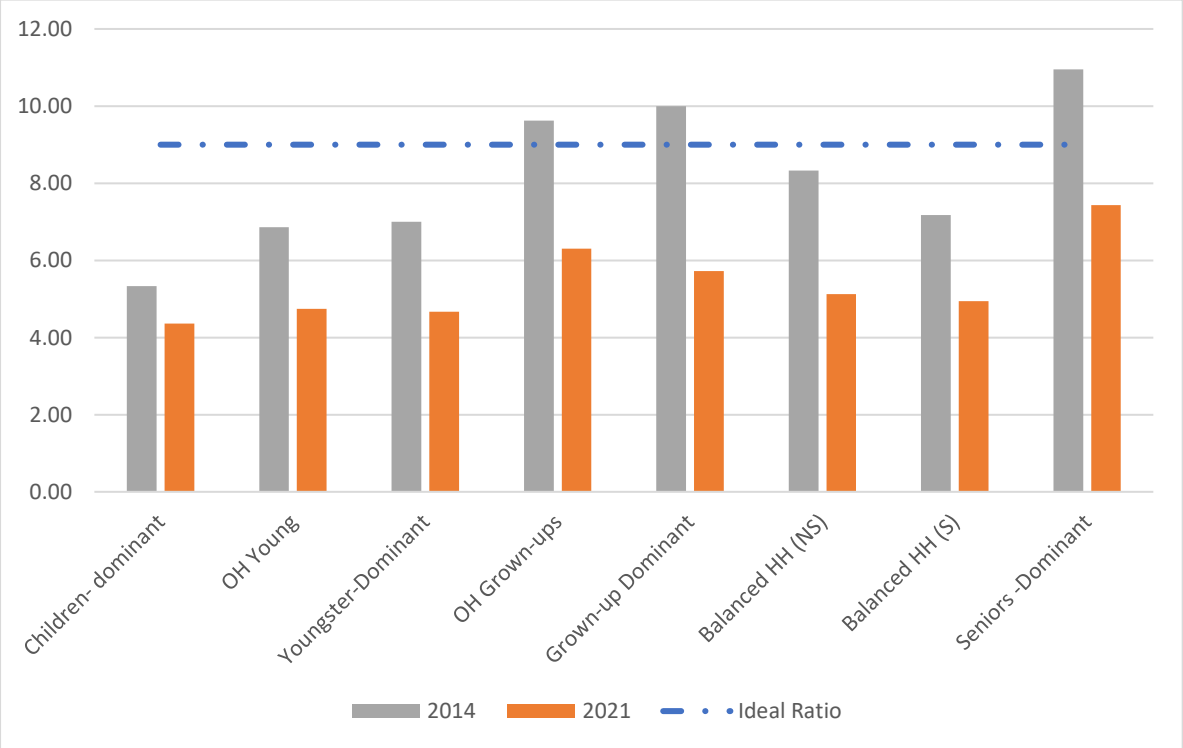
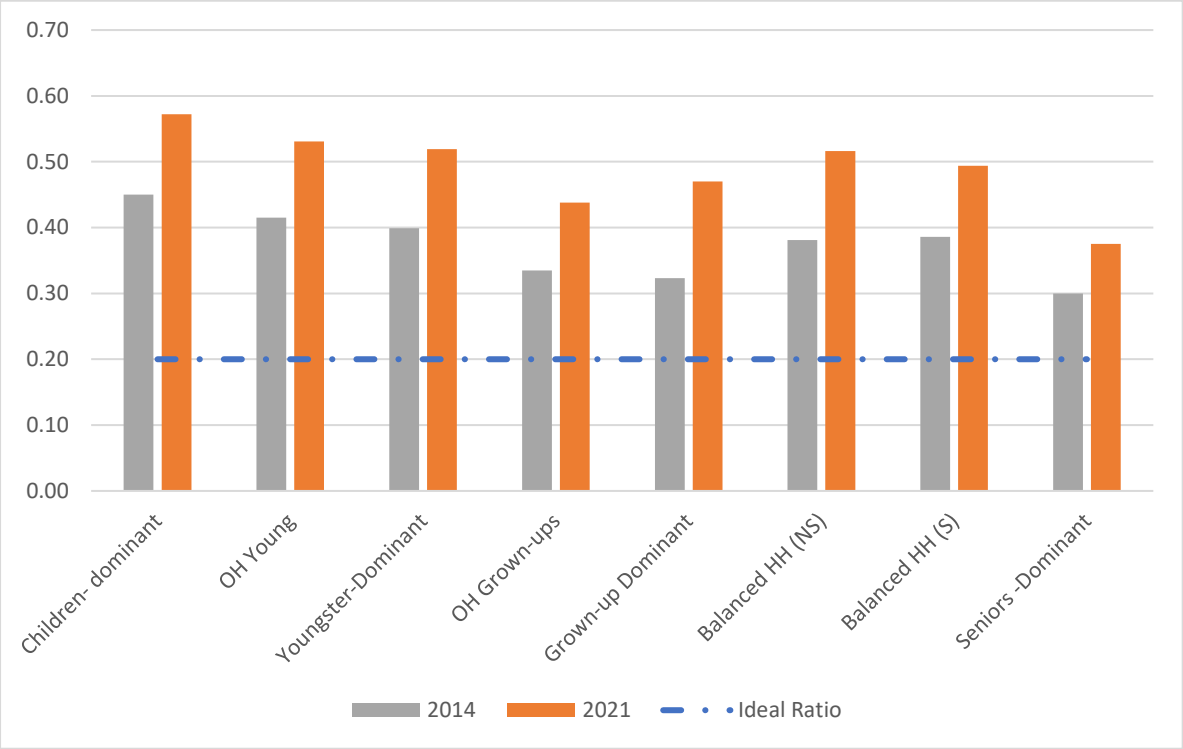


Figure 8 : Income Share Ratios According to Household Age Structure

(A). Share of Bottom 90% against the Top 10%



(B). Share of Top 50% against the Top 10%



(C). Share of Bottom 90% against the Top 50%

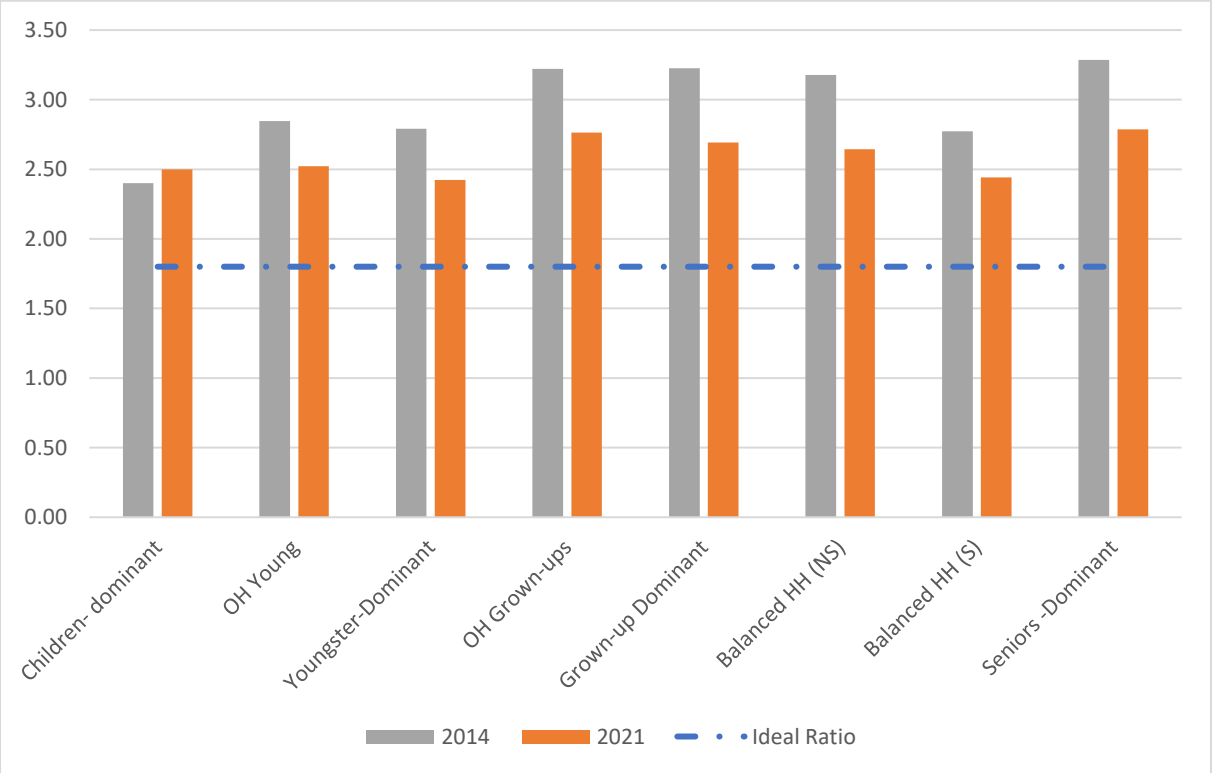


Table 4: Consumption Share of Households Classified According to Age Structure

(A). 2014

Age Structure	Children - dominant	Other households of the Young	Youngsters - dominant	Others households of Grown-ups	Grown-up - dominant	Balanced households with no Seniors	Balanced households with Seniors	Seniors - dominant
UTs	0.00867	0.05726	0.08332	0.20022	0.30094	0.29067	0.02541	0.03351
North East	0.01356	0.08781	0.10883	0.21331	0.3345	0.19277	0.03799	0.01123
AP	0.01272	0.07812	0.10688	0.15315	0.29456	0.31559	0.02672	0.01226
Bihar	0.04251	0.20375	0.18861	0.10438	0.19758	0.22699	0.02756	0.00862
Chhattisgarh	0.02041	0.15857	0.19666	0.14193	0.20494	0.22032	0.04817	0.009
Delhi	0.00877	0.12443	0.16572	0.27935	0.21297	0.15652	0.04223	0.01002
Goa	0.01041	0.05808	0.11444	0.20811	0.344	0.21624	0.03629	0.01242
Gujarat	0.01848	0.13366	0.15561	0.14697	0.27651	0.23268	0.02871	0.00739
Haryana	0.01508	0.11023	0.13572	0.21356	0.25273	0.22023	0.03476	0.01769
HP	0.00805	0.0641	0.10311	0.21339	0.29776	0.27167	0.03034	0.01159
J&K	0.0094	0.07045	0.15532	0.20721	0.32811	0.18145	0.04076	0.00729
Jharkhand	0.01469	0.14782	0.18731	0.09365	0.24219	0.28076	0.02809	0.00548
Karnataka	0.00794	0.0843	0.11647	0.21905	0.30906	0.21367	0.03983	0.00968
Kerala	0.00517	0.05935	0.06695	0.23237	0.338	0.24873	0.0317	0.01773
Maharashtra	0.01449	0.11299	0.16713	0.11971	0.3074	0.24665	0.02378	0.00784
MP	0.01002	0.10137	0.1238	0.20542	0.27919	0.23568	0.03355	0.01096
Odisha	0.01032	0.07672	0.1149	0.1556	0.34186	0.27031	0.01856	0.01172
Punjab	0.00957	0.06241	0.10886	0.19245	0.30154	0.27276	0.02269	0.02972
Rajasthan	0.01896	0.15975	0.20393	0.13825	0.21512	0.22236	0.03005	0.01158
Tamil Nadu	0.00935	0.06697	0.09648	0.22336	0.29779	0.25478	0.02995	0.02131
Telangana	0.0118	0.087	0.14094	0.15347	0.27123	0.28741	0.03047	0.01769
Uttar Pradesh	0.02908	0.18316	0.25401	0.12068	0.18218	0.18551	0.03496	0.01042
Uttarakhand	0.01915	0.11769	0.16931	0.1679	0.22898	0.24212	0.03334	0.02152
West Bengal	0.00669	0.11956	0.09126	0.24041	0.31832	0.17426	0.03274	0.01675

(B). 2021

Age Structure	Children - dominant	Other households of the Young	Youngsters - dominant	Others households of Grown-ups	Grown-up - dominant	Balanced households with no Seniors	Balanced households with Seniors	Seniors - dominant
UTs	0.00019	0.01432	0.06526	0.07124	0.49977	0.33571	0.00131	0.01219
North East	0.02686	0.14487	0.16715	0.14753	0.30631	0.17057	0.02409	0.01263
AP	0.00139	0.01242	0.0502	0.10327	0.392	0.40433	0.00785	0.02854
Bihar	0.00267	0.05471	0.33085	0.08743	0.24424	0.25572	0.01647	0.0079
Chhattisgarh	0.00286	0.05148	0.18537	0.10393	0.33377	0.28881	0.01304	0.02073
Delhi	0.00042	0.02454	0.10407	0.29781	0.3703	0.17235	0.0191	0.0114
Goa	0.00422	0.00624	0.09499	0.10188	0.47319	0.2566	0.0133	0.04956
Gujarat	0.004	0.07895	0.16816	0.14866	0.31497	0.24521	0.02743	0.01262
Haryana	0.00069	0.01558	0.08997	0.20908	0.38579	0.22122	0.02384	0.05383
HP	NA	0.01191	0.0604	0.18668	0.4147	0.25876	0.00278	0.06478
J&K	NA	0.01236	0.24952	0.11822	0.27361	0.31109	0.01228	0.02292
Jharkhand	0.00484	0.03224	0.12731	0.09607	0.37625	0.34692	0.00981	0.00656
Karnataka	0.00207	0.02601	0.10692	0.07726	0.47526	0.30271	0.00615	0.0036
Kerala	NA	0.00611	0.06222	0.26569	0.37103	0.23256	0.02282	0.03957
Maharashtra	0.00002	0.01285	0.12824	0.08385	0.42823	0.33213	0.00771	0.00698
MP	0.00025	0.0151	0.10203	0.20717	0.36747	0.26364	0.01705	0.02728
Odisha	0.00305	0.03621	0.09651	0.13601	0.37251	0.32631	0.01257	0.01683
Punjab	0.00044	0.00866	0.1057	0.05595	0.47203	0.33701	0.0024	0.01781
Rajasthan	0.00154	0.04022	0.17572	0.06438	0.34427	0.35639	0.00609	0.01138
Tamil Nadu	0.00439	0.01647	0.06654	0.10469	0.43717	0.303	0.00633	0.0614
Telangana	0.00362	0.0234	0.0919	0.0561	0.40913	0.38972	0.00532	0.0208
Uttar Pradesh	0.00281	0.05815	0.27087	0.16654	0.25222	0.2051	0.02995	0.01438
Uttarakhand	NA	0.0065	0.13165	0.06925	0.33917	0.44181	0.00551	0.00612
West Bengal	0.00099	0.03949	0.07829	0.24408	0.42178	0.17531	0.0202	0.01985

Table 5: Income Share of Households Classified According Age Structure

(A). 2014

Age Structure	Children - dominant	Other households of the Young	Youngsters - dominant	Others households of Grown-ups	Grown-up - dominant	Balanced households with no Seniors	Balanced households with Seniors	Seniors - dominant
UTs	0.00558	0.04218	0.06491	0.20495	0.35343	0.269	0.02198	0.03798
North East	0.00833	0.06823	0.09294	0.24465	0.35876	0.17387	0.0389	0.01433
AP	0.01023	0.07303	0.10125	0.16612	0.3316	0.2804	0.02483	0.01254
Bihar	0.02943	0.16217	0.17352	0.12885	0.25604	0.21521	0.02605	0.00874
Chhattisgarh	0.01381	0.13025	0.18133	0.15037	0.25126	0.22233	0.04311	0.00753
Delhi	0.00442	0.09277	0.13388	0.30954	0.27297	0.14455	0.03211	0.00976
Goa	0.00774	0.04331	0.09277	0.22312	0.3992	0.19256	0.03003	0.01126
Gujarat	0.01257	0.11195	0.14456	0.1514	0.31859	0.22676	0.02602	0.00815
Haryana	0.00845	0.09234	0.11057	0.227	0.3025	0.21087	0.02923	0.01905
HP	0.00673	0.05397	0.08546	0.23304	0.33468	0.25099	0.02034	0.01479
J&K	0.00569	0.04979	0.11765	0.23665	0.39501	0.15619	0.0318	0.00722
Jharkhand	0.01027	0.11442	0.17308	0.11219	0.28559	0.27022	0.02869	0.00554
Karnataka	0.00543	0.07185	0.10243	0.24084	0.34658	0.18662	0.0365	0.00976
Kerala	0.00423	0.05597	0.06045	0.23788	0.36365	0.23007	0.02971	0.01803
Maharashtra	0.00858	0.096	0.1521	0.12294	0.35713	0.23472	0.02145	0.00709
MP	0.00657	0.08639	0.1123	0.21598	0.32391	0.21412	0.03115	0.00957
Odisha	0.00589	0.05267	0.09776	0.17546	0.39547	0.24711	0.01481	0.01082
Punjab	0.00548	0.04422	0.09574	0.2185	0.33138	0.25638	0.02026	0.02804
Rajasthan	0.01211	0.12487	0.17667	0.16501	0.26556	0.21372	0.02929	0.01277
Tamil Nadu	0.00652	0.0512	0.08118	0.24668	0.34345	0.22353	0.02789	0.01955
Telangana	0.00924	0.07813	0.12564	0.16213	0.32382	0.25421	0.0293	0.01753
Uttar Pradesh	0.01972	0.14748	0.22755	0.14454	0.23618	0.1805	0.0331	0.01093
Uttarakhand	0.01487	0.10374	0.14901	0.17645	0.27526	0.2318	0.02973	0.01914
West Bengal	0.00461	0.09637	0.07487	0.25665	0.37042	0.14884	0.02886	0.01937

(B). 2021

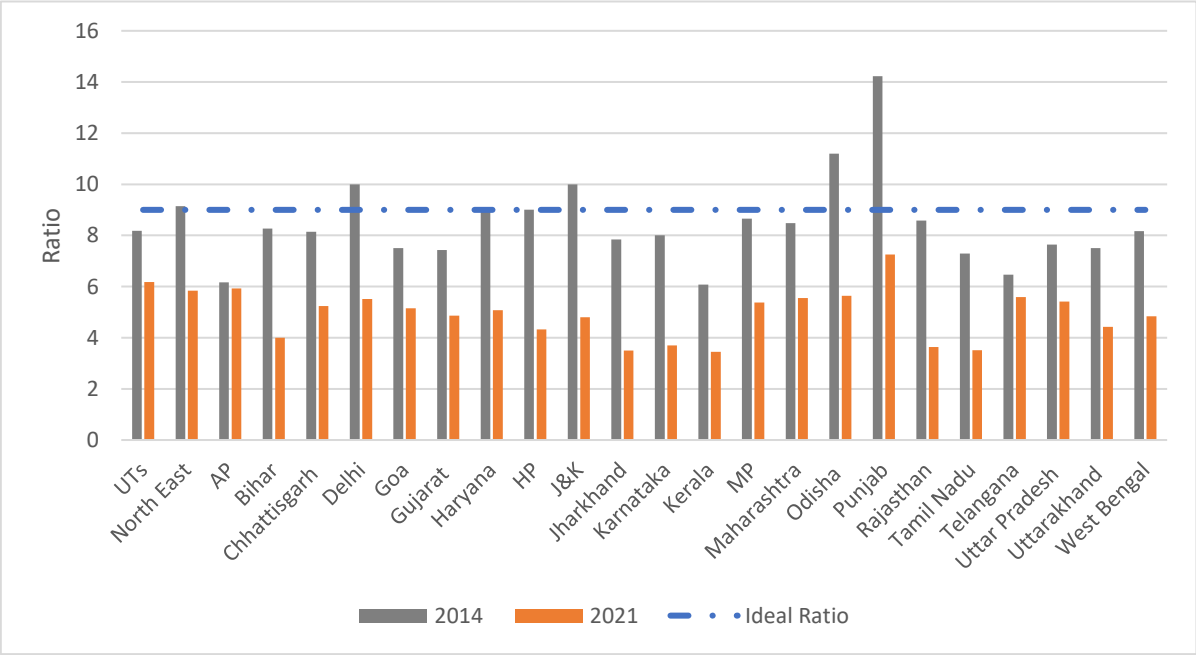
Age Structure	Children - dominant	Other households of the Young	Youngsters - dominant	Others households of Grown-ups	Grown-up - dominant	Balanced households with no Seniors	Balanced households with Seniors	Seniors - dominant
UTs	0.00016	0.01108	0.05584	0.07555	0.5381	0.30668	0.00107	0.01154
North East	0.01663	0.1055	0.12762	0.10401	0.52063	0.1001	0.01812	0.00739
AP	0.00118	0.00953	0.04388	0.10968	0.42573	0.38225	0.00703	0.02072
Bihar	0.00213	0.05089	0.30333	0.0936	0.27188	0.25333	0.01623	0.00861
Chhattisgarh	0.00173	0.03212	0.17136	0.09034	0.4033	0.2757	0.00936	0.01608
Delhi	0.00025	0.03005	0.10348	0.29903	0.38263	0.15551	0.01928	0.00978
Goa	0.00391	0.00529	0.07465	0.10178	0.50505	0.25346	0.01431	0.04155
Gujarat	0.00298	0.06879	0.16003	0.13758	0.34912	0.24509	0.02567	0.01075
Haryana	0.00058	0.0146	0.08374	0.20699	0.39437	0.23045	0.02264	0.04664
HP	NA	0.00974	0.05533	0.18968	0.43568	0.2342	0.00423	0.07114
J&K	NA	0.01241	0.23565	0.12185	0.28558	0.30853	0.01062	0.02537
Jharkhand	0.00326	0.0274	0.1199	0.10869	0.41186	0.31224	0.00936	0.00728
Karnataka	0.00213	0.02598	0.10213	0.07629	0.48747	0.29573	0.00657	0.00369
Kerala	NA	0.00523	0.05532	0.26408	0.40022	0.21151	0.02195	0.04168
Maharashtra	0	0.01126	0.11404	0.07982	0.46519	0.31547	0.0078	0.00642
MP	0.00018	0.01359	0.09238	0.20633	0.39907	0.25084	0.01436	0.02326
Odisha	0.00239	0.03094	0.08642	0.13879	0.39758	0.31473	0.01179	0.01736
Punjab	0.00045	0.00777	0.08716	0.07142	0.50975	0.29947	0.00213	0.02184
Rajasthan	0.00143	0.04155	0.16379	0.06846	0.35935	0.34788	0.00642	0.01113
Tamil Nadu	0.00407	0.01537	0.06312	0.09939	0.46054	0.29024	0.00599	0.06128
Telangana	0.00226	0.02502	0.07768	0.05924	0.44621	0.36748	0.00514	0.01697
Uttar Pradesh	0.00209	0.05612	0.24892	0.17188	0.28282	0.19519	0.02794	0.01504
Uttarakhand	NA	0.00666	0.12495	0.06957	0.34903	0.43907	0.00475	0.00597
West Bengal	0.00089	0.03644	0.07301	0.23671	0.45219	0.16152	0.01915	0.02011

Table 7: Lerman - Yitzhaki Decomposition of Income Inequality according to Household Age Structure

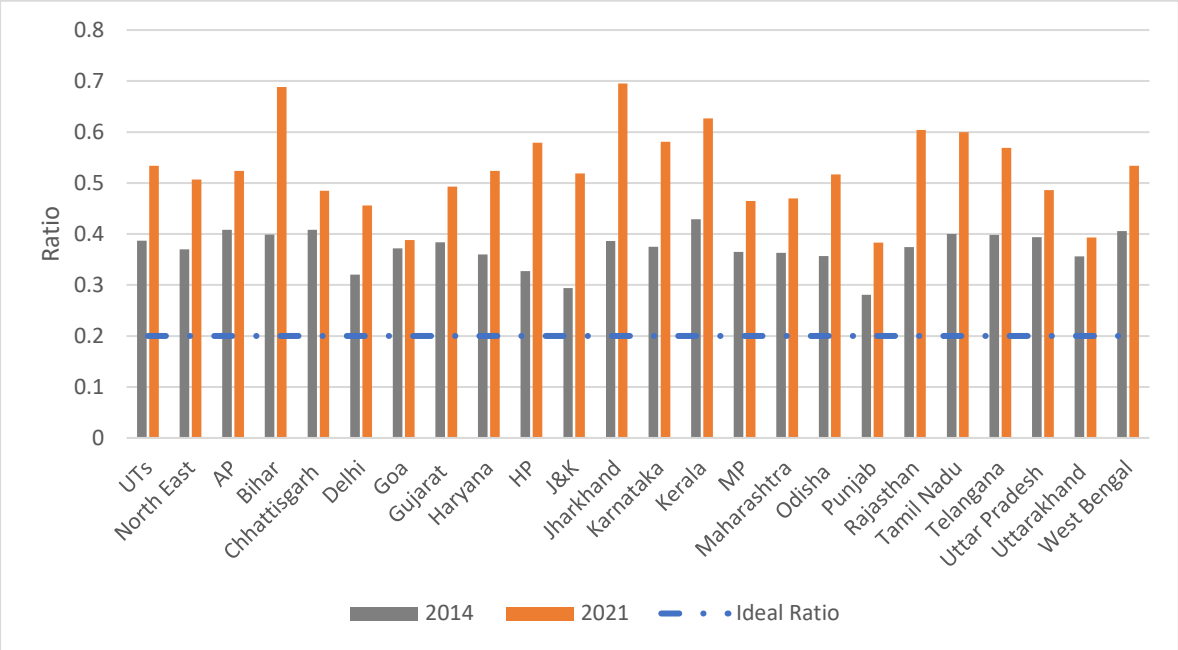
Source	Si	Gi	Ri	Share	Marginal effect
Children- dominant	0.0057	0.6207	0.7364	0.0055	-0.02
OH Young	0.0688	0.5915	0.8531	0.0728	0.41
Youngster-Dominant	0.1418	0.5725	0.9021	0.1538	1.2
OH Grown-ups	0.1724	0.5117	0.889	0.1647	-0.78
Grown-up Dominant	0.3452	0.4657	0.9185	0.31	-3.52
Balanced HH (NS)	0.2241	0.4641	0.9073	0.1981	-2.6
Balanced HH (S)	0.0231	0.5466	0.8784	0.0233	0.02

Figure 9: State-wise Income Share Ratios According to Household Age Structure

(A). Share of Bottom 90% against the Top 10%



(B). Share of Top 50% against the Top 10%



(C) Share of Bottom 90% against the Top 50%