Who Belongs to the Middle Class? Identifying Them Using Monthly Family Income

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Abstract

Social class is a significant factor that influences an individual's health, education, and lifestyle, among other things. However, there is no standard income-based scale that can classify individuals into different social classes for comparability across studies. In this article, we outlined the method of using monthly family income to identify the middle class of a country and how to use it to define the lower and upper class by using a widely accepted definition of the middle class and implemented it to determine the threshold for middle class family using the monthly median income of a country. This method can be used by any country to classify the community as "lower class" (<75% of the median income), "middle class" (75-125% of the median income) and "upper class" (>125% of the median income). We also presented an example using data from Bangladesh. The results were then adjusted for inflation to provide a guideline for updating the income limits for any future year. The social class in 2023 based on the monthly household income was <12,900 BDT for lower class, 12,900 to 21,500 BDT for middle class and >21,500 BDT for upper class after inflation. This method of social class classification can be used for grouping study participants into comparable socioeconomic categories in the context of any country and can be updated easily in the future.

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Running Head: Method for middle class categorization.

Introduction

Social class reflects economic and social standing based on income, education and occupation[1]. One's class impacts health and well-being, as higher classes have more resources while lower classes face obstacles worsening health [2]. These obstacles include limited healthcare access, greater exposure, and financial/social stress. Classes are distinguished objectively by measures like income/education and also subjectively. However, complexity sometimes causes ambiguity due to lack of clarity [1]. Debate still exists on whether class is mainly economic or not.

Generally, classes are divided into upper, middle, and lower. The upper class is wealthy with high status. The lower class consists of hourly workers and long-term unemployed or welfare reliant. The middle class resides between, though composition varies across regions or countries. Overall, the middle class occupies the socioeconomic middle between upper and lower classes. There are different ways to define social class depending on the region. In Bangladesh, those considered middle class may be viewed as lower class in more developed nations.

Determining social class in any country is important for understanding social, economic, and political issues. Knowing the distribution of resources across classes provides insight into the socioeconomic landscape. This allows policymakers to identify disparities and develop targeted programs to meet the specific needs of vulnerable groups based on their social class. Social class can be determined subjectively based on perceptions or objectively using measurable criteria like occupation, education, and income. Most sociologists prefer the objective method of categorizing individuals according to where they stand in relation to these variables [3].

Determining social class is a complex task, as it is influenced by factors beyond just income, like education and cultural capital. Someone with a high income but limited education or cultural capital may belong to a lower class. While imperfect, income is often used as a proxy in large studies where other data is limited [4]. Income-based definitions can be absolute, using fixed Purchasing Power Parity (PPP)-adjusted income ranges applied globally, or relative, considering national income percentiles [5]. Absolute definitions using fixed daily income thresholds, like $2-20 per day in 2005 PPP dollar[6], do not account for variations in costs of living between countries. Similar arguments can be made against the method used in other studies where the threshold were $2-4 or $6-10 per day [7], defining the global middle class as $10-100 per day based on national accounts [6] and those above $2-13 per day in 2005 PPP prices as middle class[8]. While practical, absolute definitions do not fully capture country-level economic differences. Relative boundaries provide a more accurate picture within a country by making lower and upper income limits country-specific [5], such as between the 2nd-4th consumption quintiles [9].

Why use social class stratification?

In biomedical studies, social class is often an important factor to consider when making comparisons. There are two main approaches used to define social class. The first involves calculating a wealth index, which acts as a proxy measure of household socioeconomic status [10]. The wealth index is a composite, multidimensional indicator that incorporates information on asset ownership. It allows data to be disaggregated by wealth quintiles, helping to uncover issues disproportionately affecting certain population segments in terms of access to services and health outcomes. However, constructing the wealth index requires detailed data on various assets, which can deter respondents due to the time involved. The second approach considers social class stratification based on the middle class. This method serves as the benchmark for defining the upper and lower classes. As it needs relatively little information, this offers a practical tool for research purposes. Defining social class in terms of the middle class allows construction of social class categories using limited data collection. Both methods have merits, but the latter may be preferable when time or data constraints are a concern for studies involving social class as a factor. It provides a feasible option using a minimum of explanatory variables.

Definition of the middle class

One definition of the middle class that has been applied in research is based on a percentage range around the national median income level. Specifically, a study conducted in the United States defined the middle class as those with incomes falling between 75-125% of the national median income [11]. Although this definition was developed and tested within a developed country context, another study from 2010 also applied this same definition to developing nations when attempting to characterize their middle class populations [12]. Under this definition, the middle class encompasses those citizens with incomes reasonably close to, but not at the very top or bottom of, the national income distribution levels.

Other approaches to socio-economic stratification

Asset-based measures of socio-economic stratification (i.e. wealth index) provide an alternative to income or consumption data. They have arisen from demographic health surveys which often lack income or consumption data but collect ownership information on durable assets, housing quality, and access to services.[13] Researchers found these items indicate living standards and can construct wealth indices for measuring relative social strata within a population. Assets indices are valuable when income/consumption data is unavailable and have been widely used in public health research.[13] However, both the wealth index and stratification using income data have their pros and cons which are presented in table 1.

Table 1. Pros and cons of stratification using income and the wealth index

Stratification using income data	Wealth index		
Pros: - Relatively straightforward to calculate. - Allows for comparisons over time. - Assets included in wealth index construction does not always reflect the relative social standing (i.e. electricity was once an important asset which is now commonplace).	**Pros:** - Captures data regarding assets. - Provides a long-term picture of long-financial condition. - Less prone to short-term fluctuations. - Less frequent periodic update is needed.		
Cons: - Does not account for savings, assets or debts and people may under-report income. - Frequent update is required. - Income alone may not accurately reflect standard of living.	**Cons:** - Difficult to define and measure wealth comprehensively. - Requires data on value of assets, savings. - Calculations can be complex depending on methodology - Requires expert and trained interviewers. - People may under-report assets.		

Steps for determining the social class and adjusting for inflation

Based on the definition used by Thurow as well as Birdsall, the median household income is the key for identifying the middle class [11][12]. When a country publishes their household income and expenditure survey, the data can be used to determine the median household income. It can be a single figure, or it may be reported as a range. As the social class is region-dependent, there is no merit to converting the range of income into US dollars or international dollars, except for when the threshold itself is of concern.

Adjustment for inflation

To account for inflation, it is necessary to consider the Consumer Price Index (CPI) which tracks the cost of goods or services over time to measure inflation (Box 1). Another approach can be using the GDP implicit price deflators [14].

Box 1. Using CPI for inflation adjustment

To adjust for inflation, the following formula can be used.

$$\text{Adjusted amount} = \frac{\text{CPI from recent period}}{\text{CPI from earlier period}} \times \text{Amount for earlier period}$$

For example, the CPI of Bangladesh was 219.86 and 339.07 in 2016 and 2023 respectively[15]. So, after adjustment Bangladeshi Taka (BDT) 100 in 2016 would be,

$$\text{Adjusted amount in 2023} = \frac{339.07}{219.86} \times 100 = \text{BDT } 154.22$$

Example of middle-class identification by National level CPI

The following is an example for identifying the middle class using the Household Income & Expenditure Survey (HIES, 2016) conducted by the Bangladesh Bureau of Statistics (BBS) [16]. The data used is from publicly available report. Table 2 presents a list of monthly household income groups of equal sizes by using and modifying the report of HIES (2016) [16] (Table 1).

Table 2. Distribution of households by monthly household income groups (modified)

Monthly household income groups (in BDT)	Number of households	Cumulative frequency
0-4999	6632803	6632803
5000-9999	11037940	17670743
10000-14999	8503955	26174698
15000-19999	5009170	31183868
20000-24999	2932004	34115872
25000-29999	1711329	35827201
30000-34999	988110	36815311
≥35000	2514115	39329426
Total	**39329426**	

BDT: Bangladesh Taka.

As the current report contains grouped data, the formula for median calculation for group data is used. The formula is:

$$\text{Median} = L + \left(\frac{\frac{n}{2} - cf}{f} \right) \times h$$

Here,

- n = no. of observations= 39329426
- $\frac{n}{2} = \frac{39329426}{2}$ = 19664713. So the median class is 10000-14999 (As the 19664713th observation lies here).
- L = lower limit of the median group = 10000
- cf = the cumulative frequency of the class preceding the median group = 17670743
- f = frequency of median group = 26174698
- h = group size (assuming groups are of equal size) = 4999

So, median $= L + \left(\dfrac{\frac{n}{2} - cf}{f} \right) \times h$

$$= 10000 + \left(\dfrac{19664713 - 17670743}{8503955} \right) \times 4999 = 11149.77$$

So, the median for monthly household income is BDT 11,149.77 as per HIES (2016).

After adjustment for 2023 the median household income is:

$$\dfrac{331.35}{219.86} \times 11{,}149.77 = \text{ BDT } 17{,}170.65$$

According to the definition, the lower limit for the middle class is:

= 75% of BDT 17,170.65 = BDT 12,877.99 = (rounded as) BDT 12,900.

Similarly, the upper limit for the middle class is:

= 125% of BDT 17,170.65 = BDT 21,463.31 = (rounded as) BDT 21,500.

Additionally, general index CPI for urban and rural areas can be used to classify the middle class accordingly for any year for urban and rural population. For March 2023, in Bangladesh the general index for urban and rural areas were 340.16 and 338.48 respectively.[17] Using the adjustment formula, the median household income can be calculated as:

- Urban median family income: 340.16/219.86 × 11,149.77 = BDT 17,250.55
- Rural median family income: 338.48/219.86 × 11,149.77 = BDT 17,165.35

Finally, the social class stratification of Bangladesh household as per national, urban and rural median household income in 2023 shown in Table 3 after rounding.

Table 3. The distribution of social class based on monthly household income

Social class	Monthly household income (in BDT)		
	National level	Urban level	Rural Level
Lower class	<12,900	<12,950	<12875
Middle class	12,900-21,500	12,950-21,600	12,875-21,450
Upper class	>21,500	>21,600	>21,450

Updating for future years

Using the above-mentioned procedure, we can update the threshold for any future years, considering the inflation adjustment formula and General index CPI for that year. However, as CPI is constantly changing, the above-mentioned thresholds should be updated frequently. Additionally, if any recent survey becomes available, the median household income from that survey should be used.

Conclusion

Social class reflects economic and social standing, which needs to be regularly reviewed based on changing income data to ensure accurate classifications due to a change in the CPI. This study classified Bangladeshi social classes using updated income data, which can help policymakers and researchers understand outcomes across classes. The current study considers families earning less than BDT 12,900 as lower class, BDT 12,900-21,500 as middle class and more than BDT 21,500 as upper class in 2023 at the national level. Similarly, if the population can be identified as an urban resident or rural resident, modified cut-off marks can be used. Other studies have considered 10000-20000 as middle class, albeit empirically [18]. Following this method, using any available national income data, the social class stratification threshold level for any county for any year can be constructed and used in studies.

Statements and Declarations

Authors contribution

MFAF lead study conception, study design and data analysis. SSE lead manuscript drafting and data interpretation. MASK lead acquisition of data and took part in drafting the manuscript. All the authors critically revised the manuscript.

Declaration of use of AI

During manuscript preparation, the authors used ChatGPT (version 3.5) to improve the language and readability, since they are non-native English speakers. After utilizing the tool, the authors carefully reviewed and edited the content as needed, taking full responsibility for the manuscript's final content.

Data sharing

The current report used data from a publicly available report.

Ethical implication

The current report used data from a publicly available report. So, no ethical clearance was necessary.

Patient and Public Involvement

It was not appropriate or possible to involve patients or the public in the design, or conduct, or reporting, or dissemination plans of our research.

Preprint

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