

Analysis of household consumption expenditure: NSSO Consumer Expenditure Survey 2022-23

Residential energy demand forecast

- ▶ To create policy pathways towards net-zero emissions future in India, it is imperative to understand the residential energy demand and expenditure patterns of households.
- ▶ It will help us in satisfying future energy demand and address affordability concerns as well.
- ▶ However, direct measurement of household energy demand and income/expenditure levels is a tough task due to absence of credible source of unit-level database.
- ▶ Household Consumption Expenditure Survey (2022-23) dataset published by Ministry of Statistics and Programme Implementation (MoPSI) provides us an alternative way of measuring household energy demand

Household Consumption Expenditure Survey (2022-23)

- ▶ The Household Consumption Expenditure Survey (HCES) is designed to collect information on consumption of goods and services by the households.
- ▶ The survey also collects some auxiliary information on household characteristics and demographic particulars of the households.
- ▶ Information collected in HCES is useful for understanding the consumption and expenditure pattern, standard of living and well-being of the households.

Methodology

- ▶ We pre-process and clean the dataset as per the methodology prescribed in https://github.com/s7u512/NSSO_HCES_2022-23/tree/main
- ▶ Afterwards we select randomly the state of Karnataka to analyse the monthly per capital expenditure pattern of households in both urban and rural areas based on their expenditure quintiles¹.
- ▶ We use the weighted values for processing the complex survey data.

¹Households were divided into quintiles based on their Monthly Per Capita Expenditure (MPCE), ensuring each quintile contains an equal proportion of the weighted population. This approach accounts for varying household sizes and weights, leading to different numbers of unweighted households and populations across quintiles.

Variables of Interest (sent by Prayas)

The variables of interest have been categorised into 3 major blocks

- ▶ Characteristics of the dwelling unit of households (building materials used, source of energy for cooking and lighting, source of drinking water)
- ▶ Consumer goods ownership - Whether households possessed TV, mobiles, PC, Laptop, bikes, cars, trucks, washing machine, AC, cooler, etc.
- ▶ Appliances and transport equipment purchases - Number of first hand and second hand purchases, cost of purchases, cost of repair and maintenance, etc for goods identified above.

Datasets

- ▶ Master_Data.R in SRC/ provides the code for creating the requisite tables for each of the 3 blocks that is stored in DATA/. The link for github repo containing datasets and source code is https://github.com/shaan-sd/NET_ZERO_INDIA_NSSO
- ▶ Problem identified - There are exact number of rows as many as households in first 2 tables, however in 3rd table there are multiple rows for each household based on goods owned and its details. That's why kept these tables separately.
- ▶ If details of each good is required, then the table remains as it is, however if we only need sub total for appliances and transport or the number of goods owned by each household, the table can be minimized to have same number of rows as the number of households.

Karnataka

MPCE Analysis - Rural Karnataka

quintile	min_MPCE	avg_MPCE	max_MPCE
1	1156.08	2446.75	2927.38
2	2927.58	3238.08	3562.66
3	3562.94	3955.48	4358.83
4	4359.82	4880.44	5540.07
5	5540.70	7464.97	66635.26

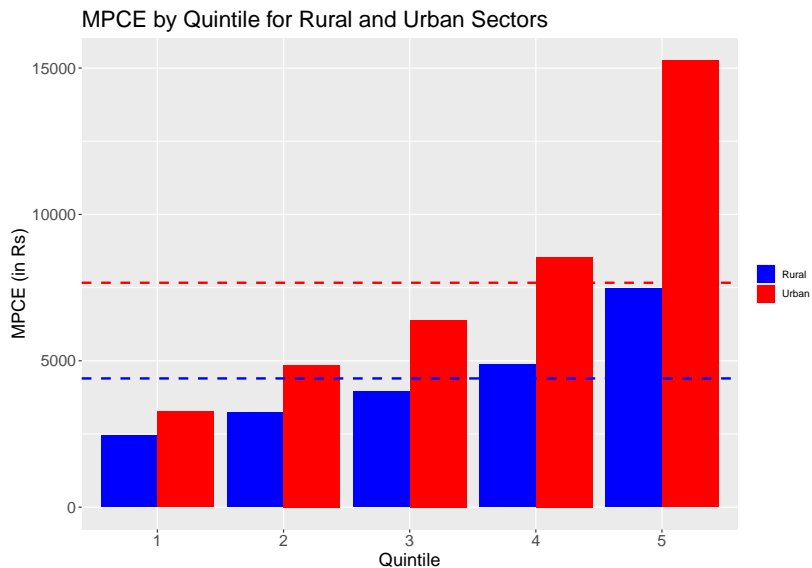
quintile	avg_HH_size	total_population	weighted_households
1	5.77	7492274.86	1297643.88
2	4.80	7491259.94	1562145.21
3	4.18	7497655.26	1793080.35
4	3.86	7494449.90	1939621.58
5	3.22	7496222.79	2330576.20

MPCE Analysis - Urban Karnataka

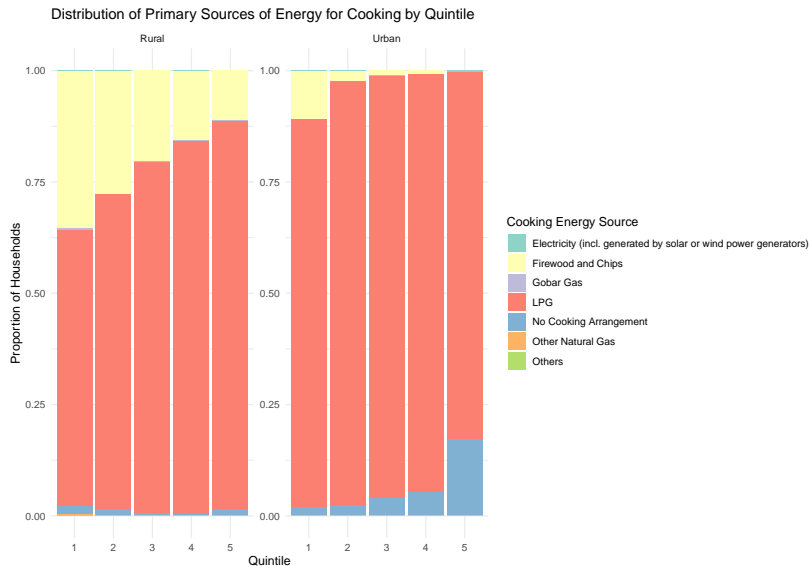
quintile	min_MPCE	avg_MPCE	max_MPCE
1	1429.27	3272.40	4141.74
2	4146.61	4851.21	5571.12
3	5572.55	6389.92	7241.09
4	7242.91	8551.26	10143.33
5	10146.35	15253.80	110937.66

quintile	avg_HH_size	total_population	weighted_households
1	5.25	4248297.55	809080.53
2	4.23	4251698.75	1004387.90
3	3.64	4248068.46	1168216.22
4	3.20	4265401.29	1333896.06
5	2.26	4253545.98	1880897.38

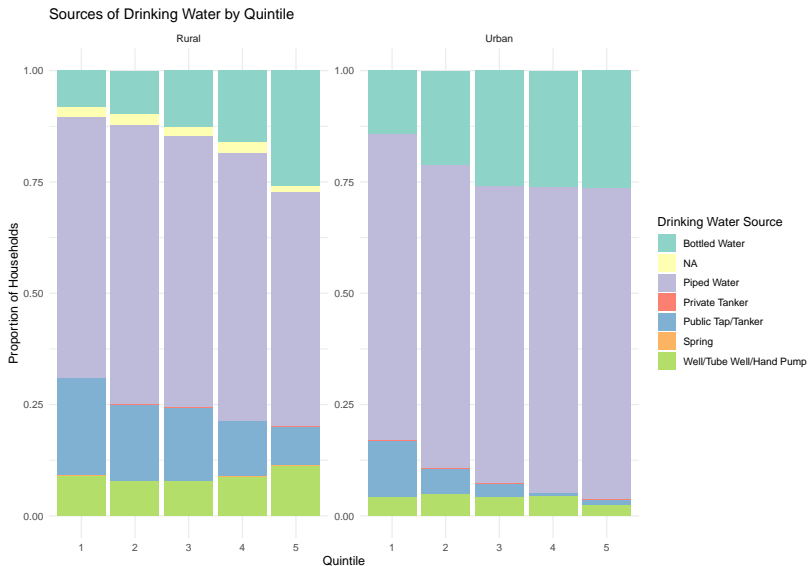
MPCE Analysis



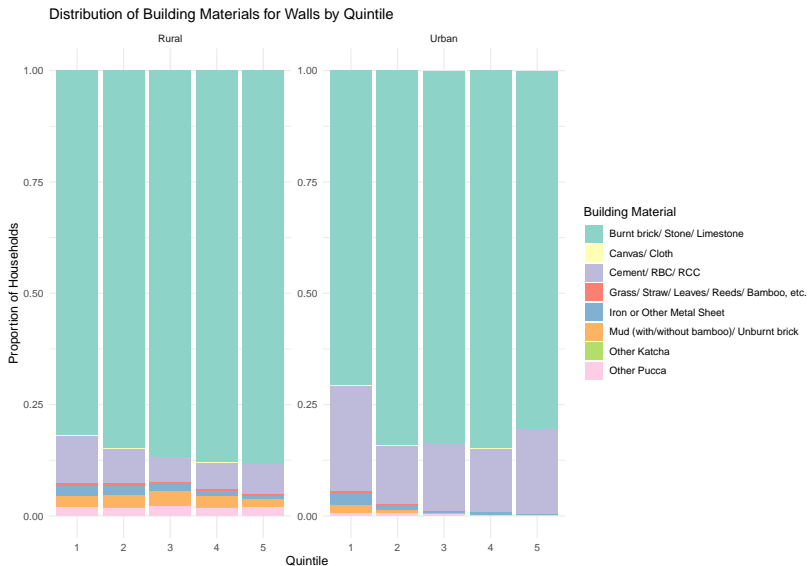
Sources of energy for cooking purposes



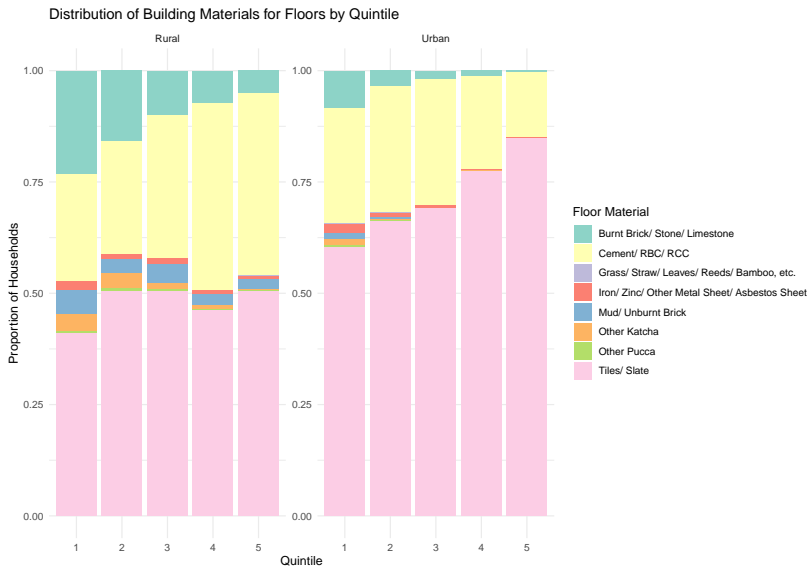
Sources of drinking water



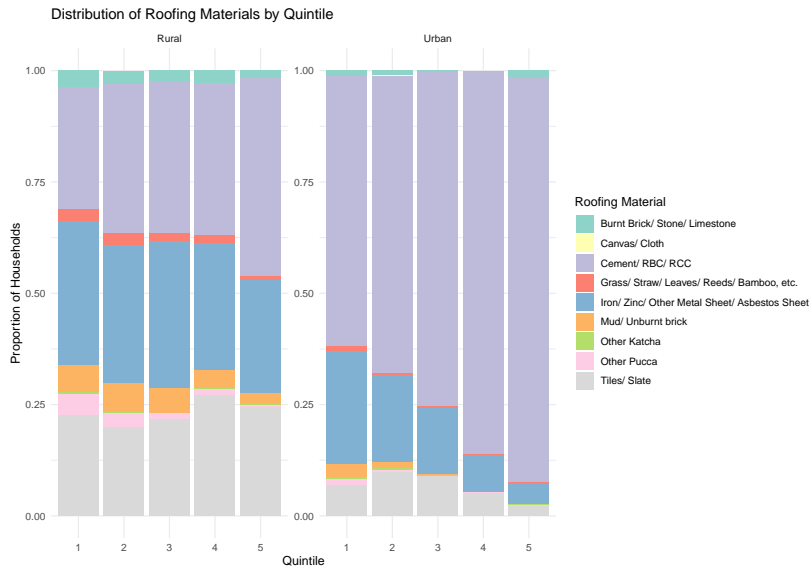
Building material for walls



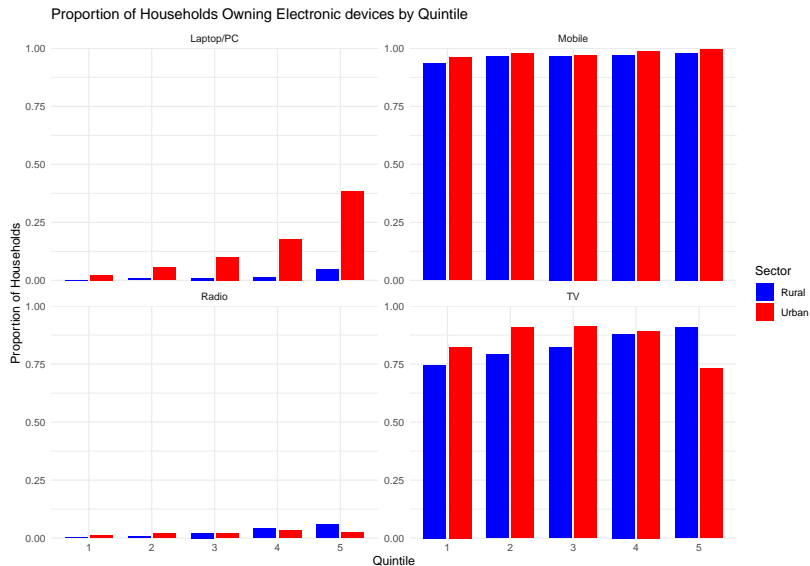
Building material for floor



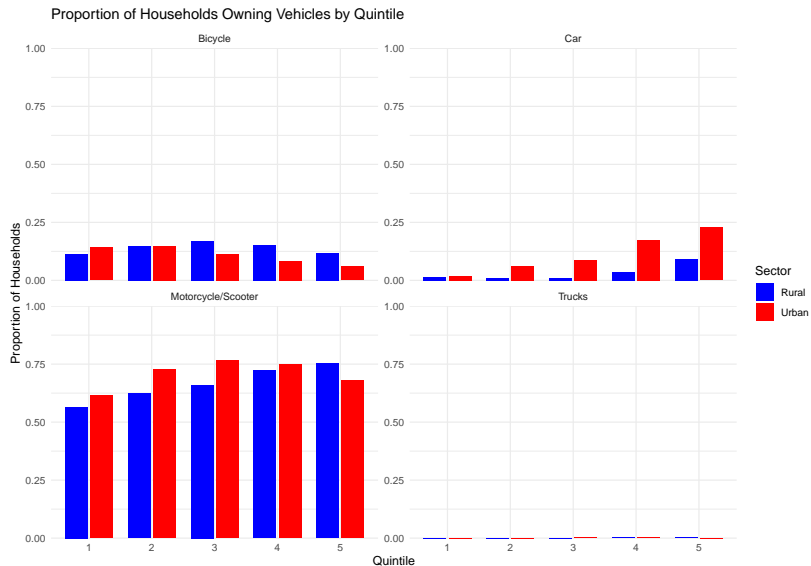
Building material for roof



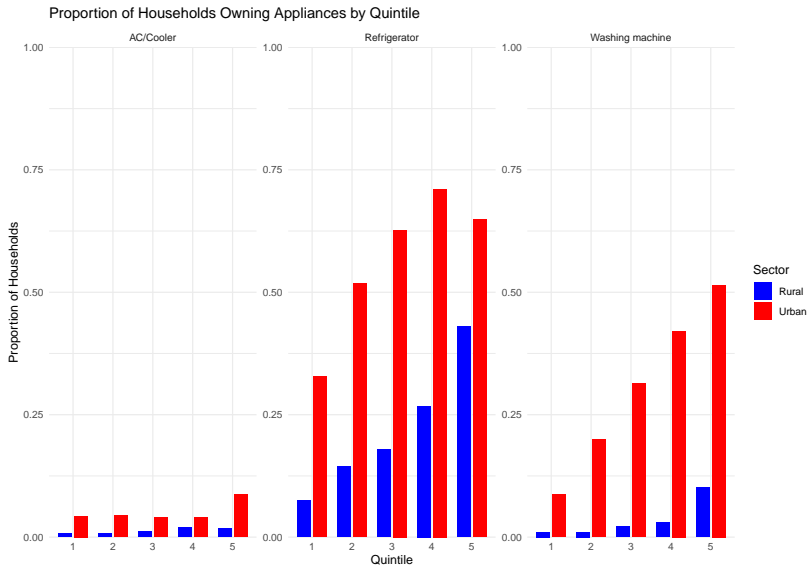
Electronic devices owned



Vehicle ownership

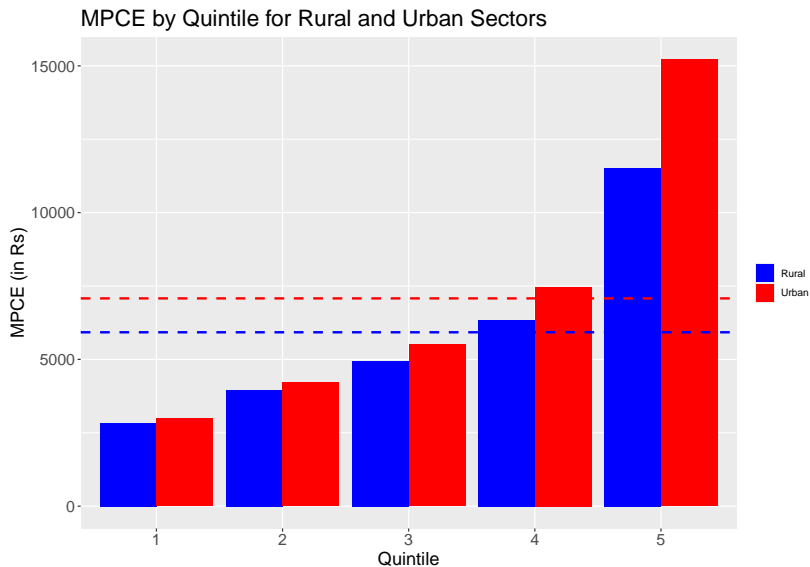


Electric appliances ownership

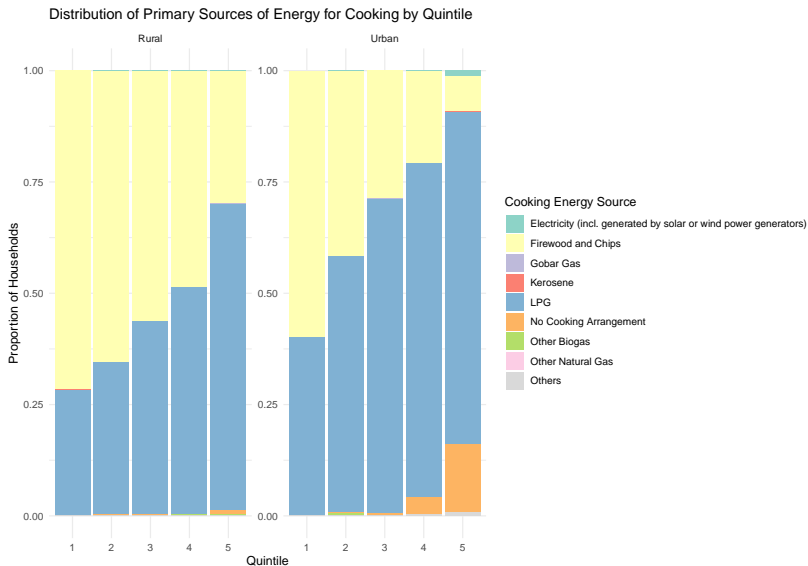


Kerala

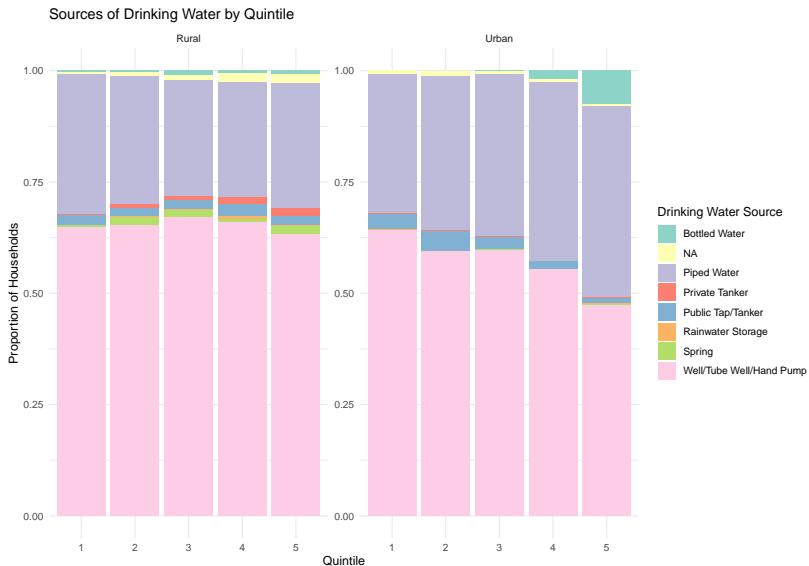
MPCE Analysis



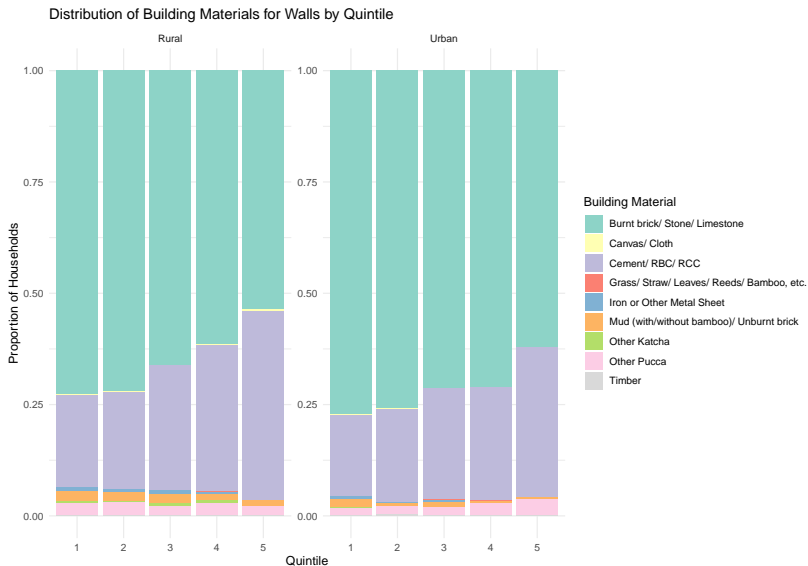
Sources of energy for cooking purposes



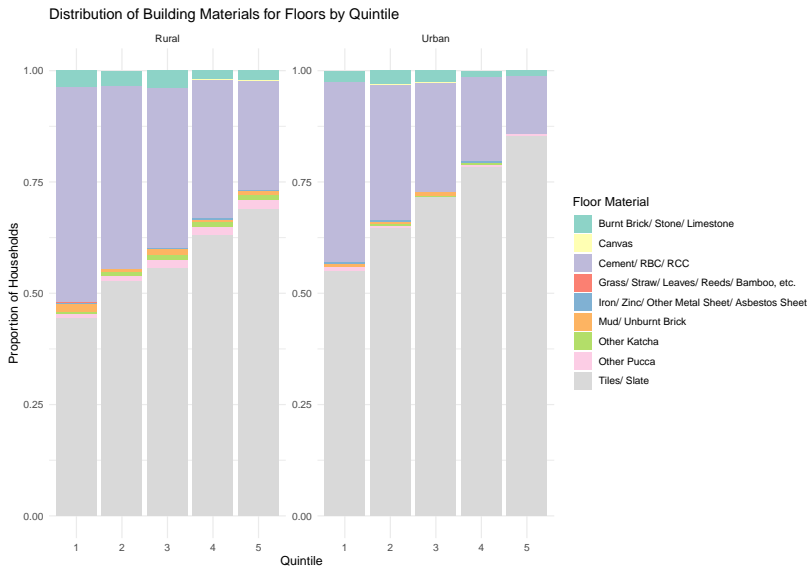
Sources of drinking water



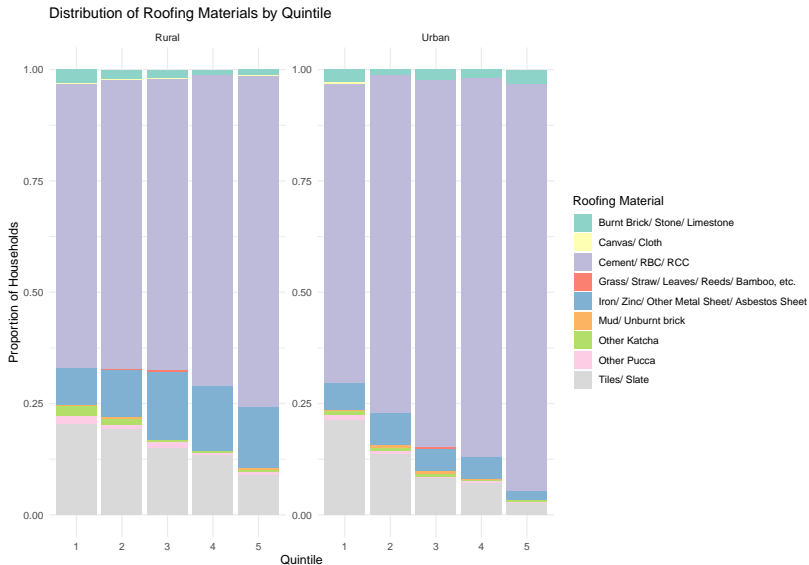
Building material for walls



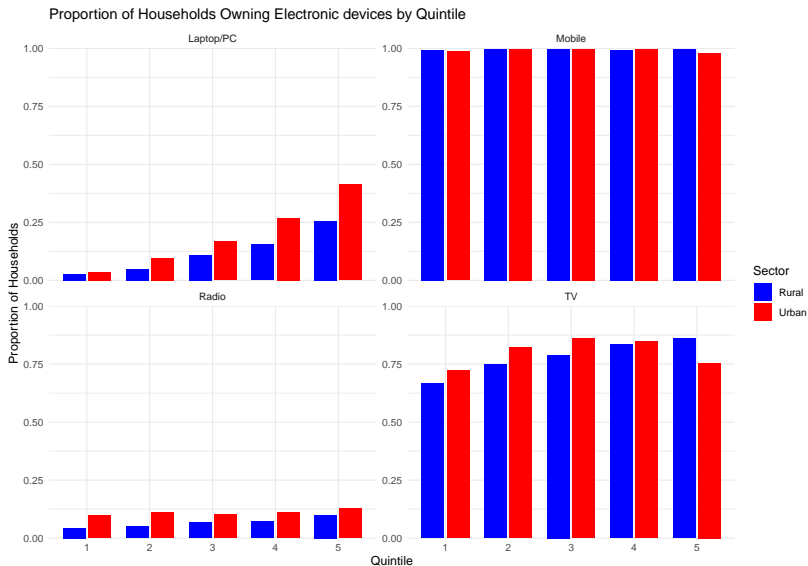
Building material for floor



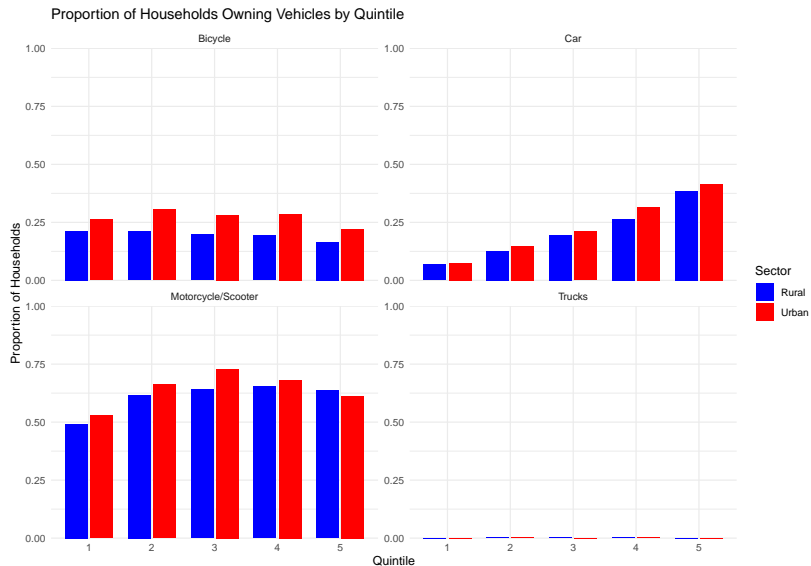
Building material for roof



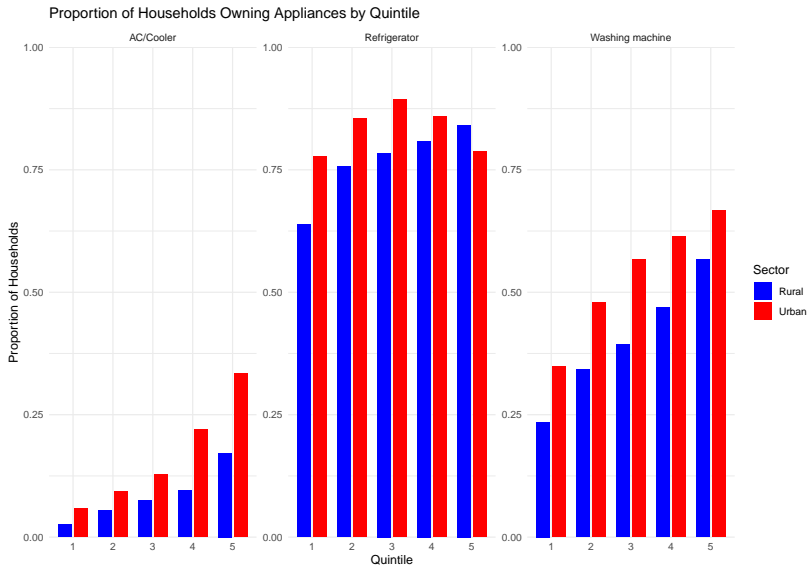
Electronic devices owned



Vehicle ownership

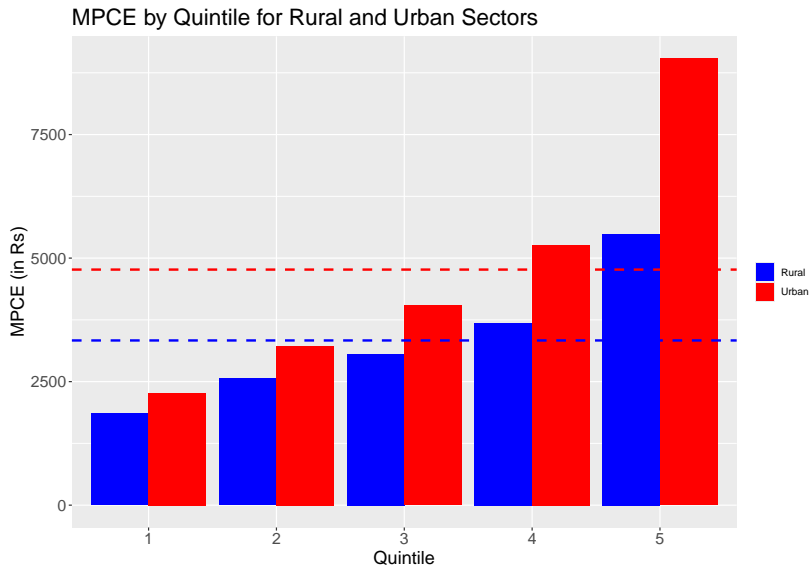


Electric appliances ownership

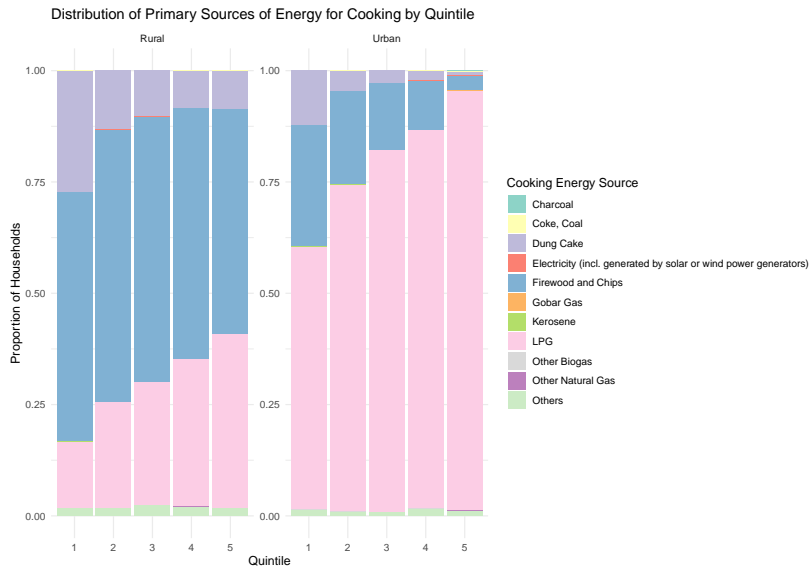


Bihar

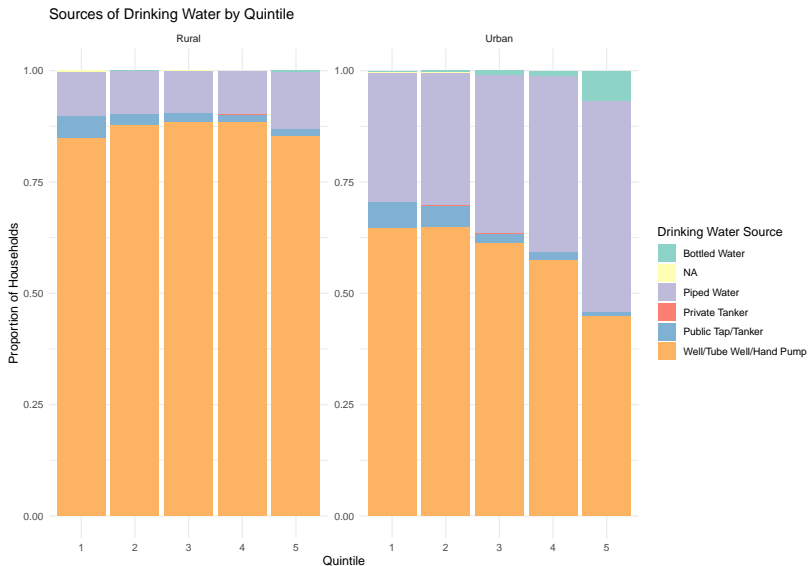
MPCE Analysis



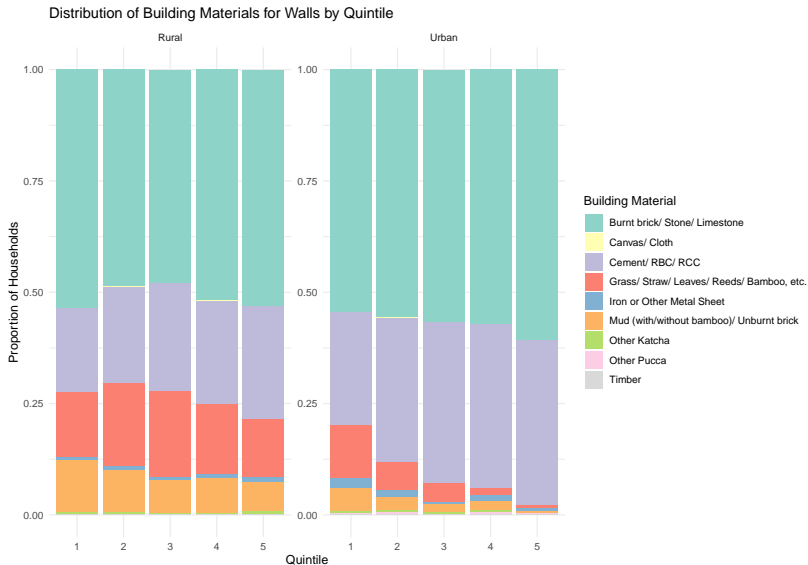
Sources of energy for cooking purposes



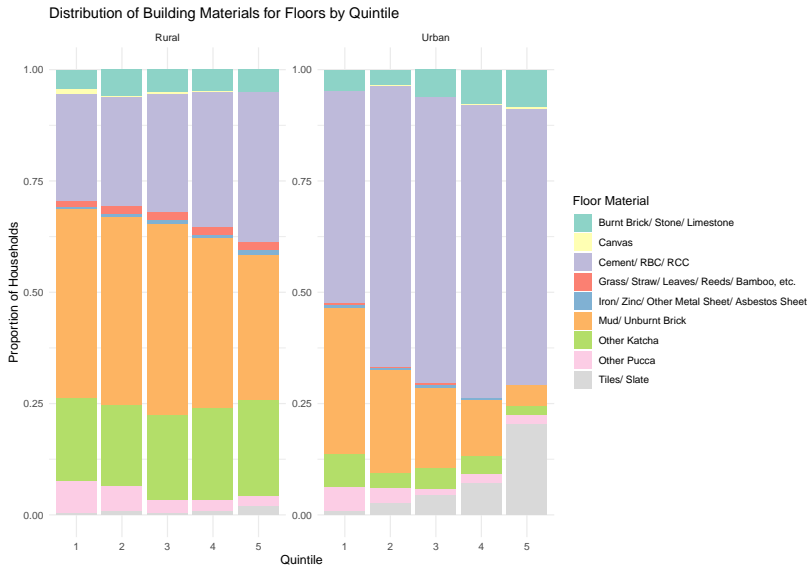
Sources of drinking water



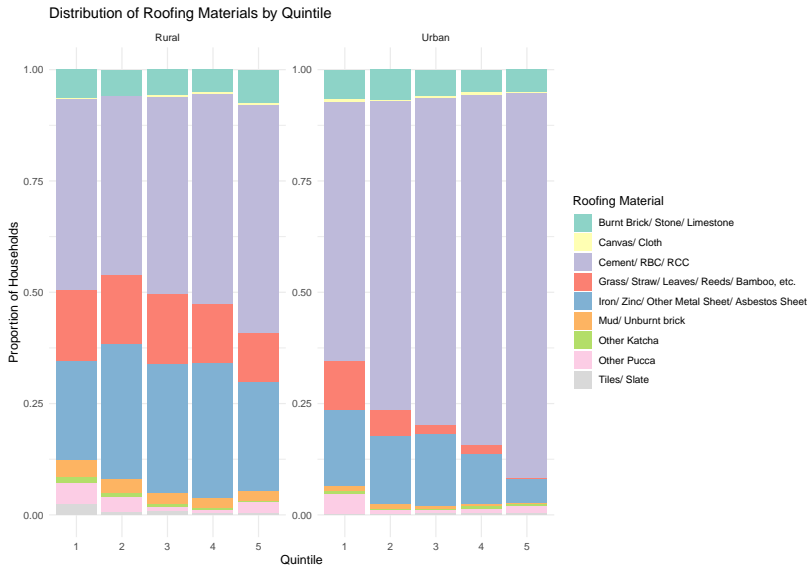
Building material for walls



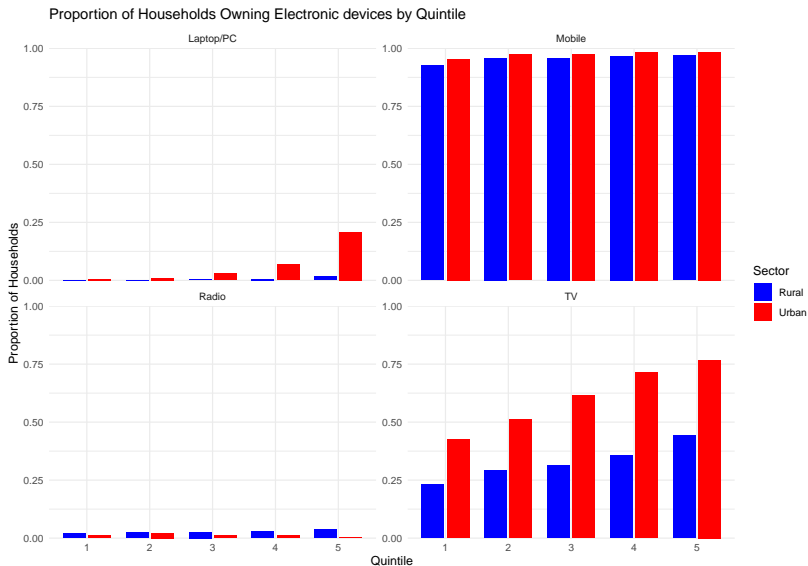
Building material for floor



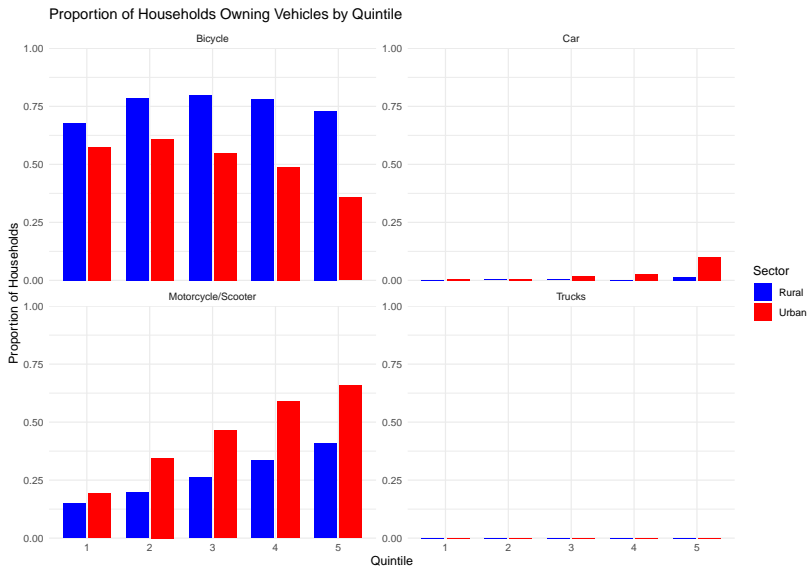
Building material for roof



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