MESSAGE Access Brazil descriptive analysis

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1. Household Sector (rural or urban)

Despite Brazil been a highly urbanized country, this is not geographic homogeneous. The national urbanization average is 84% but the North and Northeast regions still have almost 30% of its population living in rural areas, which represents 10% more than the country average and only 8.3% of Southeast population lives in rural areas (Table 1). Urbanization rate can affect the fuels availability. In urban areas the infrastructure of modern fuel distribution is well established and firewood collecting is limited.

Table 1: Urban share by Region

Region	Urban Household
Southeast	91.7%
Midwest	87.3%
South	84.8%
Northeast	73.9%
North	73.8%
Brazil	84.4%

2. Household income and weighting factor

- a. Urban households tend to earn twice as rural households both on average and by income quintale;
- b. Northeast has the lowest income in almost all groups;
- c. Southeast the richest in almost all groups.

Table 2: Median income capita/day in $PPP 2010

Region	R1	R2	R3	R4	R5	U1	U2	U3	U4	U5
Midwest	2.31	4.33	7.14	11.27	23.28	4.32	8.60	13.72	22.66	53.99
North	2.26	4.25	7.17	11.19	21.95	3.91	8.31	13.65	22.76	50.39
Northeast	1.96	4.22	6.99	11.14	19.54	3.88	8.36	13.43	22.07	50.16
South	2.26	4.41	7.41	11.84	23.11	4.48	8.75	14.01	22.83	50.06
Southeast	2.35	4.41	7.11	11.52	22.18	4.55	8.70	14.02	23.07	53.12
Brazil	2.06	4.27	7.11	11.41	21.88	4.21	8.57	13.88	22.83	52.11

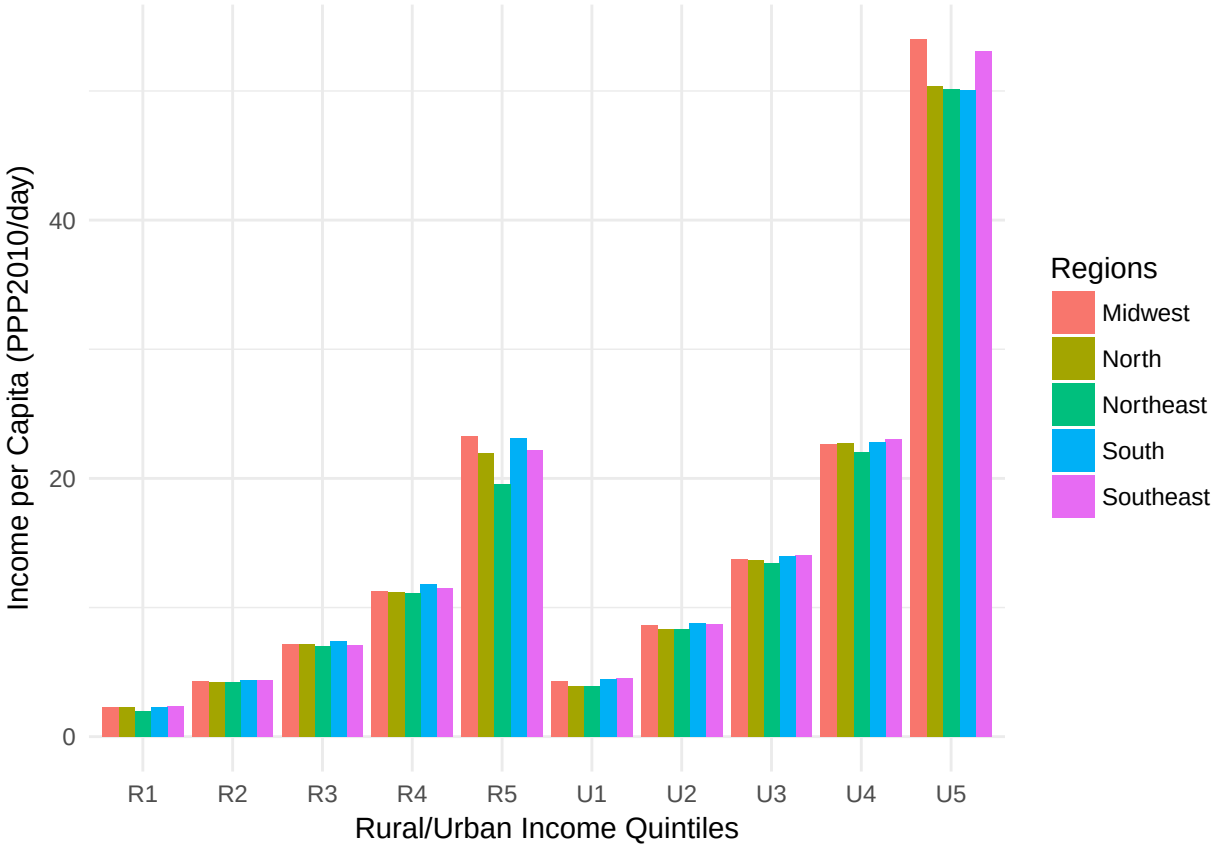


Table 3: Median Income per capita/day in $PPP 2010

Region	Rural	Urban
Midwest	3.60	4.70
North	1.61	2.75
Northeast	1.33	2.75
South	3.95	5.94
Southeast	3.32	6.15
Brazil	2.25	4.87

3. Number of people per household

3.1 Population by Region

Table 4: Population by Region

Region	Population	Share in Brazil
Southeast	80005167	42.0%
Northeast	53655438	28.2%
South	27624015	14.5%
North	15395472	8.1%
Midwest	13839206	7.3%

3.2 Household size

Table 5: Size of Household

Region	People per Household
North	3.91
Northeast	3.56
Midwest	3.16
Southeast	3.15
South	3.11
Brazil	3.30

- The poorest regions have families 12% larger than the national average.

4. Quantity of each fuel used for cooking

4.1 Quantity of each fuel consumed:

4.1.1 Number of observations with quantity cooking fuel different than zero

The small number of observations for Charcoal and Firewood consumption is not compatible with other official reports (Energy Balance) and the POF's information stove-type ownership. Given that is possible on possible approach is to estimate a fuel consumption based on the LPG physical data and stove-type ownership complying with the official data.

Table 6: Number of Observations - Cooking Fuel

fuel	n
Coal	42
Firewood	45
LPG	49839
Pipeline natural gas	506

4.1.2 Energy by income group

By stove type

Observations (without weight)

	Frequency	Percent	Valid Percent
Coal	3039	5.43	5.46
Electric	51	0.09	0.09
Gas	44090	78.77	79.28
Other	32	0.06	0.06
Wood	8401	15.01	15.11
NA's	357	0.64	NA
Total	55970	100.00	100.00

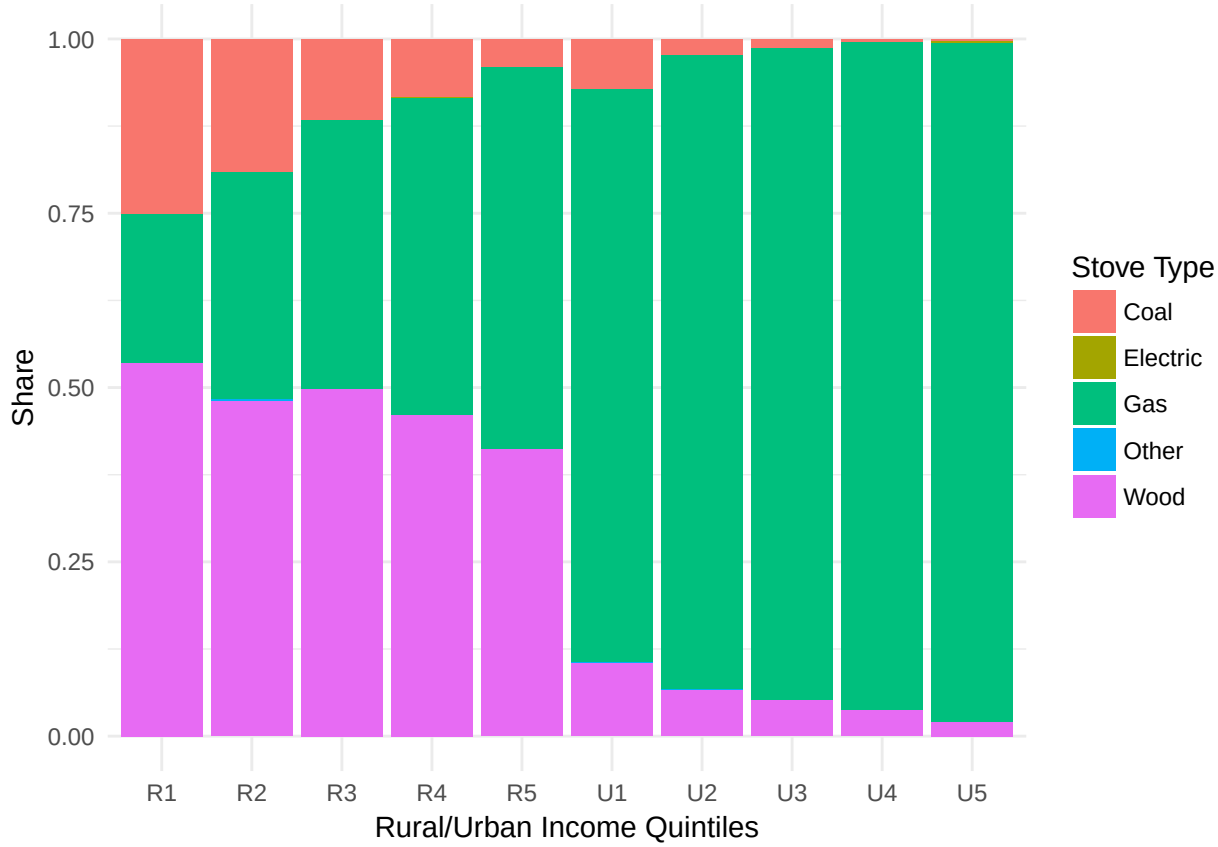
Sample (with weight)

	Frequency	Percent	Valid Percent
Coal	2273095.00	3.94	3.96
Electric	59192.83	0.10	0.10
Gas	48044966.42	83.28	83.68
Other	28298.46	0.05	0.05
Wood	7012440.55	12.16	12.21
NA's	273787.35	0.47	NA
Total	57691780.59	100.00	100.00

By income group

Table 9: Stove type by income group

stove_type	R1	R2	R3	R4	R5	U1	U2	U3	U4	U5
Coal	25.0%	19.0%	11.6%	8.3%	4.0%	7.0%	2.2%	1.2%	0.4%	0.2%
Electric	NA	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.3%
Gas	21.5%	32.6%	38.6%	45.5%	54.7%	82.2%	91.0%	93.5%	95.7%	97.5%
Other	NA	0.2%	NA	0.0%	NA	0.1%	0.1%	0.0%	0.0%	0.0%
Wood	53.5%	48.2%	49.8%	46.1%	41.2%	10.6%	6.7%	5.2%	3.8%	2.0%



By income region

Table 10: Stove type by region

stove_type	Midwest	North	Northeast	South	Southeast
Coal	3496.0166	327650.0004	1929623.519	2179.099	10146.362
Electric	6515.1961	924.2325	7711.454	35497.910	8544.036
Gas	3960659.9560	3055899.0035	10467353.593	6824286.534	23736767.331
Other	797.9101	NA	21629.943	2785.975	3084.629
Wood	372687.3926	511116.2333	2520617.934	2004546.244	1603472.743

Table 11: Stove type by region

stove_type	Midwest	North	Northeast	South	Southeast
Coal	0.1%	8.4%	12.9%	0.0%	0.0%
Electric	0.1%	0.0%	0.1%	0.4%	0.0%
Gas	91.2%	78.4%	70.0%	76.9%	93.6%
Other	0.0%	NA	0.1%	0.0%	0.0%
Wood	8.6%	13.1%	16.9%	22.6%	6.3%

Only Firewood

```
## Joining, by = "region2"
```

```
## Warning in full_join_impl(x, y, by$x, by$y, suffix$x, suffix$y): joining
## character vector and factor, coercing into character vector
```

5. Price of each fuel used for cooking

Table 12: Fuel price by rural and urban income per capita quintales

fuel	R1	R2	R3	R4	R5	U1	U2	U3	U4	U5
Coal	23.41	24.04	29.54	30.86	NA	25.42	25.03	29.08	NA	28.75
Firewood	25.72	25.72	25.72	25.72	25.72	25.72	25.72	25.72	NA	25.72
LPG	38.74	38.74	39.00	38.80	38.67	37.73	37.67	37.44	37.53	38.31
Pipeline natural gas	NA	NA	88.61	84.17	74.38	290.12	84.55	133.60	154.04	139.31

- a. Constant Firewood price (probably imputed)
- b. Little variations in LPG prices (regulated market)
- c. Strange oscillations in Pipeline gas prices (see U1)