



Meeting of the Group of Experts on National Accounts (GENA)

Distribution of household income, consumption, and savings
MEDIDCAH: the case of Mexico



April 25-27, 2023.

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Objectives

- Present the imputation methods applied to transactions where it is not convenient to use the microdata from the household survey (ENIGH) for distribution by a household group. On some occasions, there is no good micro-macro conceptual alignment, or the survey does not capture elements related to said transactions.
- The National Institute of Statistics and Geography (INEGI), in the framework of complementing the economic indicators available in the country, is participating in this initiative, presenting the experimental statistics on the **"Measurement of the Distribution of Available Income, Consumption, and Savings of Households (MEDIDCAH)"** developed up to the present.

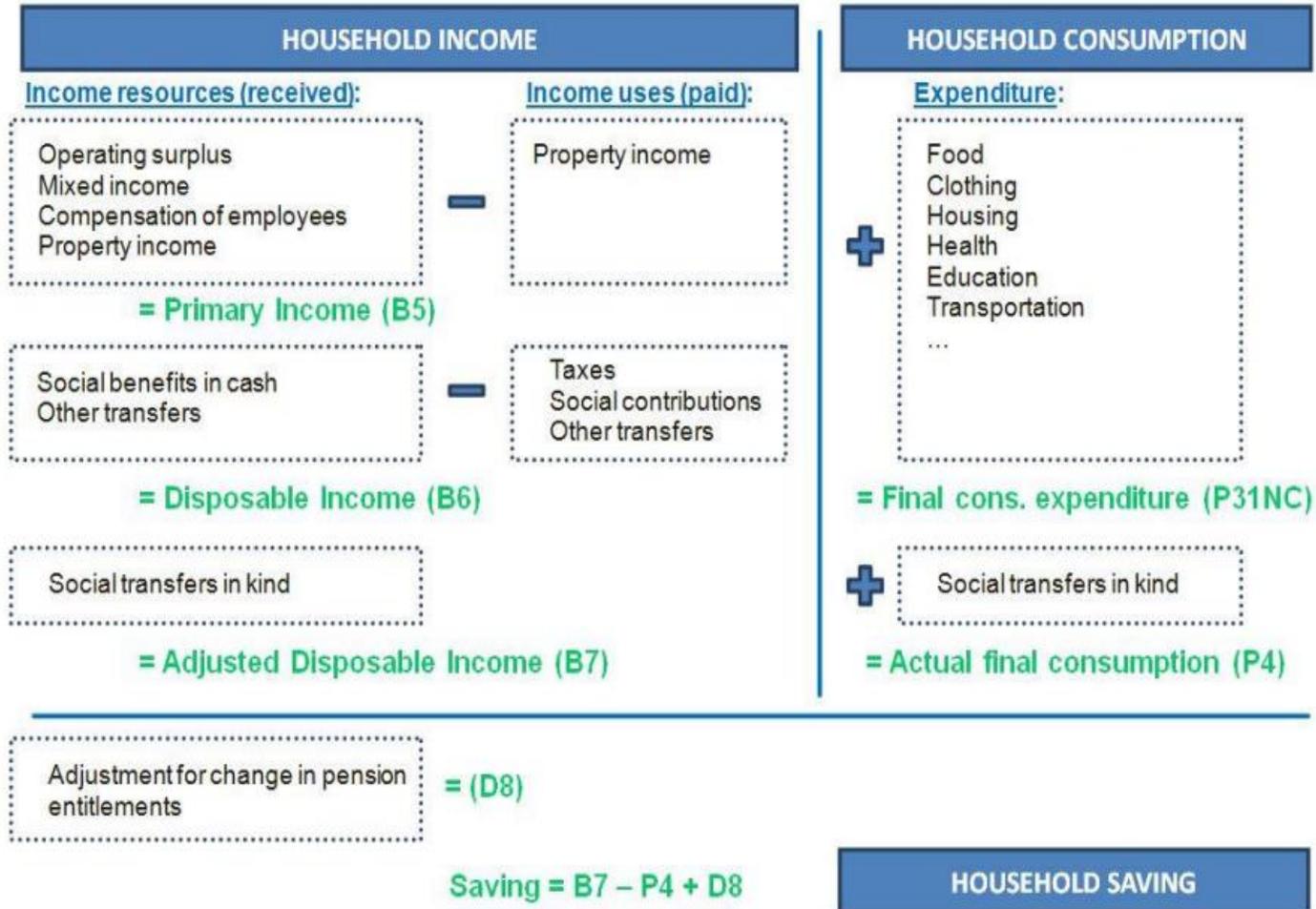
Distributive
accounts



MEDIDCAH



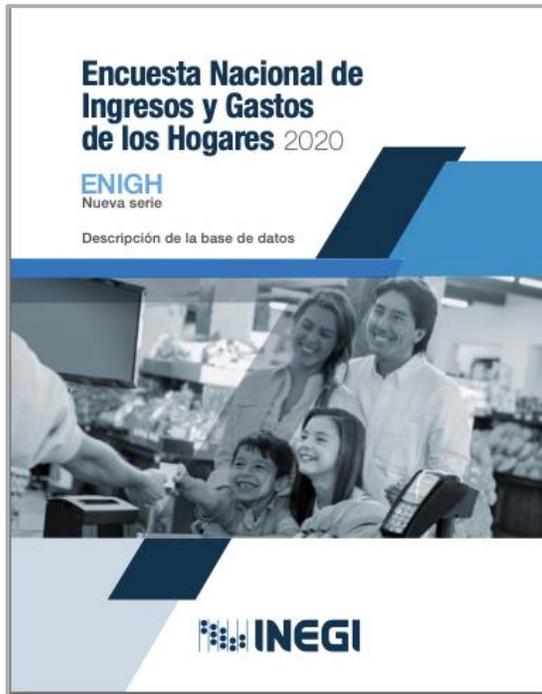
Structure of distributive accounts



In Mexico, the distributive accounts are derived from the macro data of the household sector measured in the accounts by institutional sectors. These accounts are adjusted to the criteria suggested by the EG DNA guide for distributive purposes.

Data sources

Microdata



The ENIGH will publish the results of the 2022 survey in the second semester of this year.



Macrodata

- ✓ National Accounts
- ✓ Administrative data

The National Accounts are updating their base year, 2018, with a series of results for 2022.

National Accounts consumption adjust

1. Private consumption and NPISH

The private consumption of households is extracted from total expenditure in the internal market, classified by purpose.

2. Non-resident households

The consumption of *non-resident households* in the economic territory is extracted with information from the Balance of Payments and from the measurements of receptive tourism consumption available in the INEGI tourism satellite account.

3. Rental services

Rental consumption is structured into:

- a) effective rent
- b) imputed rent

Based on measurements of the informal economy and output produced for own final use from the goods and services accounts.

Consumption adjustment example



Concept	2018	2020		2018	2020		2018	2020		2018	2020
06 Health	573,134	581,974		65,149	68,762		3,176	1,540		504,809	511,672
06.1 Medical products, appliances and equipment	327,143	343,017	█	-	-	█	2,473	1,199	█	324,670	341,818
06.2 Out-patient services	135,480	115,088		30,537	32,231		703	341	█	104,239	82,516
06.3 Hospital services	110,511	123,869		34,611	36,531		-	-	█	75,900	87,338

Micro-Macro conceptual alignment

1

Conceptual homologation of ENIGH variables with the SCN (aggregation or reassignment of concepts).

2

Comparability between the levels of income and consumption of the microdata with the totals of the National Accounts, identifying the discrepancies and gaps between the two sources of information or elements without counterparts in the microdata.

3

Imputation methods evaluation.

4

Updating of expansion factors for sociodemographic construction based on the 2020 Population and Housing Census.

Current income

Micro-Macro conceptual alignment and Imputation methods evaluation

Item	Name	Imputation method
B2R1	Owner occupied dwellings	A
B2R2	Leasing of dwellings	A
D11R	Wages and salaries	A
D121R	Employers' actual social contributions (counterpart in D611)	B
D41R'	Interest received (not adjusted for FISIM)	A
D41R_FISIM	Adjustment for FISIM (positive sign)	B
D42R	Distributed income of corporations	A
D44R	Investment income disbursements	A
D441AR	Investment income attributable to insurance policyholders	A
D441BR	Property income received attributed to life insurance policyholders	B
D442R	Investment income payable on pension entitlements (included in net social contributions paid)	B
D443R	Investment income attributable to collective investment funds shareholders	A
D45R	Rent received	A
D41P	Interest paid	A
D41P'	Interest paid (not adjusted for FISIM)	A
D41P_FISIM	Adjustment for FISIM (negative sign)	B
D45P	Rent paid	B
D5P	Less: Current taxes on income and wealth	B
D611P	Employers' actual social contributions paid	A
D613P+D614P	Households' social contributions (actual and supplements)	A
D613P	Households' actual social contributions	B
D61xP	Less: Social insurance scheme service charges	B
D71P	Non-life insurance premiums (including D441AR, see above)	A
D75x	Miscellaneous current transfers paid of which transfers between resident households	A
D63R1	Education	A
D63R2	Health	A

Consumption

Micro-Macro conceptual approval and Imputation methods evaluation

Item	Name	Método de imputación
CP010	Food and non-alcoholic beverages	A
CP020	Alcoholic beverages, tobacco, and narcotics	A
CP030	Clothing and footwear	A
CP041	Actual rentals on housing	A
CP042	Imputed rentals on housing	A
CP043	Maintenance and repair of dwellings	A
CP044	Water supply and miscellaneous	A
CP045	Electricity, gas, and other fuels	A
CP050	Furnishings, household equipment, and routine maintenance of the house	A
CP061	Medical products, appliances, and equipment	A
CP062	Out-patient services	A
CP063	Hospital services	A
CP071	Purchases of vehicles	A
CP072	Operation of personal transport equipment	A
CP073	Transports services	A
CP080	Communications	A
CP090	Recreation and Culture	A
CP100	Education	A
CP110	Restaurants and hotels	A
CP12x	Miscellaneous (less FISIM, less insurance)	A
CP1261	SIFMI	B
CP125	Insurances expenditures (life and non-life)	A

Imputation
estimation
methods
MEDIDCAH

Methods for scaling microdata



Simple calibration

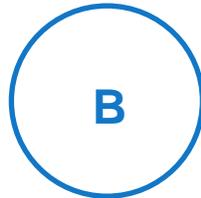
Coefficient = (Total macro / Total micro)



ENIGH provides information that allows scaling with method “A” 44 of the 57 transactions that are not balances.

Imputation with proxy variable

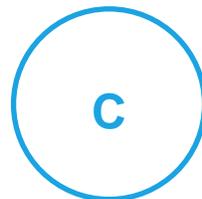
Information is imputed with the distribution of another variable



Code SNA	Description
D441BR	Property income received attributed to life insurance policy holders
D442R	Investment income payable on pension entitlements
D45P	Rent paid
D613P	Households' actual social contributions
D614P	Households' social contributions supplements
D61xP	Social insurance scheme service charges
D63R3	Other STiK
D8R	Adjustment for the change in pension entitlements
P33	Final consumption expenditure of resident households abroad

Imputation with exogenous variable

Information is imputed based on other surveys or administrative data



Code SNA	Description
D121R	Employers' actual social contributions
D5P	Current taxes on income and wealth
D63R1	STiK Education
D63R2	STiK Health

Simple calibration

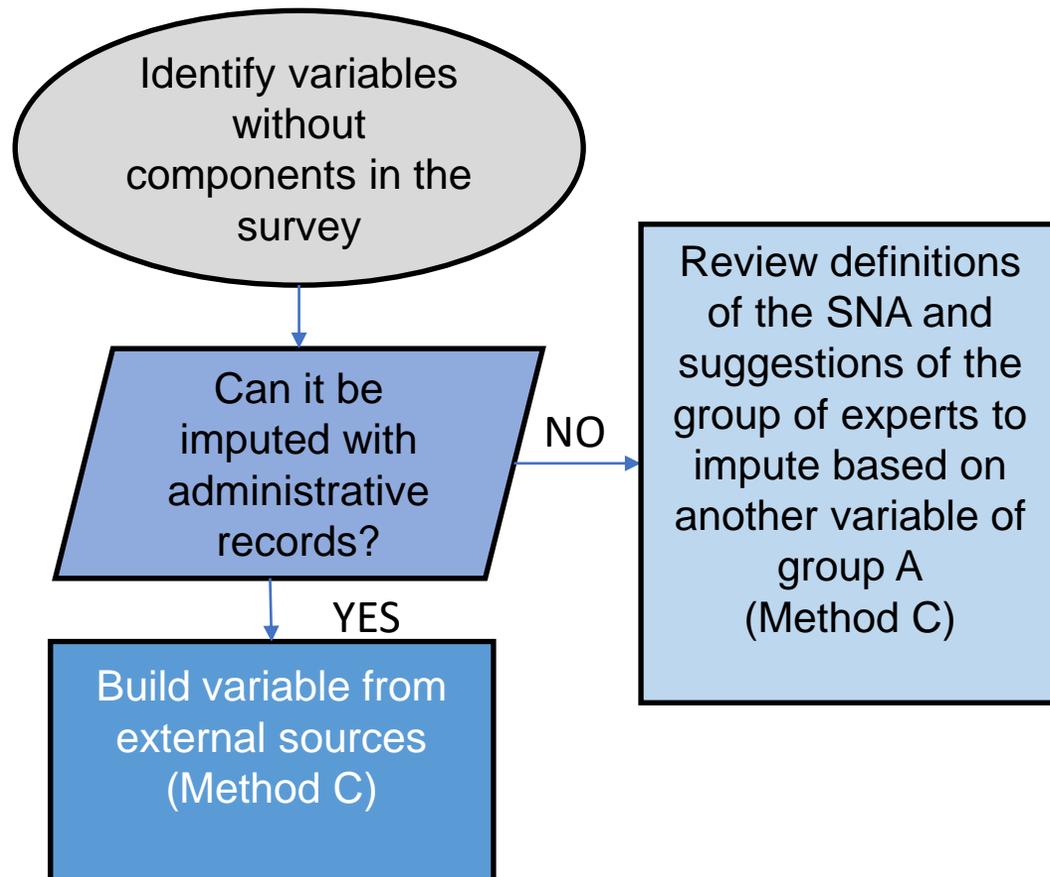
A Method

It consists in that the values of the micro source transactions are scaled so that their totals coincide with the corresponding sums in the national accounts.

The ENIGH provides information that allows escalation with method "A" in 44 of the 57 transactions that are not balanced.

Item	Name	2018	2020
B2R1	Owner occupied dwellings	2.1049	1.9228
B2R2	Leasing of dwellings	1.4842	1.4689
B3R1	Own account production	2.8735	2.5023
B3R2	Underground production	3.6682	3.5637
B3R3	Mixed-income excluding underground and own account production	79.9441	53.6149
D11R	Wages and salaries	1.3050	1.4101
D41R	Interest received	39.1968	41.9352
D41R'	Interest received (not adjusted for FISIM)	30.1187	33.3061
D42R	Distributed income of corporations	10.3657	9.8760
D44R	Investment income disbursements	1.8224	4.2847
D443R	Investment income attributable to collective investment funds shareholders	0.4834	0.3816
D45R	Rent received	4.0595	1.3705
D611P	Employers' actual social contributions paid (see corresponding item above)	1.4085	1.5570
D612P	Employers imputed social contributions paid (see corresponding item above)	13.5816	7.3031
D71P	Non-life insurance premiums (including D441AR (see above))	4.0033	2.1129
D72R	Non-life insurance claims	243.2974	68.8063
D75R	Miscellaneous current transfers received	2.9061	3.3329
D75P	Miscellaneous current transfers paid	2.2334	2.0894
D75x	of which transfers between resident households (2008 SNA 8.133)	11.6193	14.6720
D63R1	Education	1.2045	1.1851
D63R2	Health	1.0984	1.2165

Imputation with proxy variable, Method B



Receiver		Source	
Receiver item	Name	Source item	Name
D41R_FISIM	Adjustment for FISIM (positive sign)	D41R	Interest received
D442R	Investment income payable on pension entitlements	D443R	Investment income attributable to collective investment funds shareholders
D441BR	Property income received attributed to life insurance policyholders	D41R	Interest received
D41P_FISIM	Adjustment for FISIM (negative sign)	D41P	Interest paid (not adjusted for FISIM)
D45P	Rent paid	D45R	Rent received
D613P	Households' actual social contributions	D443R	Investment income is attributable to collective investment funds shareholders.
D614P	Households' social contributions supplements	D443R	Investment income is attributable to collective investment funds shareholders.
D61xp	Social insurance scheme service charges	D612P	Employers imputed social contributions paid
D63R3	Other social transfers in kind	D63R1	Social transfers in kind: Education
P33	Resident households' expenditure abroad	CP125	Insurances expenditures (life and non-life)
D8R	Adjustment for change in pension entitlements	D121R	Employers' actual social contributions

Imputation with exogenous variable

Method C Imputation with exogenous variable uses exogenous resources to the primary sources from the ENIGH, establishing the criterion that the microdata does not exceed the value of the macroeconomic aggregates calculated in the national accounts.

Imputation to:

Wages and salaries, for the distribution of imputed social contributions.

Current taxes on income, wealth, etc.

Social transfers in kind (Stik).
Education
Health

Method C

Hypothetical case of imputation

$$\text{Taxes} = ((\text{Taxable income} - \text{lower limit}_{ISR}) * \text{rate}_{ISR}) + \text{fixed fee}_{ISR}$$

Tax calculation

Taxable Income	11,605.00
- ISR lower limit	10,031.08
= Difference	1,573.92
X ISR rate	17.92
= Marginal Tax	282.05
+ ISR fixed fee	917.26
= Tax to withhold	1,199.31

Theoretical calculation

Iteration number 850

Estimated gross income	11,290.18
- ISR lower limit	10,031.08
= Difference	1,259.10
X ISR rate	17.92
= Marginal Tax	225.63
+ ISR fixed fee	917.26
= Tax to withhold	1,142.89

Gross income of ENIGH

Iteration number 1,153

Adjusted gross income	11,605.47
- ISR lower limit	10,031.08
= Difference	1,574.39
X ISR rate	17.92
= Marginal Tax	282.13
+ ISR fixed fee	917.26
= Tax to withhold	1,199.39

Effective perception 10,406.08

Residue 0.93

Social transfers in kind (Education)

The adjustment process in the microdata uses as exogenous variable administrative records on the enrollment of students who receive public education by educational level.

In the case of social transfers in kind related to education, the information reported by the Education Ministry was used, precisely, the records of public spending on education and student enrollment according to their educational level (pre-primary, primary, secondary, baccalaureate, bachelor's degree, and postgraduates), allowing to have the level of educational expenditure per student.

$$\textit{Educational expenditure per student by level} = \frac{\textit{Educational spending}}{\textit{Student enrollment}}$$

When having information from the ENIGH regarding the degree of studies that the household members who said they were students studying, the measurement of social transfers in kind was determined by multiplying the Educational expenditure per student by level of education by the number of people studying reported by ENIGH.

$$TSE_{(Edu)} = \textit{Educational expenditure per student} * \textit{number of people studying (ENIGH)}$$

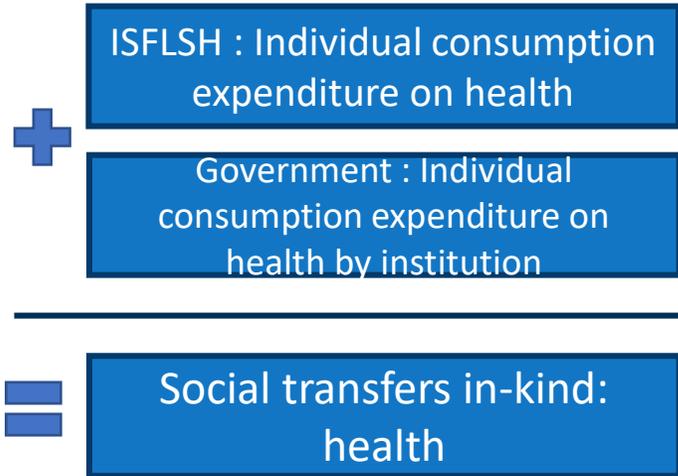
Where:

TSE(Edu) = Social transfers in kind in educational services

Social transfers in kind (Health)



SCNM



ENIGH 2020

Number of affiliates

	48,714,614
	9,037,472
	35,824,834
	1,026,100

Annual per capita expenditure by institution and federal entity

	\$4,530.39
	\$5,175.01
	\$5,515.03
	\$19,761.05



MAIN RESULTS 2020





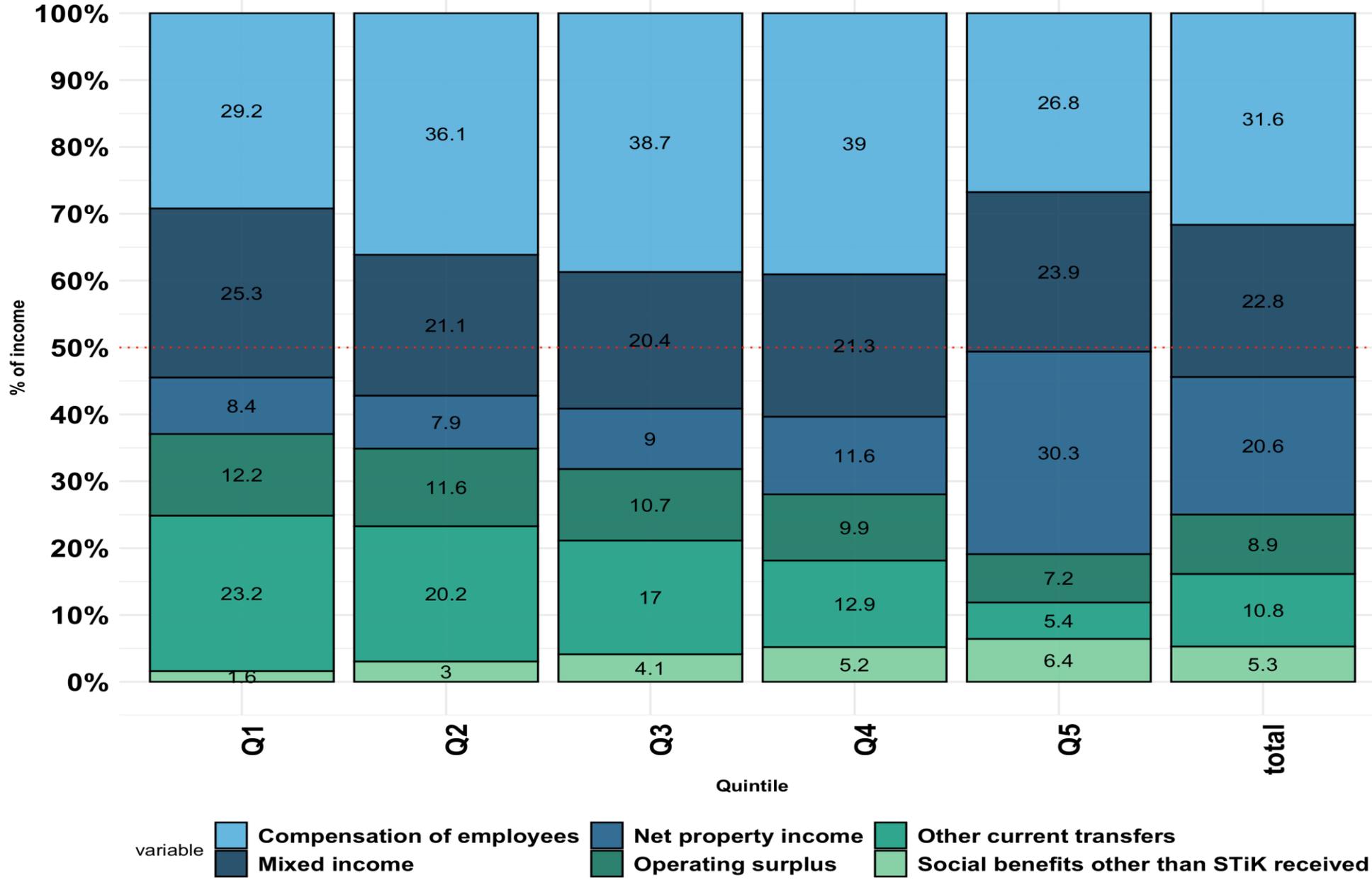
INCOME



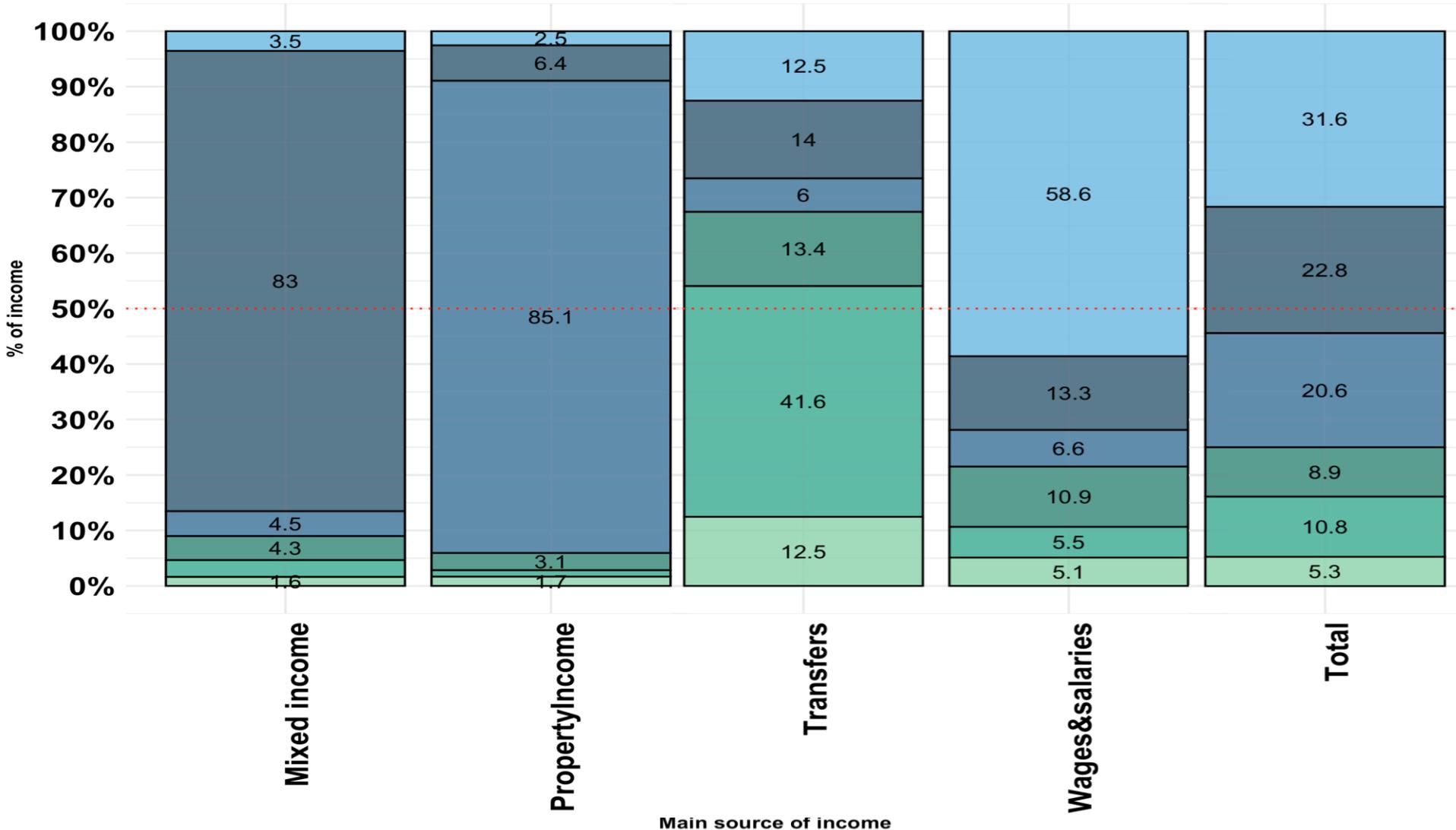
Income composition by quintile, 2020

The Mexican society has mainly income from:

- Employee compensation 31.6 %
- Mixed-income 22.8%
- Property income 20.6%



Composition of households by the main source of income, 2020

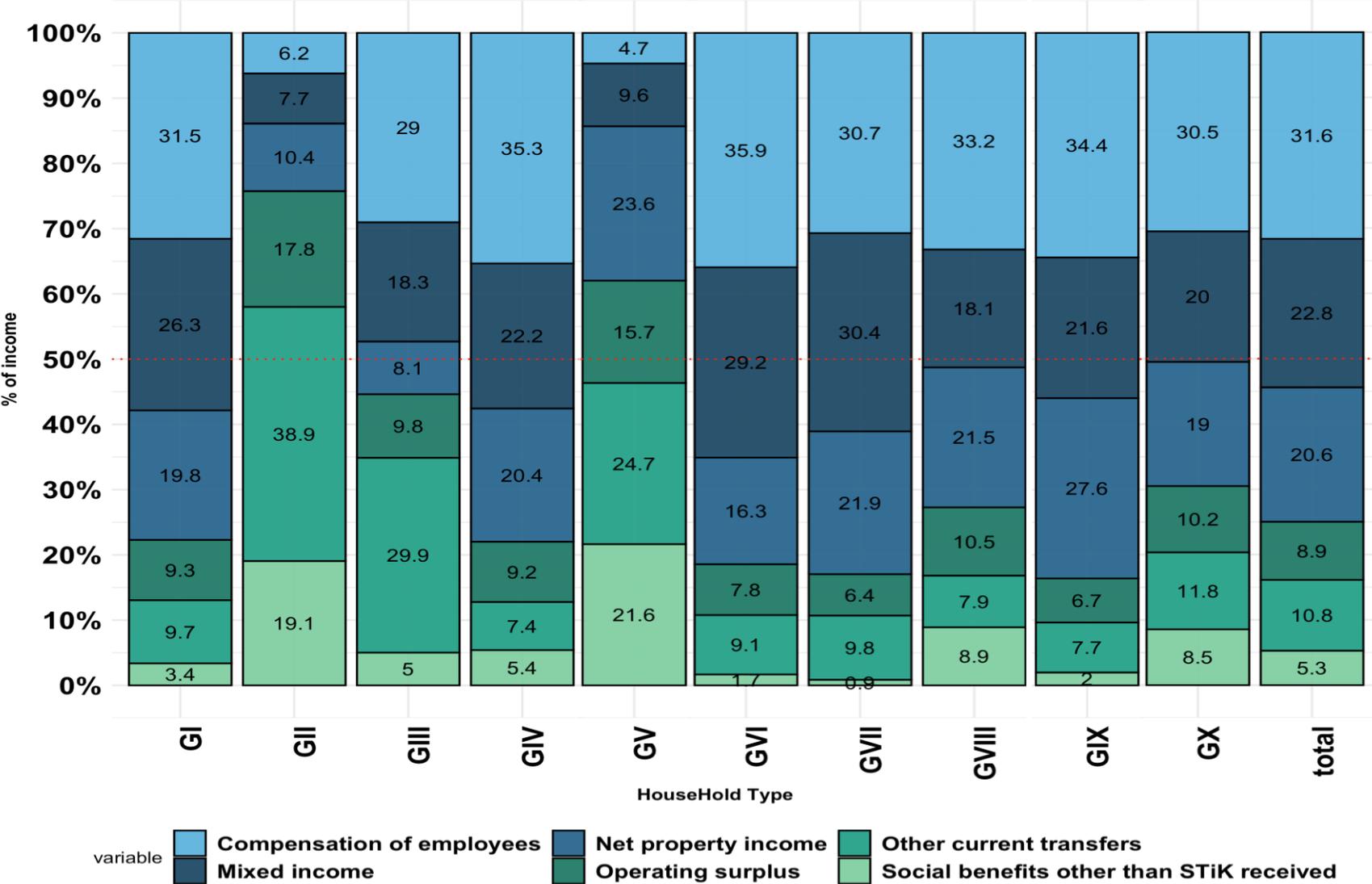


- Households with mixed income and property income have a preponderance of primary income representing 83% and 85.1% of income, respectively.
- Wage and salary dependent households have a diversity of income from different sources.
- Households that mostly receive transfers have many sources of income to supplement total income

variable

■ Compensation of employees	■ Net property income	■ Other current transfers
■ Mixed income	■ Operating surplus	■ Social benefits other than STiK received

Composition of household income by sociodemographic characteristic, 2020

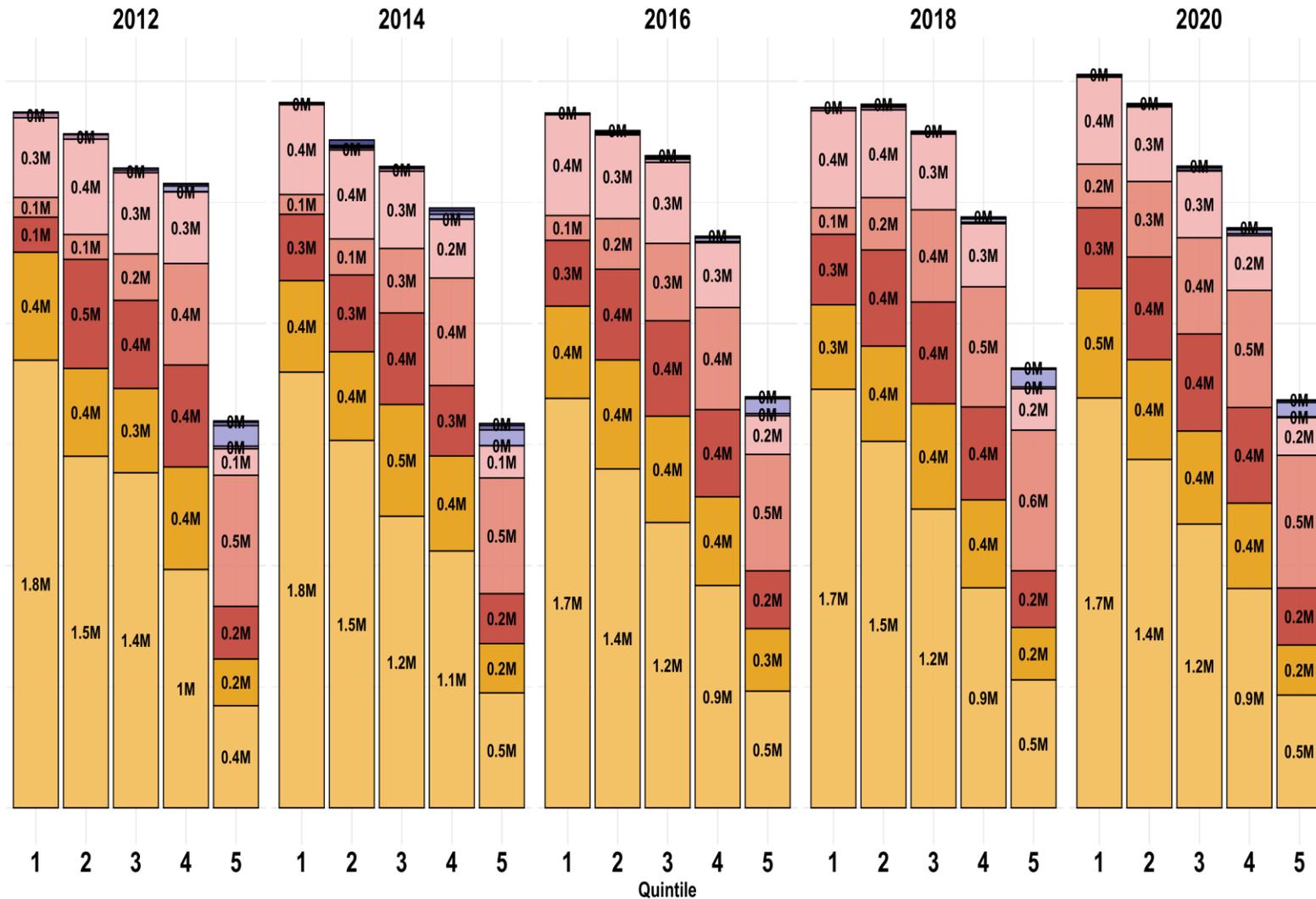


- Income patterns are observed that respond mainly to the age of the inhabitants of the dwelling, such as group II, where they live single with less than 65 years of age, and their primary source of income is current transfers with 38.9% participation, in contrast to the group VI with two adults and less than three children have labor income as their primary source of income.

- In groups IV and IX, the inhabitants are under 65 years of age and with no more than two minors or none. In these groups, labor income and mixed-income

GI: Single under 65; GII: Single over 65; GIII: Single with children at home; GIV: 2 adults under 65 with no children in the Home; GV: 2 adults at least one older than 65 without children in the Home; GVI: 2 adults with less than three children in the Home; GVII: 2 adults with at least three children in the Home; GVIII: More than two adults with at least one older than 65; GIX: More than two adults without over 65 with at least one child in the household; GX: Others

Access to educational services by quintile

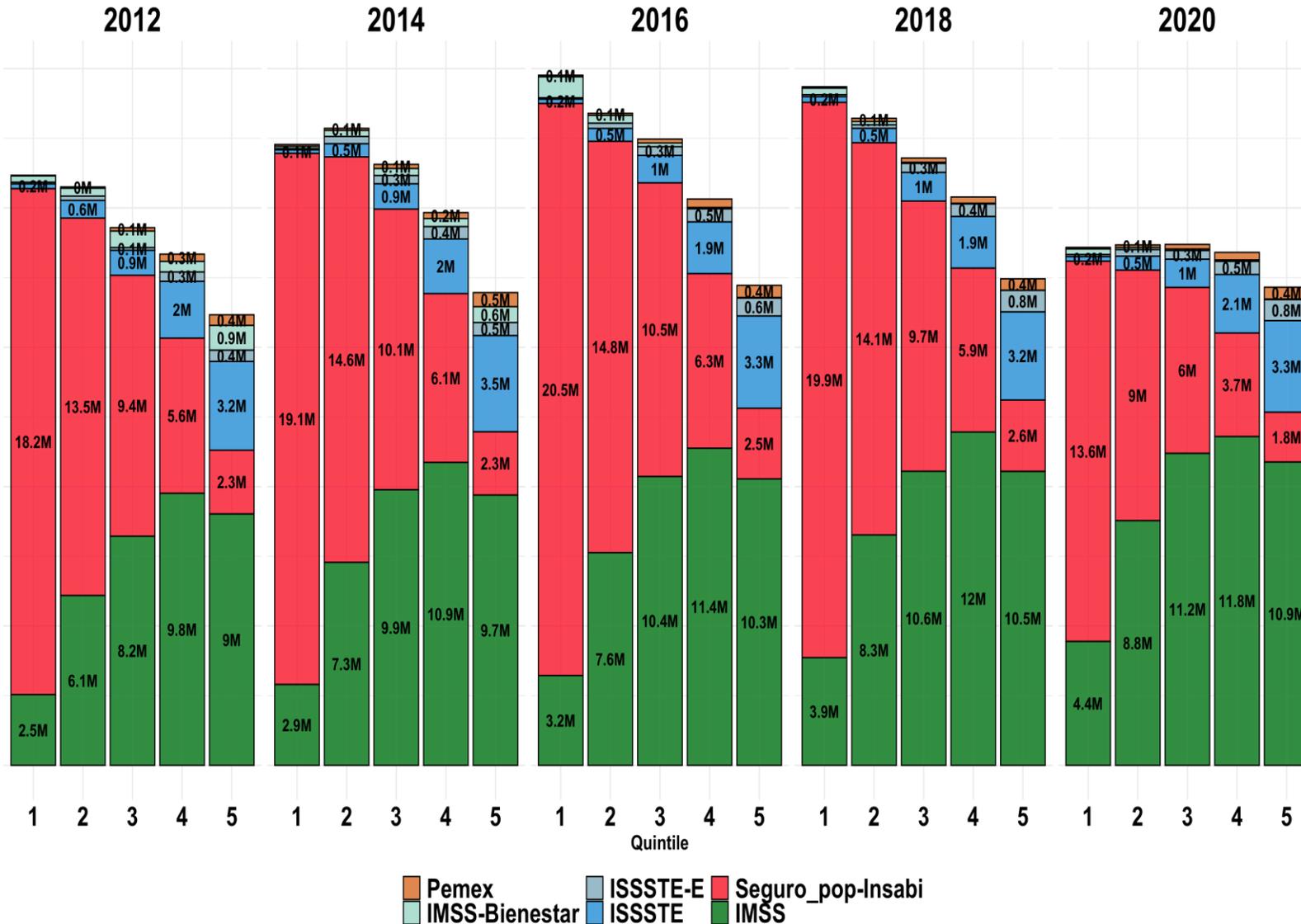


D63R1 Social transfers in kind of educational services

- The primary beneficiaries of social transfers in kind of educational services are members of households from quintile 1 to 4, who receive essential education services (preschool and primary). In contrast, quintile 5 are students of professional education.



Behavior of the records of insured persons by quintile of adjusted income.



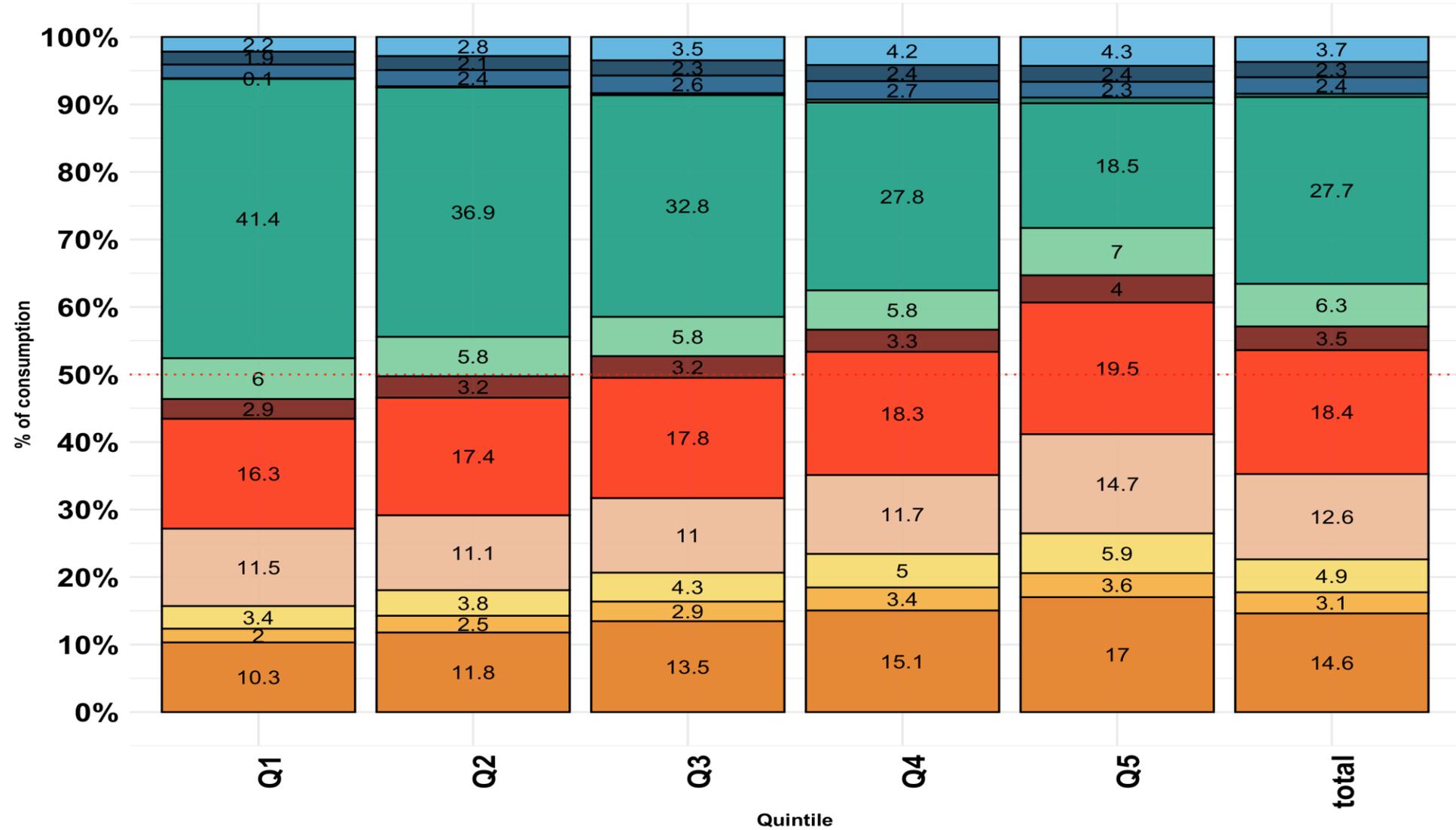
D63R2 Social transfers in kind of health

- The drop-in health services provided to households, mainly in quintiles 1 and 2 is from the adjustment of the change in the health system that occurred in 2019 and is reflected in the results of 2020.



Consumption

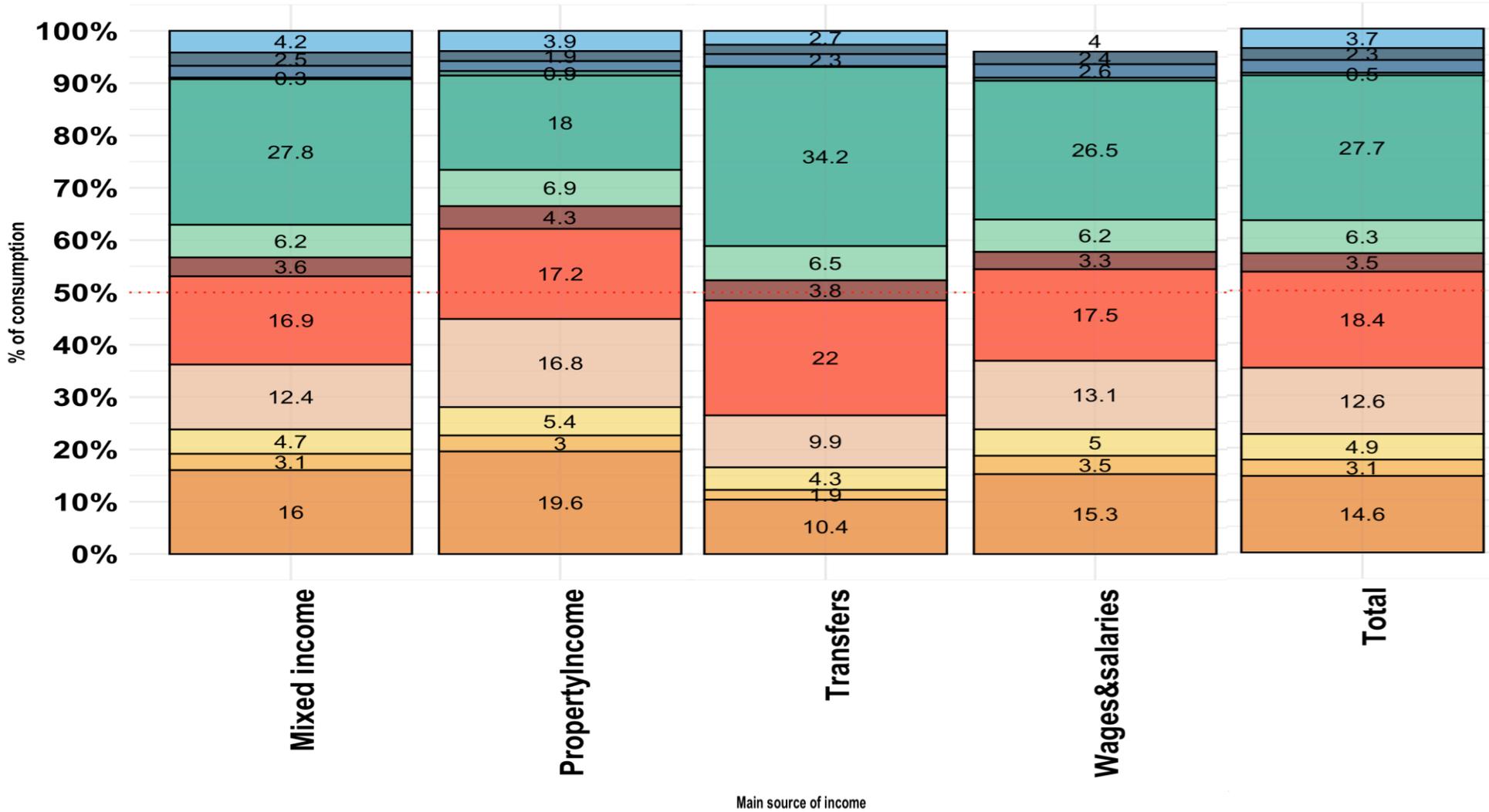
Consumption patterns by quintiles, 2020



- Consumption patterns tend to be more homogeneous between groups but follow the principle of income level and preferences
- The destination of the income of low-income households is food, miscellaneous, and household services (fuel and electricity), which could be called their autonomous consumption.



Household consumption patterns by the main source of income, 2020



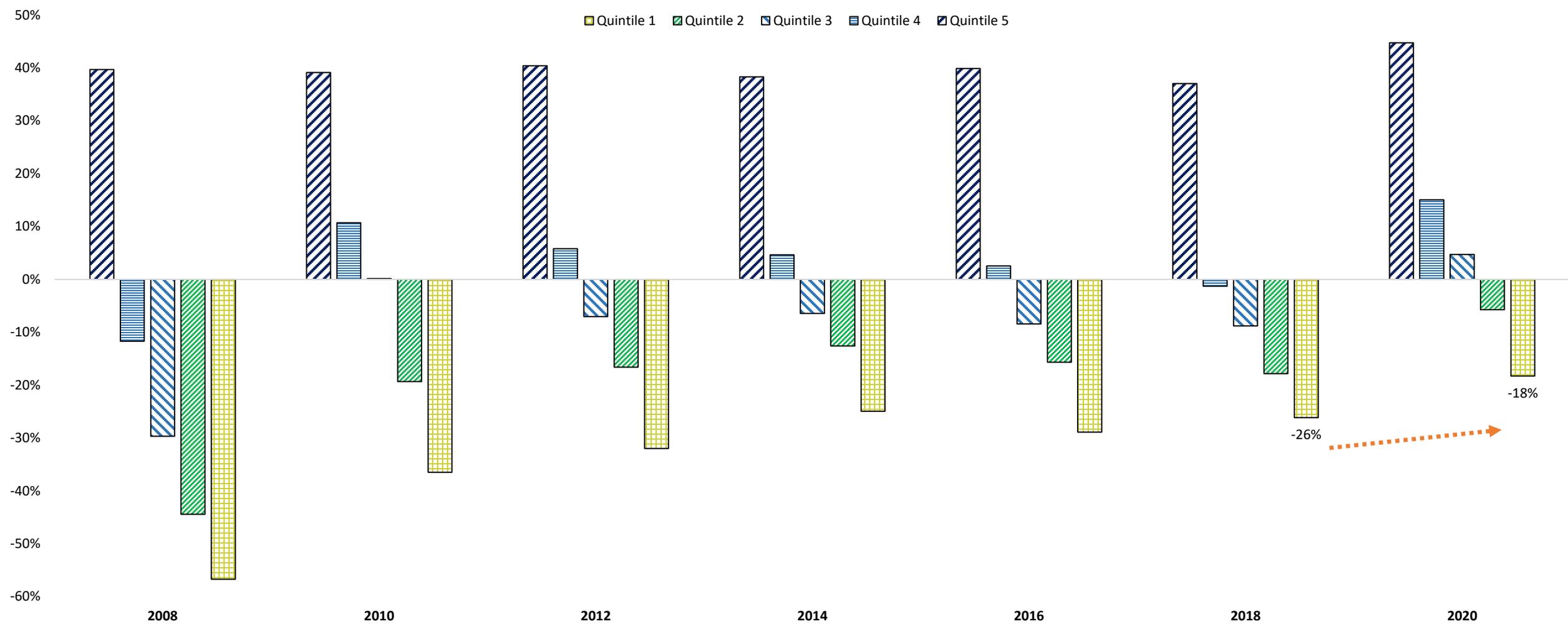
- There is not so much discrepancy in its intra-household percentage composition in the household services, clothing and footwear consumption groups.
- The contributions of the consumption patterns with the greatest discrepancy between the 5 main sources of income is that of food and non-alcoholic beverages.



SAVING

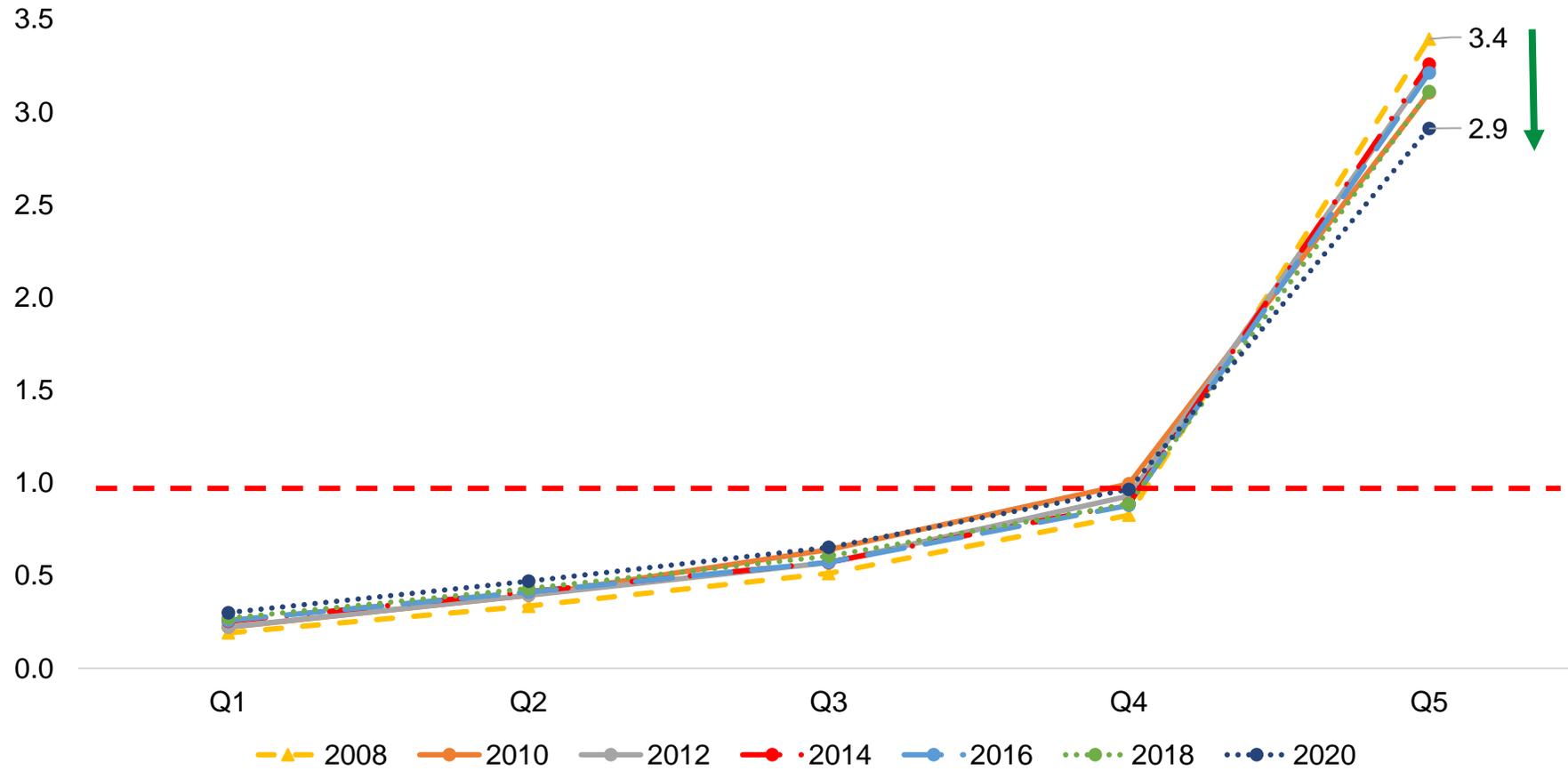
 INEGI

Saving as a percentage of equivalent disposable income, 2008-2020



The reduction in dissaving to -18% of households located in the lowest distribution level in 2020 is explained by implementing 19 priority social programs to support the sectors most affected by the pandemic in the short term.

Disposable Income (B6). Proportion concerning the household average, 2008-2020.

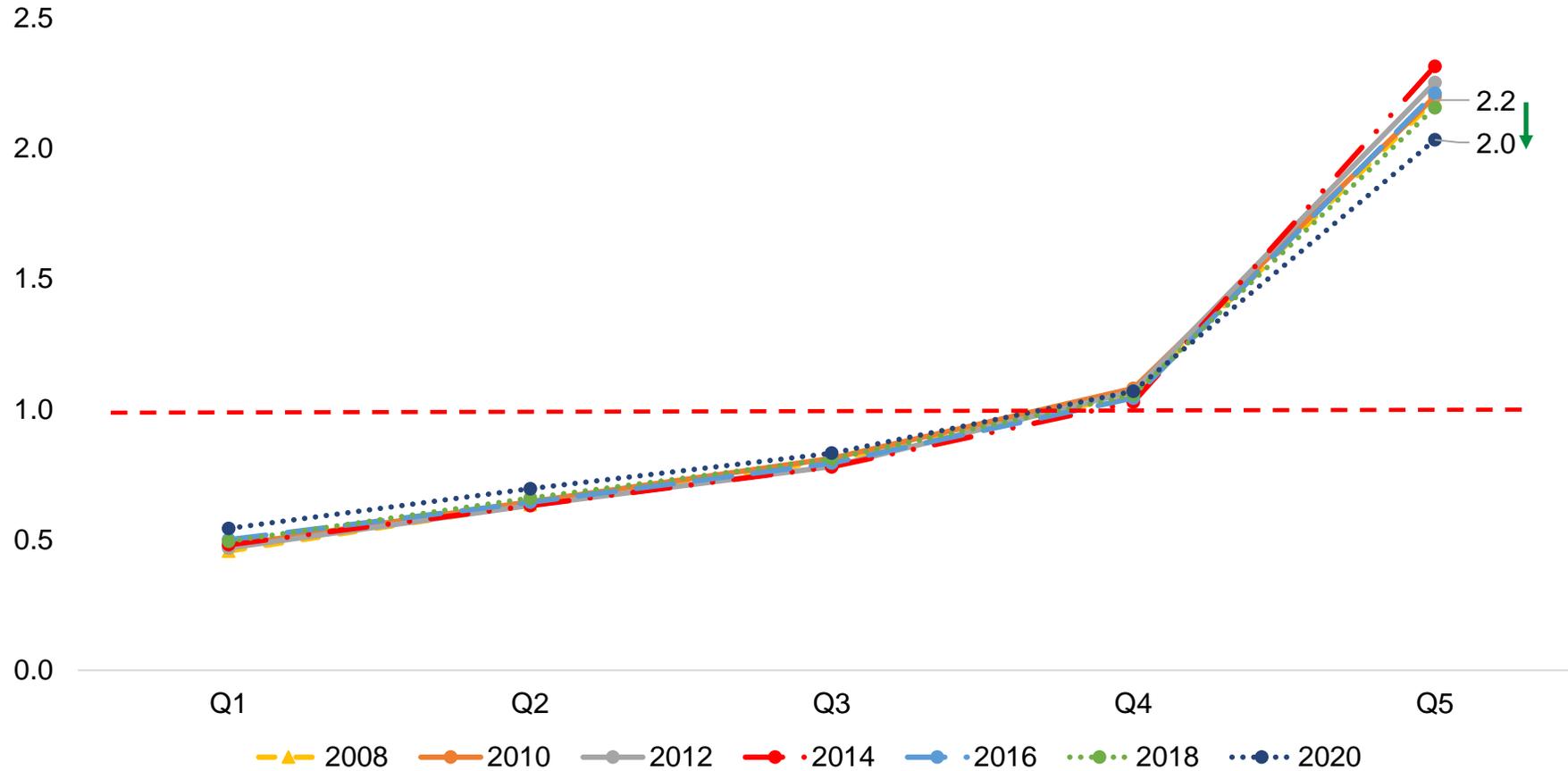


Ratio reduction (Q5) compared to the average from 2008 to 2020

Ratio values for the last two years

Quintile	2018	2020
Q1	0.3	0.3
Q2	0.4	0.5
Q3	0.6	0.7
Q4	0.9	1.0
Q5	3.1	2.9

Effective Final Consumption (P4). The proportion concerning the household average, 2008-2020.

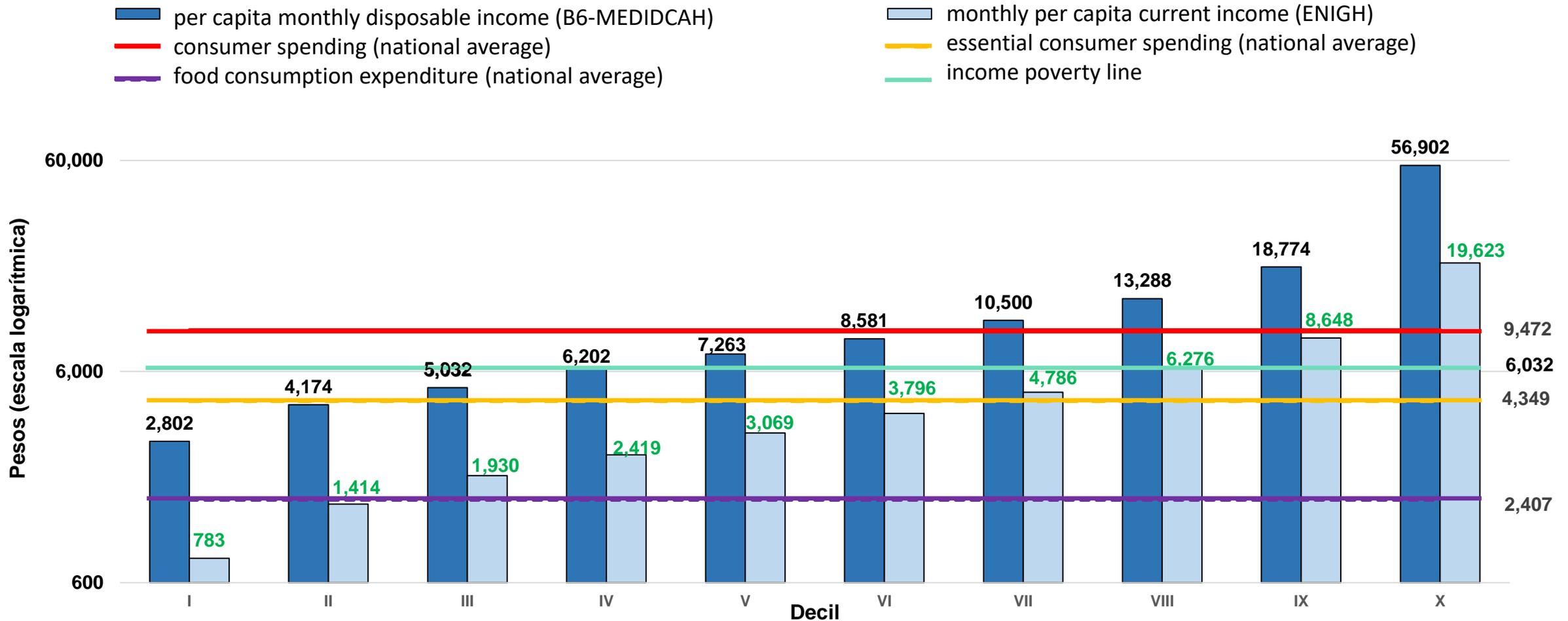


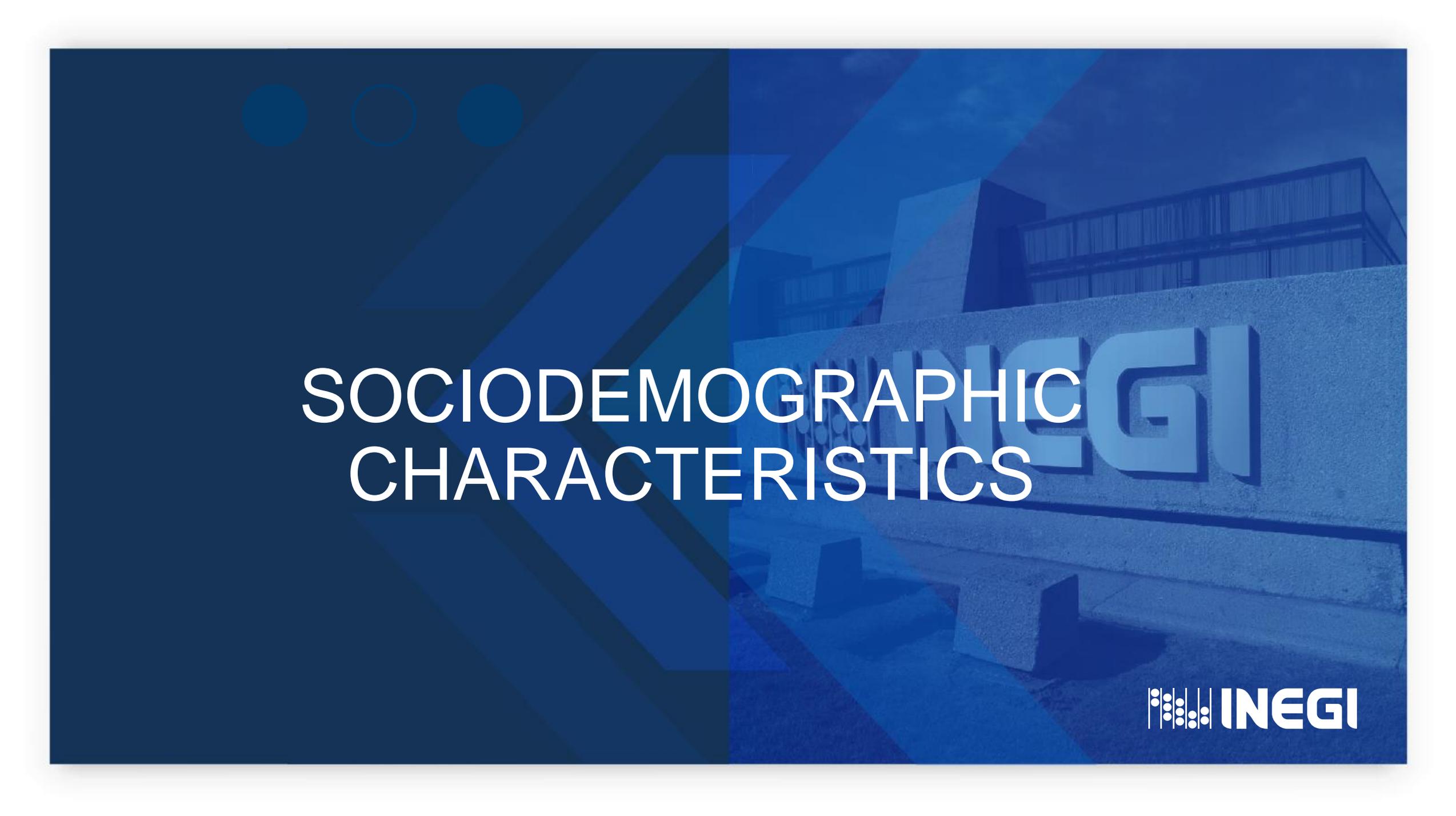
Ratio reduction (Q5) compared to the average from 2008 to 2020

Ratio values for the last two years

Quintile	2018	2020
Q1	0.5	0.5
Q2	0.7	0.7
Q3	0.8	0.8
Q4	1.1	1.1
Q5	2.2	2.0

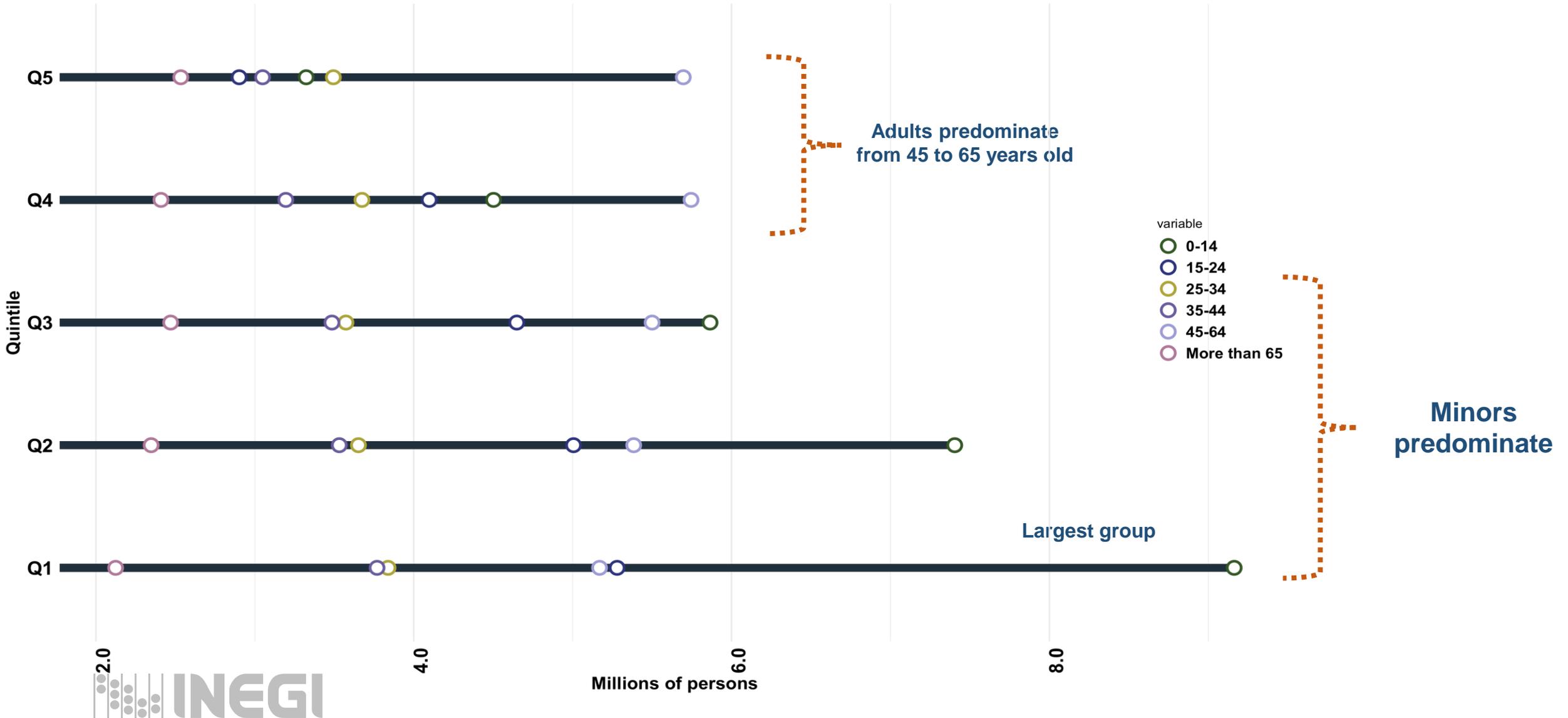
Disposable Income per capita and average consumption benchmarks, 2020





SOCIODEMOGRAPHIC CHARACTERISTICS

Sociodemographic characteristics, 2020



Challenges

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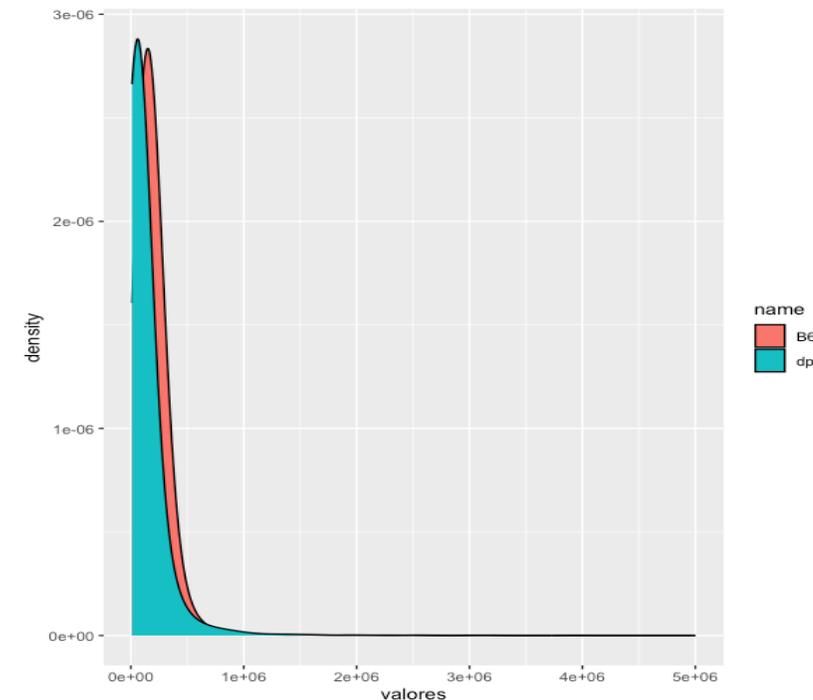
Pareto tail adjustment

The household survey microdata presents an underestimation in the tails of the distribution, particularly in the upper end. Therefore, it is evaluated to use Pareto distributions to add households that are not being captured in the survey, mainly due to the lack of data—responses from higher-income respondents.

It worked on the problem of the lack of response in the distribution at the upper end of the Available Income (B6) for the year 2020, making an adjustment and verifying the existence of Pareto distributions

Steps to follow:

- 1 the shape of the tail
- 2 the goodness-of-fit tests
- 3 the adjustment of the microdata is made with the missing observations.



Challenges

Continue developing the following issues that will allow addressing the actions indicated in the workplan of the new Data Gaps Initiative (DGI3-G20), related to the issue of information gaps on the distribution of households.

- ✓ Correct the biases in the upper part of the distribution with Pareto distributions for all income and consumption variables.
- ✓ Include distributions by decile in recurring calculations.
- ✓ Address the issue of wealth distribution.
- ✓ Start with microsimulation models to improve data relevance.

THANK YOU



Conociendo
México

800 111 46 34
www.inegi.org.mx
atencion.usuarios@inegi.org.mx

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