

*Quality-of-life loss and socioeconomic  
performance in Brazil*

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# *Quality-of-life loss and socioeconomic performance in Brazil*

- ✓ We present new statistics on quality-of-life loss and socioeconomic performance calculated by IBGE (Brazilian Institute of Geography and Statistics) and released last Friday (26/nov/2021) .
- ✓ Such statistics are classified as experimental because they were calculated for the first time and are open to debate.
- ✓ The work of Tsui (1995, 2002), Chakravarty and D'Ambrosio (2006), Stiglitz et al (2009), Sen (2009), Oliveira (2010), Alkire and Foster (2011), OECD (2015), UNICEF (2018) and UNPD (2019) were of special importance for the new statistics.
- ✓ A well-known IBGE survey on family budgets, living conditions and quality-of-life (**POF 2017-2018**) was used to obtain a wide set of non-monetary (and also subjective) indicators.

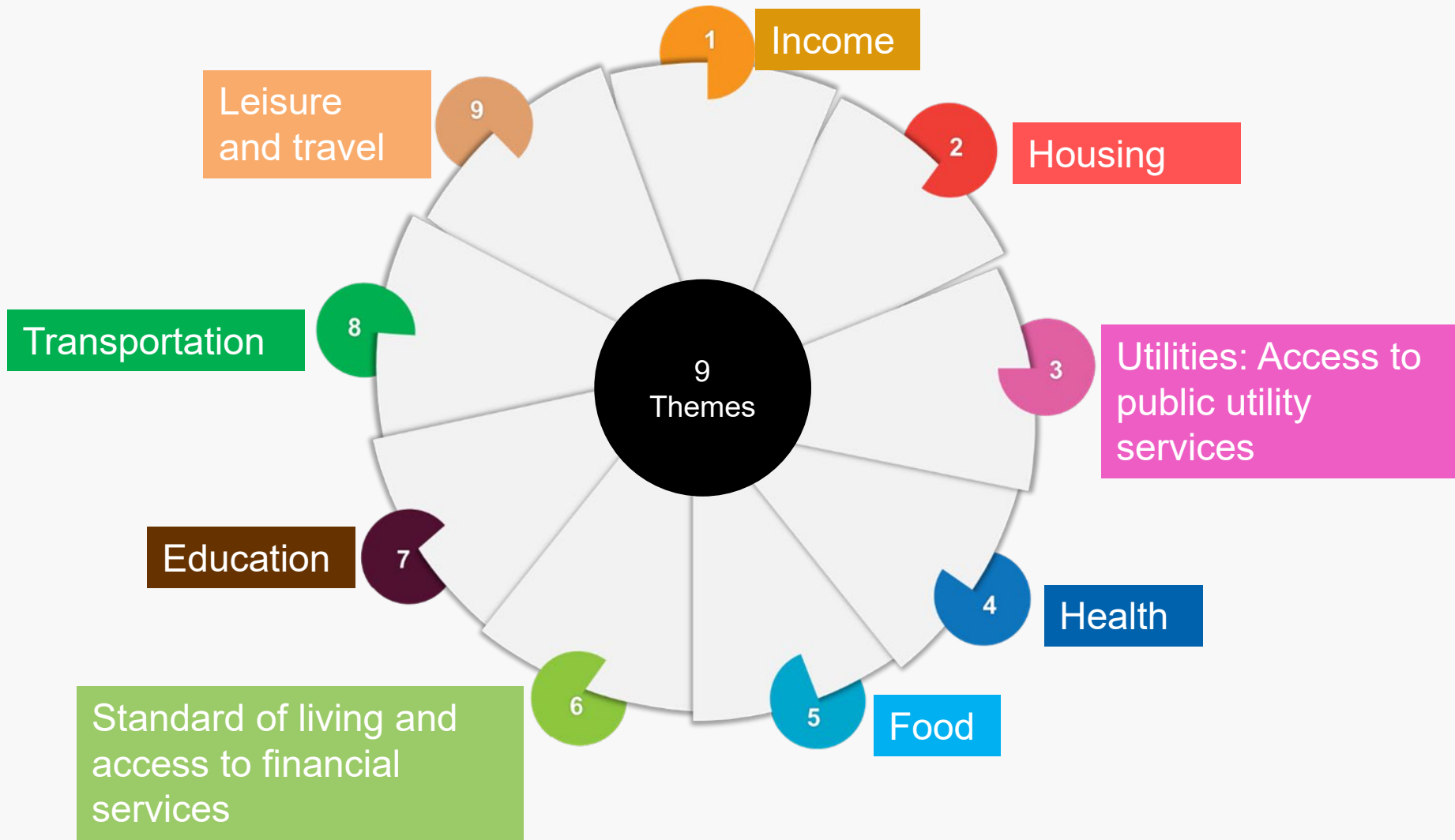
*The Contributions of the Survey to the  
Measurement of Quality of Life and  
Multidimensional Measurements*

## *POF data wealth*

*Using data from POF, the quality-of-life* of the Brazilian families can be assessed according to a rich set of information, interpreted by three complementary and linked points of view.

1. *The monetary*, where purchases of goods and services are evaluated at prevailing prices: expenditure on housing, health, education....
- 1) *The subjective*, where purchases of goods and services (and other quality-of-life elements) are assessed directly by families: minimum income needed, housing conditions...
- 2) *The non-monetary characterization*, which seeks the peculiarities of goods and services (and other elements of quality of life): frequency of water supply, material and structure of the household ....

# 9 Themes



# *Multidimensional analysis with POF data*

*Step One* – An exhaustive matrix (X) of 50 non-monetary indicators was identified!!!

Housing includes indicators on the structure of the household, neighborhood and environmental conditions (eg pollution).

Utilities includes electricity, sewage, water and garbage collection.

Health and food include food insecurity, access to health services and medicines as well as health and food evaluation.

Education covers schooling as well as education evaluation.

Access to financial services and standard of living include durable goods, bank account as well as the difficulty of paying day-to-day bills.

Leisure and transport encompass the balance in the use of time in everyday activities such as commuting to work, working hours as well as the assessment of transport and leisure.

# *Multidimensional analysis with POF data*

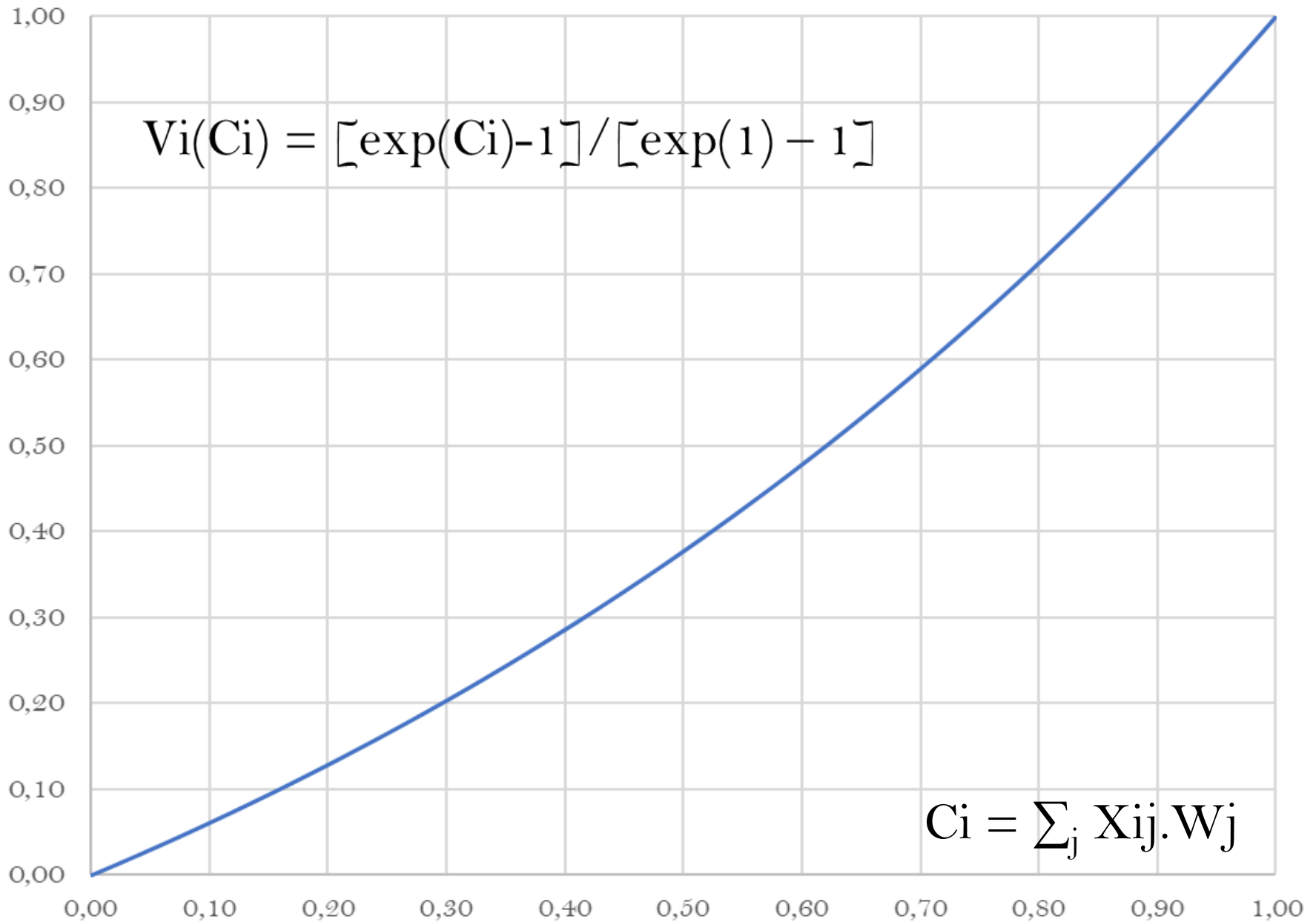
## *Step Two* – definition of an individual loss function ( $V_i$ ).

- ✓ For each person ( $i$ ) the (weighted) count of losses ( $C_i$ ) is calculated according to 50 non-monetary indicators listed above.
- ✓ For each person the strictly increasing and strictly convex individual loss function ( $V_i$ ) of the count ( $C_i$ ) is calculated.

$$V_i(C_i) = [\exp(C_i) - 1] / [\exp(1) - 1] \in [0,1] .$$

Zero indicates that there is no loss in quality of life for person  $i$ .  
One indicates the greatest possible loss.

# Individual loss function $V_i(C_i)$





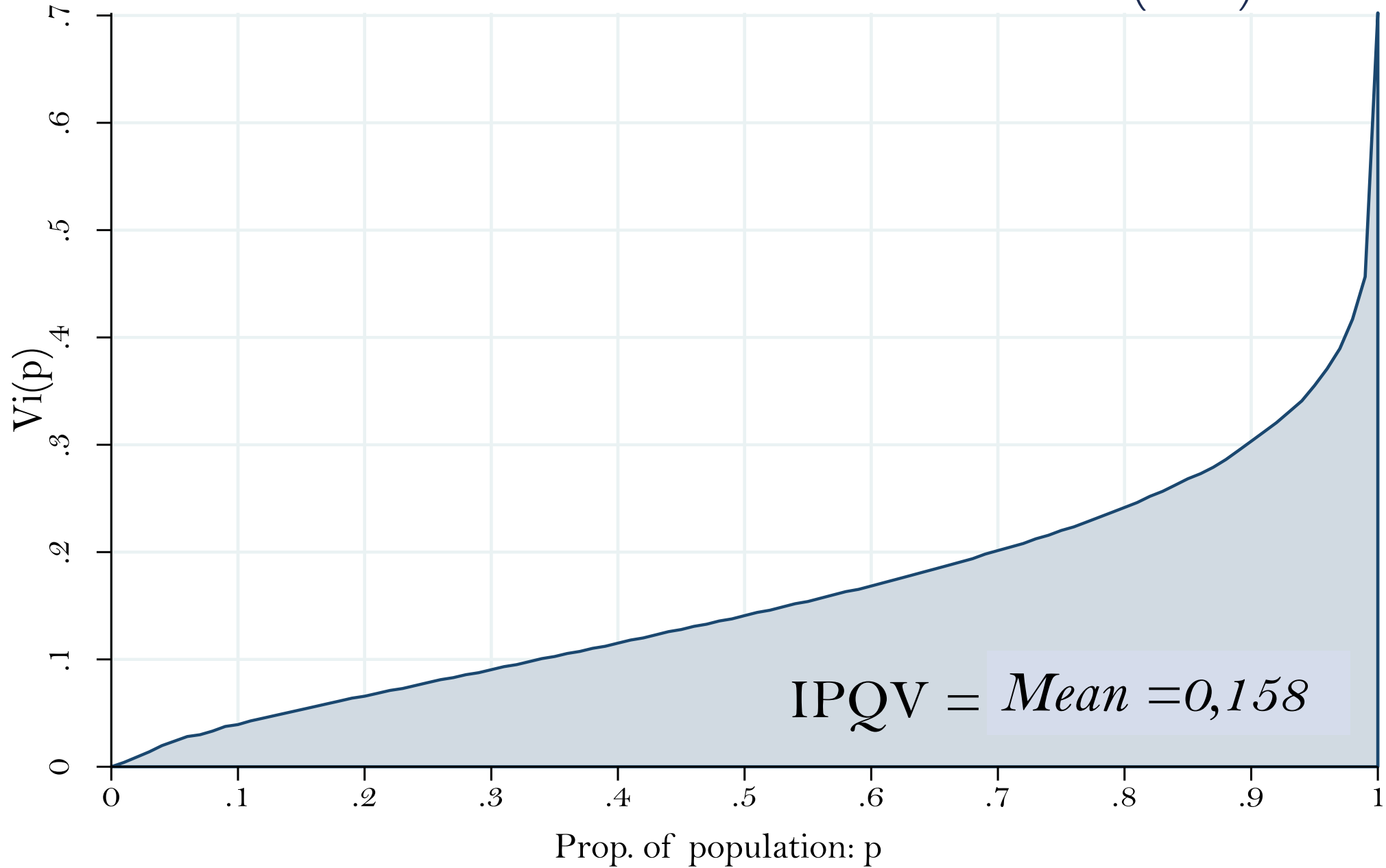
# *Multidimensional analysis with POF data*

## *Step Three* - Definition of the Quality of Life Loss Index (IPQV) by the average of individual losses.

- ✓ Zero indicates that there is no loss in quality of life. One indicates the greatest possible loss.
- ✓ The IPQV will also be a strictly increasing and strictly convex function of the counts (C<sub>i</sub>).
- ✓ Thus, “having 1 person in the population with losses in 3 attributes is more worrying than having 3 people with losses in only 1 attribute”.

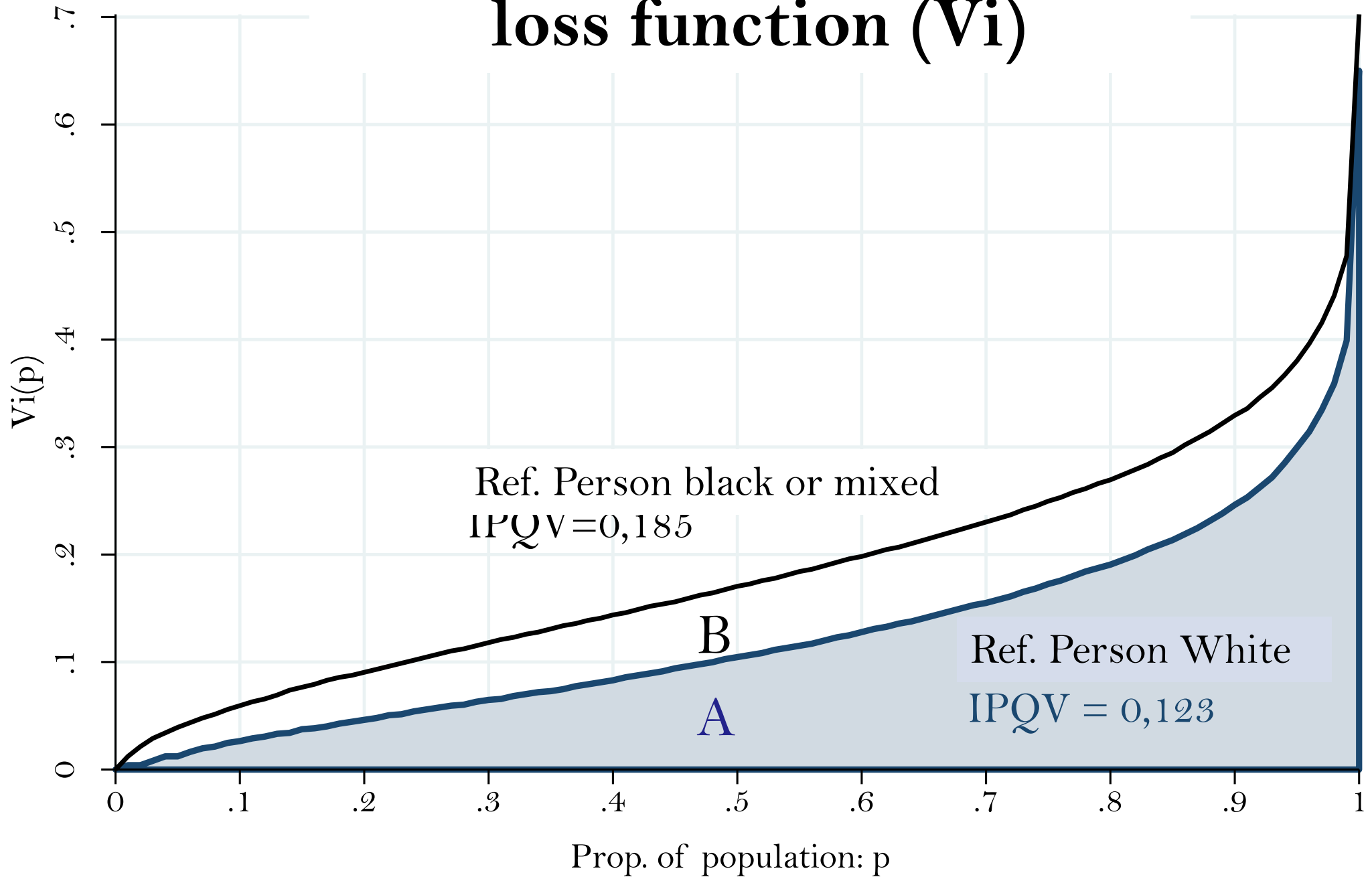
$$IPQV = \frac{\sum_{i=1}^n F_i V_i(C_i)}{\sum_{i=1}^n F_i} \in [0,1], \text{ where } F_i \text{ is the survey weight of } i.$$

# Pen's Parade of individual loss function ( $V_i$ 's)



Estatísticas	Média	Min	p1	p5	p10	p25	p50	p75	p90	p95	p99	Max
Valores	0,158	0,000	0,004	0,024	0,039	0,078	0,141	0,22	0,303	0,355	0,457	0,702

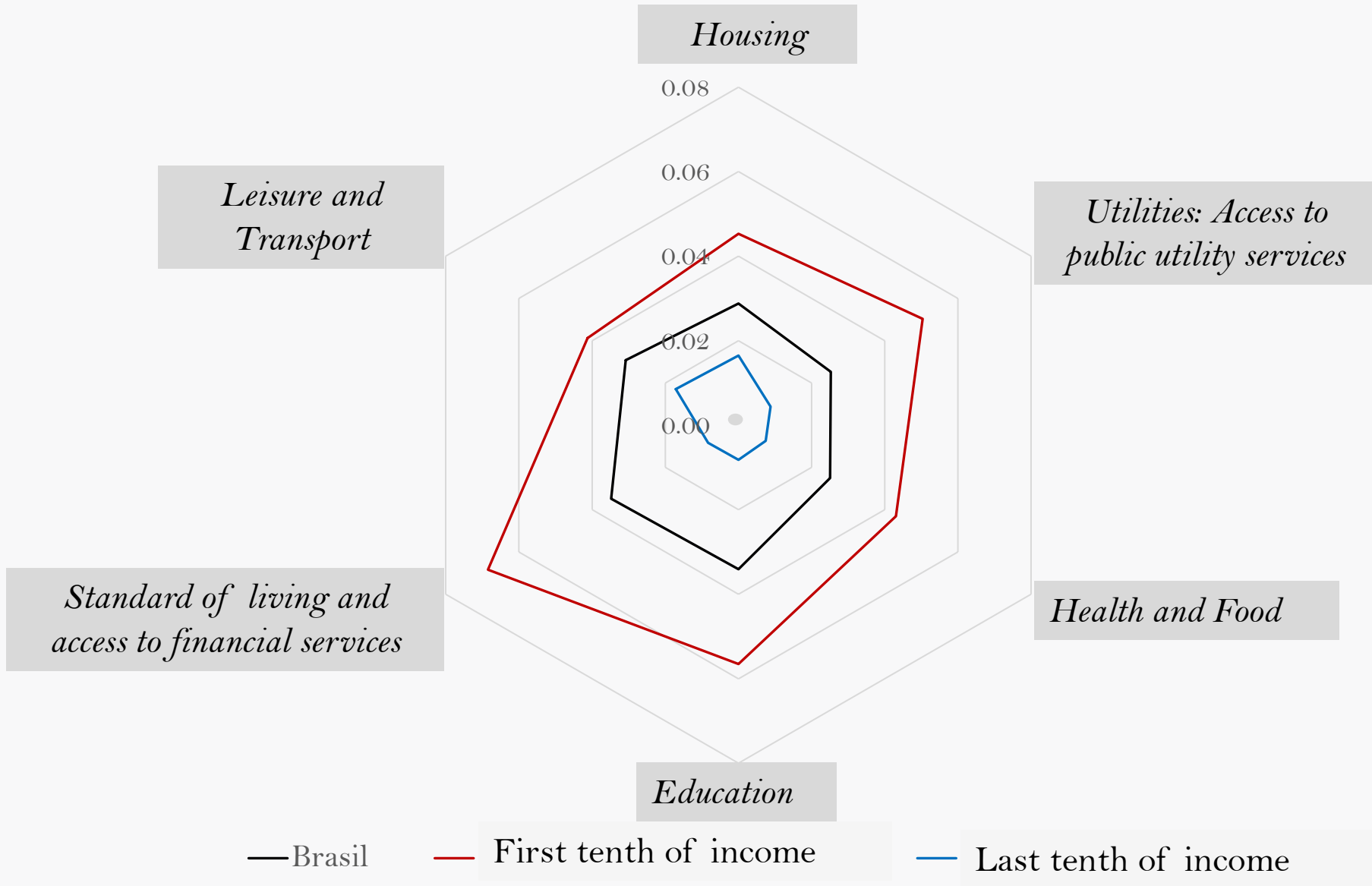
# Pen's Parade of individual loss function ( $V_i$ )



## *The Quality of Life Loss Index - IPQV and subgroups of the population*

- ✓ The IPQV shows the quality-of-life losses in Brazil and in different subgroups of the population.
- ✓ The losses were higher in families with:
  - children;
  - in rural areas;
  - in the North and Northeast regions;
  - and in the cases where the reference person of the family were back, woman or with little education

# Marginal Effects, in the first tenth and last tenth of the disposable income, Brazil – 2017-2018 period



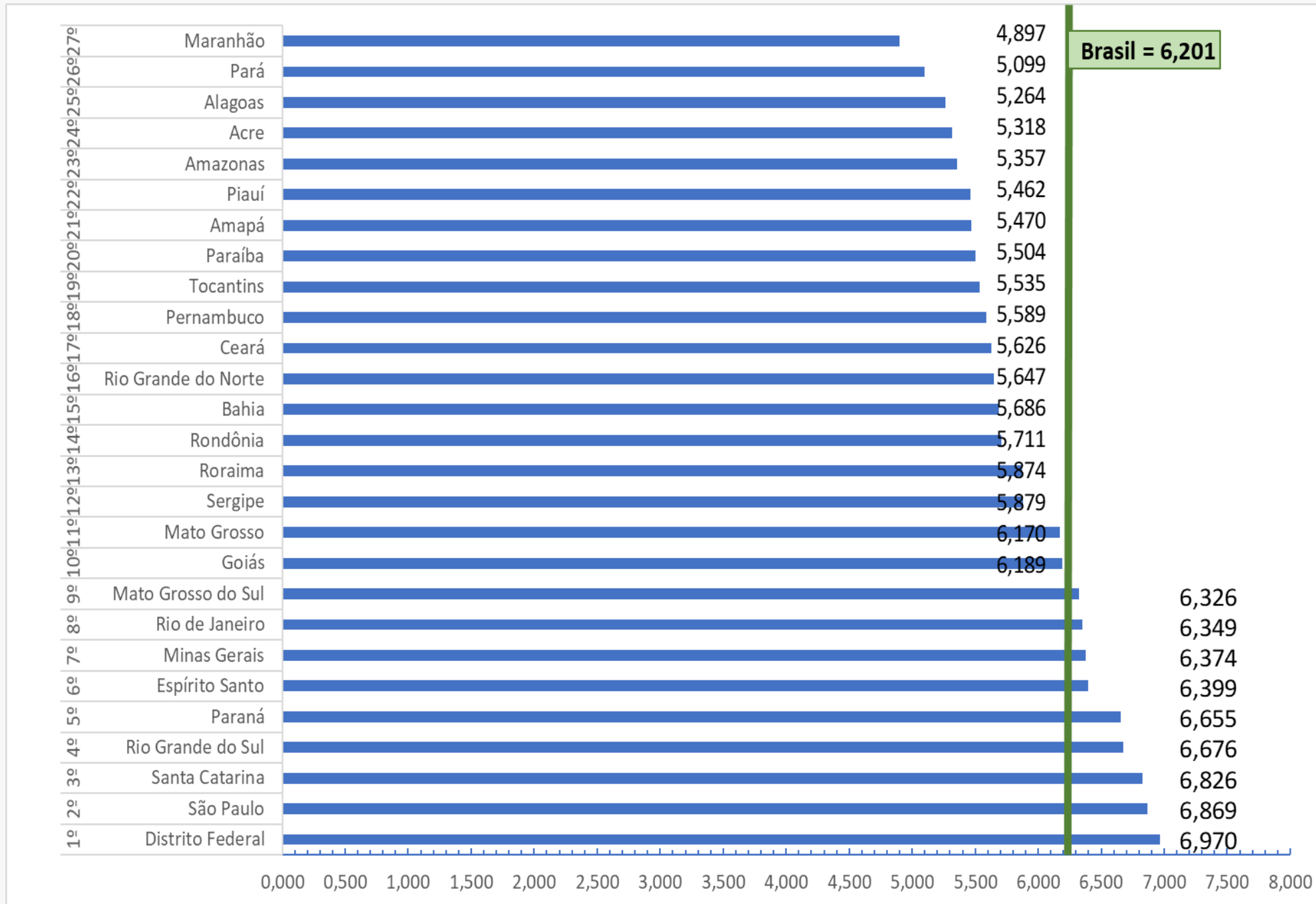
# *Socioeconomic Performance Indicators - IDS*

The socioeconomic performance index was calculated as:

$$IDS = A.(1-IPQV).$$

- ✓ *A is an economic performance indicator such as per capita disposable income ( $y$ ) or  $\ln(y)$ .* Thus, A shows the availability of resources and the importance of productivity gains for development.
  - The logarithm of per capita income is used, for example, in HDI calculations.
- ✓ *The term  $(1-IPQV)$  indicates the ability to convert resources into quality-of-life.* The higher the IPQV, the lower the IDS.
  - In large countries, or countries with regionally delimited socioeconomic processes, the country index can be calculated as the weighted sum of each location or region IDS.

# Socioeconomic Performance Index, $IDS(\ln(RDFPC), IPQV)$ , according to Federation Units - 2017-2018 period



BR e UF	IPQV	IDS(lnY,IPQV)	Housing	Utilities: Access to public utility services	Health and Food	Education	Standard of living and access to financial services	Leisure and Transport
<b>Brasil</b>	0,158	6,201	16,2	13,9	14,0	19,1	19,5	17,4
Rondônia	0,194	5,711	13,8	25,6	8,9	18,5	16,9	16,3
Acre	0,238	5,318	15,5	19,7	14,1	17,6	17,3	16,0
Amazonas	0,216	5,357	16,9	17,5	13,8	15,6	20,1	16,1
Roraima	0,171	5,874	18,7	19,4	10,3	17,7	20,0	14,0
Pará	0,244	5,099	15,3	19,6	14,8	16,7	19,5	14,2
Amapá	0,224	5,470	16,7	22,4	14,2	15,1	17,2	14,4
Tocantins	0,188	5,535	15,9	16,0	12,0	17,7	20,4	17,9
Maranhão	0,260	4,897	15,2	18,1	15,3	17,5	19,5	14,4
Piauí	0,213	5,462	14,8	19,2	9,9	19,3	20,2	16,6
Ceará	0,189	5,626	16,1	15,9	13,1	19,9	21,6	13,4
Rio Grande do Norte	0,205	5,647	15,1	16,9	16,0	19,2	19,3	13,6
Paraíba	0,208	5,504	15,1	16,7	13,1	19,4	20,3	15,5
Pernambuco	0,206	5,589	15,7	17,6	14,9	17,6	19,6	14,5
Alagoas	0,218	5,264	15,5	18,2	14,5	19,4	20,5	11,8
Sergipe	0,187	5,879	15,5	13,9	15,5	19,7	20,4	15,0
Bahia	0,200	5,686	14,1	15,4	14,7	18,6	20,2	17,0
Minas Gerais	0,138	6,374	14,9	9,8	13,3	21,8	21,1	19,0
Espírito Santo	0,139	6,399	17,5	11,9	12,7	20,0	20,6	17,3
Rio de Janeiro	0,149	6,349	19,0	11,9	13,0	17,0	19,2	19,9
São Paulo	0,113	6,869	18,0	6,2	15,1	20,2	19,0	21,6
Paraná	0,113	6,655	16,5	12,8	10,9	22,5	20,1	17,2
Santa Catarina	0,100	6,826	16,0	17,1	11,0	23,7	17,6	14,5
Rio Grande do Sul	0,127	6,676	17,5	14,0	17,3	20,1	16,4	14,8
Mato Grosso do Sul	0,153	6,326	15,5	13,9	12,6	20,3	20,6	17,1
Mato Grosso	0,167	6,170	14,9	18,6	10,2	18,4	17,9	20,1
Goíás	0,166	6,189	15,2	15,5	13,5	17,4	17,0	21,5
Distrito Federal	0,139	6,970	15,3	13,8	17,7	15,2	15,9	22,2



# *Thank you !*

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