

ANKER LIVING INCOME ESTIMATES FOR COCOA GROWING REGIONS IN BRAZIL

2021



Photo Credit: Bobby Neptune/USAID

by BARBOSA, Alexandre de Freitas; BARBOSA, Rogério Jerônimo; LAZZARI, Eduardo; PRATES, Ian; SILVA, Marina Barbosa e & TEPASSÊ, Angela Cristina with ANKER, Richard and ANKER, Martha

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ABSTRACT

This report provides Anker Living Income estimates for six cocoa growing areas in Brazil: South Bahia; East Rondonia; Southwest Pará; Southeast Pará; North Coast Espírito Santo and Belém metropolitan area. The report uses statistical regressions of available data from

Brazilian household surveys and available Anker Living Wage and Living Income Benchmarks to estimate living costs at the mesoregion level. The numbers are presented alongside with additional socioeconomic data to contextualize the results.

KEYWORDS: Living income, Anker Methodology, Brazil, Cocoa, Labor market

JEL CLASSIFICATION: J30, J50, J80, I30, I32, R20, R23

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ACKNOWLEDGEMENTS

Financial support for this report was received from Olam, Cargill Cocoa & Chocolate, Lindt & Sprungli, Mars Wrigley Confectionary, Mondelez International, Nestlé and The Hershey Company. The Sustainable Food Lab and the Living Income Community of Practice helped with the coordination and provided comments on the first draft of the report.

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1. INTRODUCTION

The objective of this report is to estimate living income values for 6 locations in Brazil where cocoa is grown. These estimates are based on a new methodology developed by the CEBRAP and the Anker Research Institute that uses secondary data on household consumption expenditure from the 2017/18 POF (Brazilian Survey of Household Expenditure) together with two available Anker methodology living wage Benchmark study estimates previously conducted studies in Minas Gerais state and non-metropolitan Sao Paulo state.

Living incomes are estimated in this report for the following six mesoregions where cocoa is grown:

- South Bahia
- East Rondonia
- Southwest Pará
- Southeast Pará
- North Coast Espirito de Santo
- Belem and metropolitan area

1.1 Definition of living income

This report uses the definition of a living income from the Living Income Community of Practice¹:

“Living income is the net annual income for a household in a particular place to afford a decent standard of living for all members of that household.”

It is important to point out that our living income estimates are not maximum values. They refer to the minimum required for families to have a decent living in the case of both living wages and living incomes.² For instance, a highly productive enterprise with activities in different places should pay wages or incomes above our living cost values.

1.2 Structure of this report

The structure of this report is the following. Section 2 describes the Anker methodology for estimating living incomes and living wages through Benchmark studies for specific locations and National Reference Values for average rural and urban areas. Section 3 describes the Anker Sub-national Estimates methodology which the authors of this report developed to estimate living incomes (i.e. living costs) for different mesoregions in Brazil. Section 4 shows in maps the six selected major cocoa regions covered in this report, highlighting their geographic locations and their major cities. Section 5 estimates the living income for each of these mesoregions by adding up separate normative estimates of food, housing, and non-food non-housing costs in addition to a small 5% margin for emergencies and sustainability. Section 6 offers a comparison of the six cocoa mesoregions according to their different demographic, socio-economic, economic, and labour market dimensions.

¹ The Living Income Community of Practice is an alliance of partners dedicated to the vision of thriving, economically stable, rural communities linked to global food and agricultural supply chains. The goal of this community is to support activities focused on improving smallholder incomes towards living incomes, aiming to enable smallholder farmers to achieve a decent standard of living. <https://www.living-income.com/>

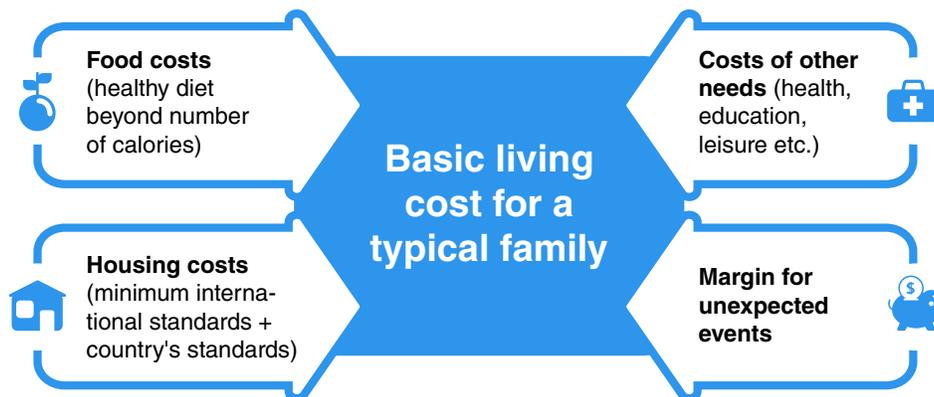
² See Annex A for the difference between living income and living wage.

2. SHORT DESCRIPTION OF ANKER METHODOLOGY AND FULL ANKER BENCHMARK STUDIES

According to the Anker methodology, living costs for a basic but decent standard of living is composed of the cost for: (i) relatively low-cost nutritious diet that is consistent with local food preferences and WHO nutritional standards for calories, macro nutrients, and fruits and vegetables; (ii) healthy housing that meets international requirements and local housing norms; (iii) all other expenses for households required for a decent standard of living, labeled as non-food non-housing (henceforth NFNH), which includes sufficient funds for adequate health care and education for children through secondary school which we consider human rights, as well as other expenses such as transport, culture, leisure, household furnishings, clothing, and so forth; at last, a small margin of 5% is added for unexpected events and sustainability.³

Our estimates of the cost of a basic but decent standard of living for workers and their family are based on costs for a typical family size as can be seen in Figure 1. This is for a family of 4 (2 adults and 2 children) for Brazil in this report. Living incomes and living wages derived from the Anker methodology represent a basic and decent living standard of life, as can see in figure 1 below.

Figure 1.
Living costs covered by living income



Source: Anker and Anker, 2017.

Quality-assured Anker living wage Benchmark studies have been done by the Anker Research Institute and Global Living Wage Coalition in 36 locations in 23 developing countries. Researchers are trained and research teams are set up and supervised to carry out these studies, combining field work and primary data collection (for local food prices, local housing costs, local health care costs, and local education costs) with secondary data analysis. Anker methodology Benchmark studies include extensive quality control mechanisms to maintain accuracy, consistency, and comparability across multiple locations within and between countries. Studies also include extensive public vetting of results with stakeholders, and public availability and publication of reports.

³ Anker, Richard and Anker, Martha. Living Wages around the world: Manual for measurement. Northampton: Edward Elgar Publishing, 2017, p. 17-24.

3. METHODOLOGICAL APPROACH FOR SUB-NATIONAL ESTIMATES FOR LIVING WAGES AND LIVING INCOMES WITHIN BRAZIL

3.1 Need for sub-national living income and living wage estimates in Brazil

Living wage and living income Benchmark studies cannot be done in every location in every country. Therefore, there is a need for a new methodology to provide sub-national estimates of living wages and living incomes for a number of locations and regions in all countries, especially in large and diverse countries such as Brazil.

In the case of Brazil, there are already living wage and living income Benchmark studies and estimates for two areas: (i) the South/Southwestern mesoregion of Minas Gerais⁴ and (ii) the large non-metropolitan area of the State of São Paulo excluding the metropolitan areas of São Paulo⁵ and Campinas. However, there is a need for living income and living wage estimates for many more regions and locations in Brazil, since Brazil is such a complex, heterogeneous and unequal country, and it is clear that the living wage and living income are not the same in all parts of Brazil.

Brazil is an ideal country to develop a new methodology for estimating sub-national living wages and living incomes. It has the potential to bring about a groundbreaking advance in the Anker methodology. Brazil already has two Benchmark studies, excellent researchers, extensive expertise in the Anker methodology, excellent socio-economic-demographic secondary data by location, and impressive literature and studies on poverty lines by region.

3.2 Methodology used in this report to estimate sub-national living income estimates for cocoa producing locations

This section provides an overview of the methodology used to estimate living income for 6 cocoa regions of Brazil. It uses secondary data from available national household surveys together with the original Benchmark study estimates from the Minas Gerais and non-metropolitan São Paulo Benchmark studies. The most important database used in this report in order to accomplish that objective is the 2017/18 POF – the latest available Brazilian Survey of Household Expenditure.⁶

This survey contains detailed information on patterns of food consumption and expenditures, housing conditions and housing expenditures, and NFNH expenditures. These data are available for 74 POF “analytical regions” of Brazil. For almost all of the 27 states of Brazil, this consists of the state capital, the metropolitan ring around the capital, and the rest of the state.⁷ Since POF regions are not sufficiently

⁴ BARBOSA, Alexandre de Freitas, Silva, Marina Barbosa e. VEIGA, João Paulo Candia & ZACARELI, Murilo Alves. Living Wage Report: Rural Brazil, Minas Gerais South/Southwestern Region with a focus on coffee growing industry. Global Living Wage Coalition, June 2016. See <https://www.globallivingwage.org/living-wage-benchmarks/urban-brazil/>

⁵ BARBOSA, Alexandre de Freitas, PRATES, Ian, SILVA, Marina Barbosa e & FARHAT, Sabrina Bowen. Living Wage Report: Non-metropolitan Brazil, State of São Paulo with focus on orange production in the citrus belt. Global Living Wage Coalition, February 2020. See https://www.globallivingwage.org/wp-content/uploads/2020/11/LW-Report_Sao-Paulo_2020_en-FINAL.pdf

⁶ For POF, see <https://www.ibge.gov.br/en/statistics/social/population/25610-pof-2017-2018-pof-en.html>

⁷ There are less than 81 values (i.e. 27 x 3), because Brasília, the capital, and some states do not have separate metropolitan rings.

disaggregated to represent the “rest of the state” – especially for large states, we used regression analysis and selected socio-economic proxy variables to estimate differences in living incomes for mesoregions within the “rest of the state”.

Living income for each coffee producing mesoregion was estimated in 3 steps. In step 1, we estimated normative living income for each POF analytical region. Food costs were estimated for a low-cost nutritious model diet for Brazil (drawn from the Anker living wage Benchmark study for non-metropolitan Sao Paulo state) using local food prices⁸; housing costs were determined for healthy housing that meets minimum international norms and Brazilian standards⁹; and all other costs (i.e., non-food non-housing costs) were estimated for households clearly above poverty.¹⁰ To this, 5% was added for emergencies and sustainability. These region-specific living income estimates were done for a family size of 4 persons.¹¹ In step 2, POF “rest of state” zones were disaggregated into mesoregions, because many of these “rest of state” POF zones are large and heterogeneous in terms of living expenses.¹² Adjustment factors were estimated for “rest of state” mesoregions using a predictive regression model for living expenses for the 59 POF analytical zones with proxy variables drawn from additional datasets.¹³ It is important to note that the living incomes estimated using this sub-national estimation methodology for the two mesoregions where Anker Benchmark studies were conducted are very similar to the Benchmark study estimates. This comparison provides supporting evidence for our sub-national estimation methodology. In step 3, we updated our 2017-18 POF based values to 2021 using national price index inflation rates for food, housing and NFNH from January of 2018 to June 2021.

⁸ Use of a common model diet for all of Brazil is consistent with the norm that all Brazilians should be able to afford a similar nutritious diet regardless of whether they live in lower income areas of Brazil such as the Northeast or in higher income areas of Brazil such as the south. Despite regional variations in the amounts consumed of different food items, the hierarchical order of the main healthy food items was found to be similar in all Brazilian regions.

⁹ Our healthy housing standard consisted of houses that are acceptable in all eight of the following characteristics: house type, walls, roof, floor, water supply, sewage, electricity, and persons per room. We, then, used local housing costs for all acceptable houses excluding the bottom and top 10% of them.

¹⁰ NFNH costs were estimated using household expenditure data for households that met our minimum housing standard. For each of the 59 POF analytical regions, our “minimum housing cost” estimate was used to identify a position within the distribution of household expenditures per capita. We, then, used observed NFNH expenditures of households from that position of the distribution plus the 10% above. For example: if housing cost for decent housing was \$300 in a given region and this was for households at the 15th percentile of the household expenditure distribution, we used the average NFNH expenditures from the 15th to 25th percentiles.

¹¹ Family size of 4 is used, because: (i) a family size of 4 is required to assure the replacement of adult population, (ii) the total fertility rate in Brazil of 1.719 implies a nuclear family size of around 4; and (iii) average household size in Brazil is 3.60 when single person households (that definitely do not have children) and especially large households (that are probably extended family households) are excluded.

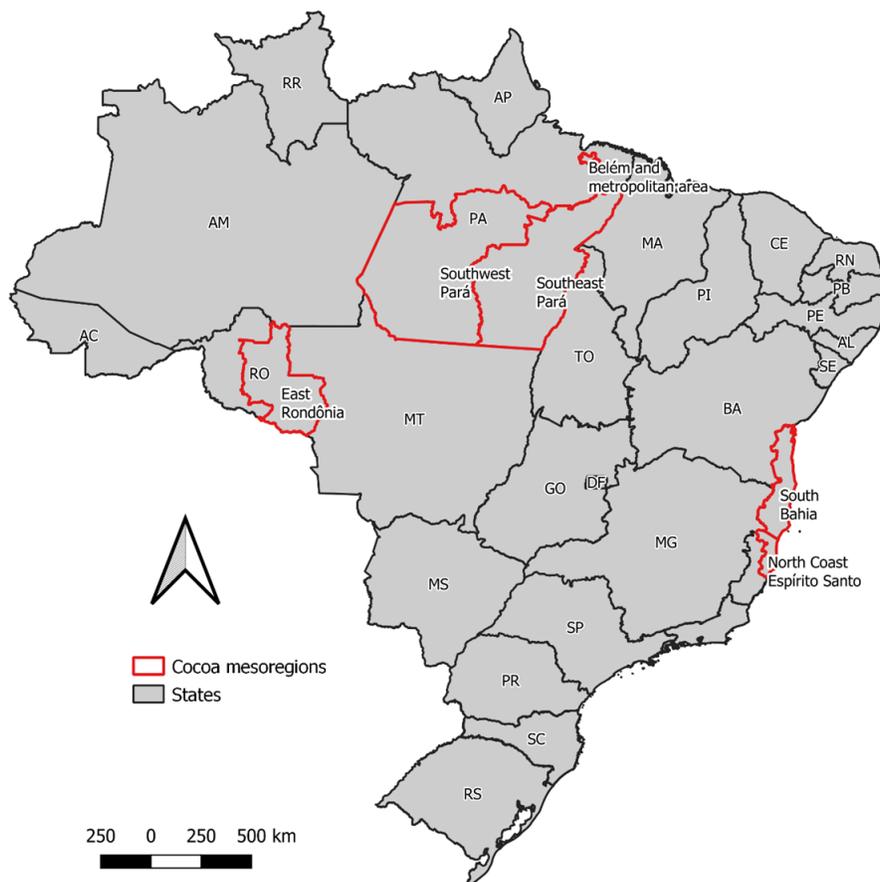
¹² Mesoregions are analytical administrative divisions of contiguous municipalities sharing common socio-economic characteristics. We only disaggregated living expenses estimates for POF analytical regions for “rest of state.” We left unchanged POF living expenses estimates for state capitals and metropolitan rings around state capitals.

¹³ To determine how living income for each mesoregion is divided into for food, housing and NFNH costs, we used their respective shares of household expenditures in the POF analytical regions where a mesoregion is located.

4. WHERE THE 6 COCOA MESOREGIONS ARE LOCATED

Below we present a series of maps. Map 1 is of Brazil with the six cocoa mesoregions indicated. Maps 2, 3 and 4 offer a closer look at these mesoregions including the municipalities of each of them.

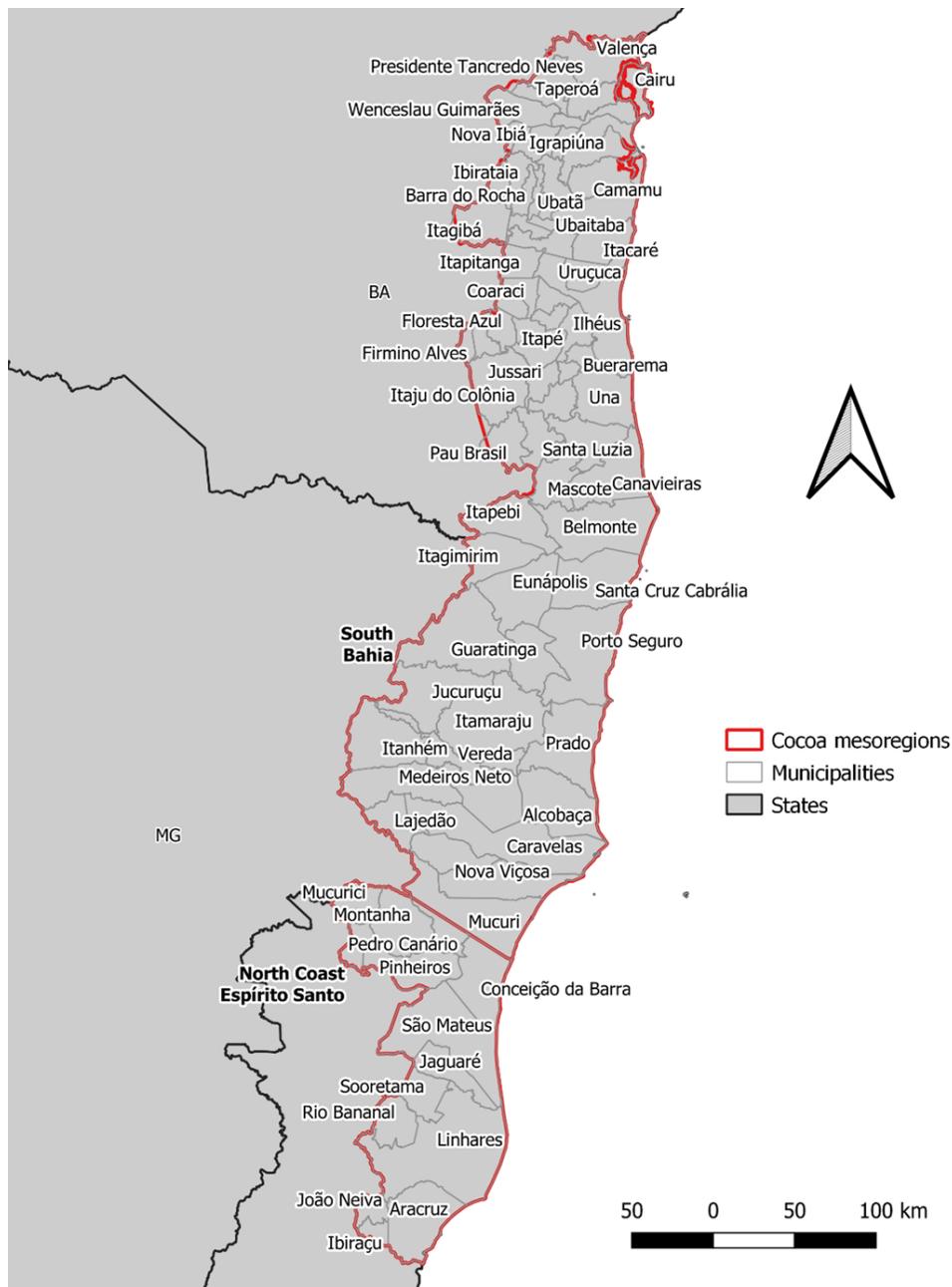
Map 1.
Cocoa mesoregions and the living cost zone



Source: authors.

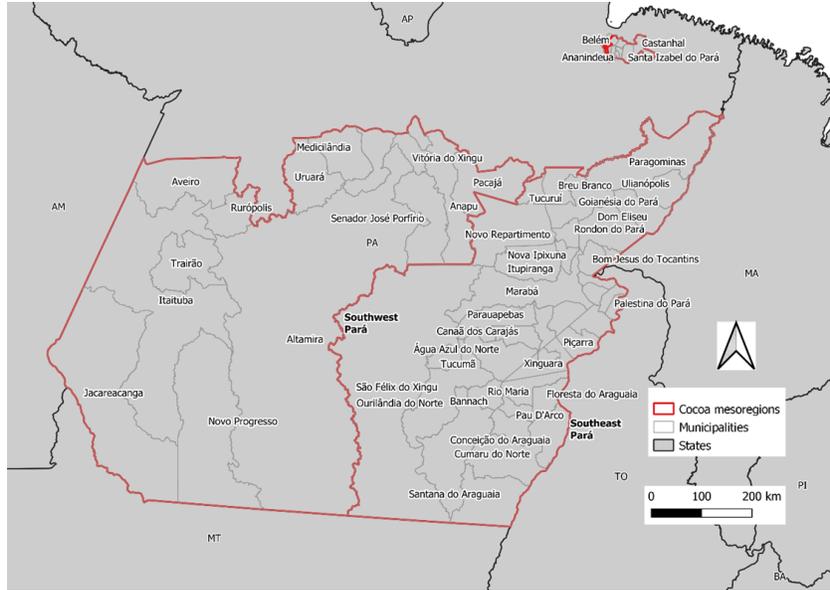
Map 2.

Municipalities in South Bahia and North Coast Espírito Santo



Source: authors.

Map 3.
Municipalities in Southeast Pará, Southwest Pará, and Belém metropolitan region of Pará



Source: authors.

Map 4.
Municipalities in East Rondônia

Source: authors.



5. LIVING INCOME VALUES FOR THE SIX COCOA MESOREGIONS IN 2021

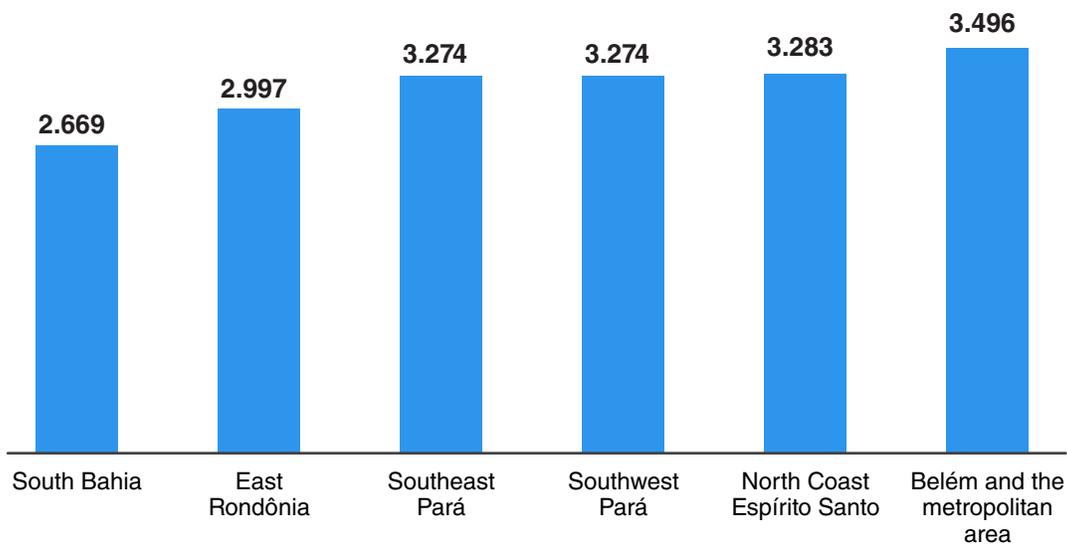
Graph 1 presents our living income estimates for the 6 cocoa mesoregions.¹⁴ Among these cocoa mesoregions, the lowest living income (R\$ 2,669) is in South Bahia and the highest is in Belém metropolitan area (\$ 3,496).¹⁵

This means that the highest living income for Belém metropolitan area is 31% higher than the lowest value for South Bahia. Furthermore, differences are rather small for the four other cocoa regions. Living income for the two cocoa producing regions of Pará are virtually the same, and, living income for North Coast Espírito Santo is only 0.3% higher than for these Pará mesoregions. Living income for East Rondonia is 8.5% lower than for the two Southern Pará mesoregions and 12.3% higher than for South Bahia.

Below graph 1, a table is provided to indicate how our estimated living income/living expenses are distributed according to food, housing, and non-food non-housing costs for each of the six cocoa mesoregions.

Graph 1.

Living income values for six cocoa mesoregions in 2021 reais per month for a family of 4 persons



Notes: Values for Southwest Para and Southeast Para were so similar that we decided to merge them into one region and value. This is the reason why they have the same value in this figure.

Source: authors

¹⁴ In order to update these 2018 POF values to 2021, we used INPC/IBGE consumer price indexes. It is important to note that these updated values took into account the different observed inflation rates for food, housing, and NFNH (non-food non-housing) costs from January 2018 (POF data) to June 2021 (most recent inflation data). This means that these 2021 values already consider the rising food prices in Brazil during the pandemic.

¹⁵ The values for the capital of Belém and its metropolitan area are the same according to our estimates. This is not the case for other metropolitan areas of Brazil.

Table 1.

Food, housing, and other expenses required per month for a living income for each cocoa location, 2021

Region	Food	Housing	Other expenses	Total living income	Total Living Income + 5%
South Bahia	883	511	1148	2542	2669
East Rondônia	835	720	1299	2854	2997
Southeast Pará	994	741	1383	3118	3274
Southwest Pará	994	741	1383	3118	3274
North Coast Espírito Santo	820	846	1461	3127	3283
Belém and the metropolitan area	913	889	1528	3330	3496

Source: authors

6. DESCRIBING AND COMPARING THE 6 COCOA MESOREGIONS

In this section, we present and discuss socio-economic-demographic indicators for the six cocoa mesoregions covered in this report. The purpose here is not to explain why living income values are relatively higher or lower in these mesoregions, but to better understand socio-economic-demographic differences between these mesoregions and so put the six mesoregions in context. Generally speaking, richer areas tend to have higher living costs than poorer areas. But this is far from exact, since living costs depend on other aspects as well such as prices.

6.1 Demographics

6.1.1 Population size and density

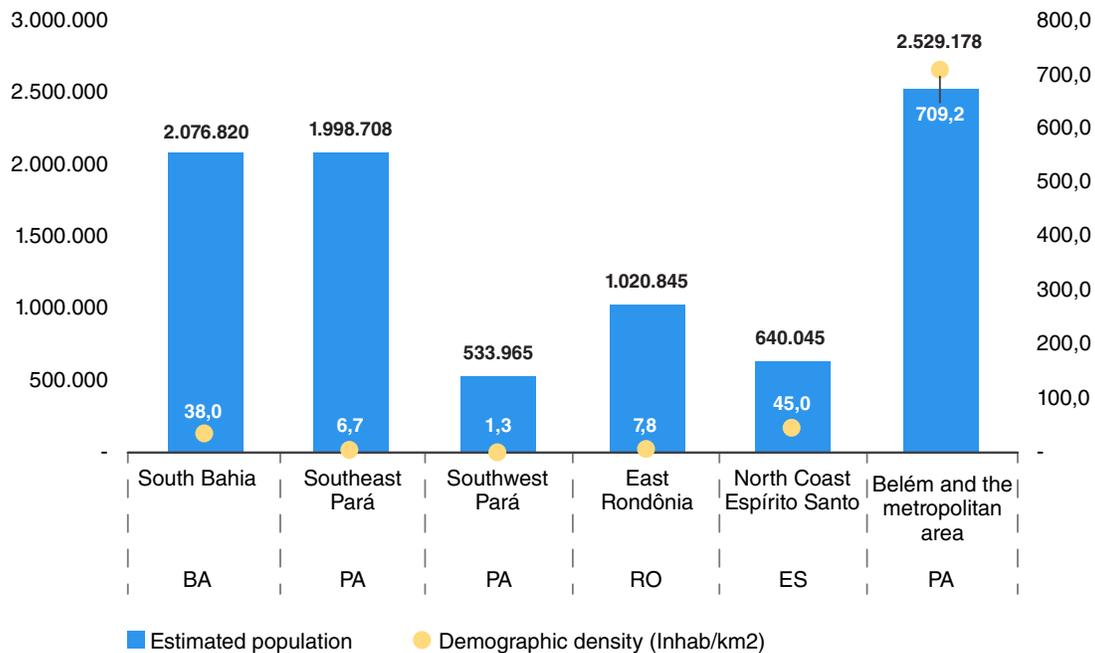
Among the cocoa producing regions highlighted above, the one with the highest living income is the largest mesoregion in terms of total population and population density. That is, Belém and its metropolitan area, with a population of 2.5 million people and 709 people per km². The second largest mesoregion in terms of population is South Bahia, which has relatively high population density and the lowest living income among the cocoa producing regions.

The Southeastern and Southwestern regions of Pará, despite being socio-economically similar, have quite different total population sizes but similarly low population densities. The population of Southeast Pará is almost four times larger than for Southwest Para, and its population density is five times bigger although still low.

East Rondônia is the region with the third largest total population (one million inhabitants) and fourth in terms of population density (7.8 people per km²). The North Coast of Espírito Santo has the smallest total population (640 thousand) and one of the highest population densities (45 people per km²).

Graph 2.

Population and population density, 2020.



Source: IBGE.

The table below shows the five largest municipalities in terms of population in each of the six cocoa producing mesoregions. Following Table 2, we present a map with total estimated population in the municipalities in each of the cocoa producing mesoregions.

Table 2.

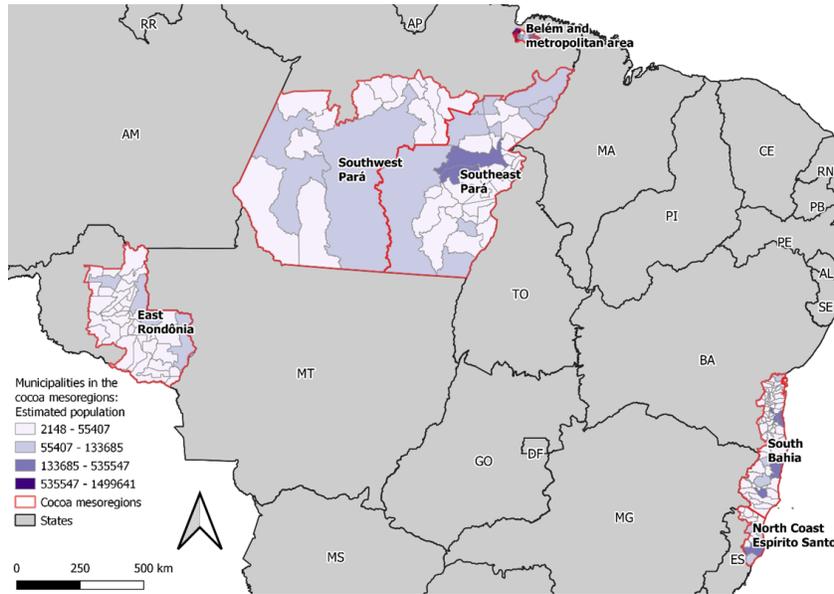
Five largest municipalities in each cocoa mesoregion in terms of total population and in % of total population, 2020

Municipalities /Mesoregions	Estimated population	%
South Bahia	2.076.820	100,0
Itabuna	213.685	10,3
Teixeira de Freitas	162.438	7,8
Ilhéus	159.923	7,7
Porto Seguro	150.658	7,3
Eunápolis	114.396	5,5
Others	1.275.720	61,4
Southeast Pará	1.998.708	100,0
Marabá	283.542	14,2
Parauapebas	213.576	10,7

São Félix do Xingu	132.138	6,6
Tucuruí	115.144	5,8
Paragominas	114.503	5,7
Others	1.139.805	57,0
Southwest Pará	533.965	100,0
Altamira	115.969	21,7
Itaituba	101.395	19,0
Rurópolis	51.500	9,6
Pacajá	48.414	9,1
Uruará	45.435	8,5
Others	171.252	32,1
East Rondônia	1.020.845	100,0
Ji-Paraná	130.009	12,7
Ariquemes	109.523	10,7
Vilhena	102.211	10,0
Cacoal	85.893	8,4
Rolim de Moura	55.407	5,4
Others	537.802	52,7
North Coast Espírito Santo	640.045	100,0
Linhares	176.688	27,6
São Mateus	132.642	20,7
Aracruz	103.101	16,1
Conceição da Barra	31.273	4,9
Jaguaré	31.039	4,8
Others	165.302	25,8
Belém and the metropolitan area	2.529.178	100,0
Belém	1.499.641	59,3
Ananindeua	535.547	21,2
Castanhal	203.251	8,0
Marituba	133.685	5,3
Santa Izabel do Pará	71.837	2,8
Others	85.217	3,4

Source: IBGE.

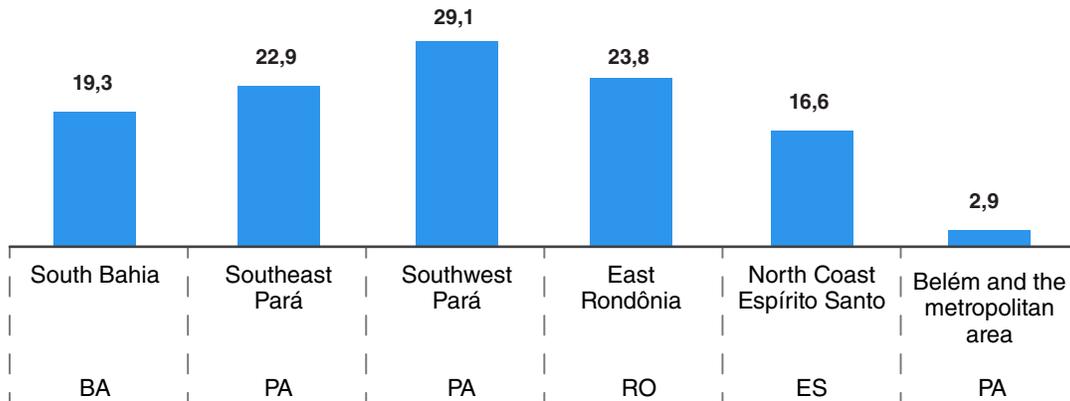
Map 6.
Distribution of the total population in the municipalities in each cocoa producing mesoregion, 2020



Source: IBGE.

Belém metropolitan area has the smallest share of the population living in rural areas, with only 2.9% of the population in this situation. It is possible to observe that the smaller the percent rural, the higher the living cost tends to be at least in the six cocoa mesoregions. However, the correlation is not perfect, as other socio-economic characteristics help to explain differences in living incomes.

Graph 3.
Percentage of people living in rural areas, 2010



■ % people living in rural areas

Source: Demographic Census/IBGE

6.1.2 Housing persons per bedroom

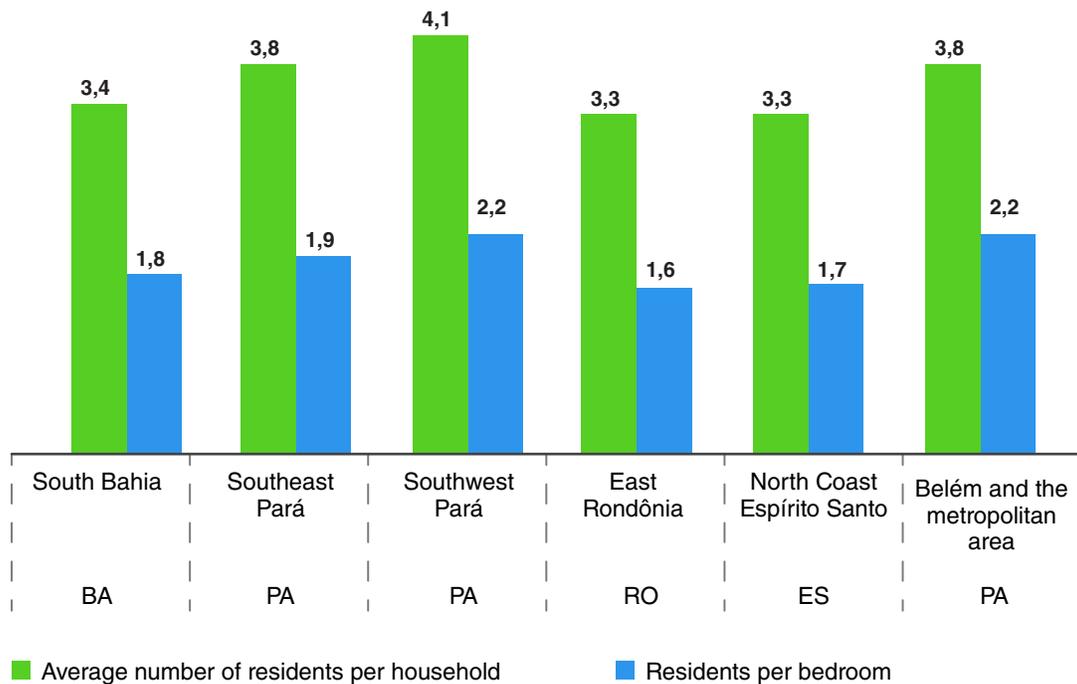
Housing density and overcrowding is often measured by the number of persons per bedroom index. It can indicate precariousness in housing conditions and overcrowding when the indicator is greater than two persons per bedroom.

Belém metropolitan region and Southwest Pará have an average density of people per bedroom slightly higher than two with an average number of residents per household of 3.8.

The cocoa mesoregions with the lowest average household size and number of people per bedroom are East Rondônia and the Espírito Santo's North Coast, with 3.3 average household size and 1.6 and 1.7, respectively, people per bedroom.

Graph 4.

Average household size and Residents per bedroom, 2010



Source: Demographic Census/IBGE

6.1.3 Infant mortality

The infant mortality rate represents the number of children who die before reaching age one for every thousand children born alive within a year. Low birth weight is a term used for newborns weighing less than 2,500g, who may or may not be premature.

Among factors correlated with infant mortality are the age and education of pregnant women; lack of medical follow-up; deficiency in health care; malnutrition; absence of effective public policies in education; and absence or deficiency in basic sanitation. Low birth weight is often related to the existence of mother's health problems or to situations affecting the development of the pregnancy.

Therefore, the indexes presented below are partly indicators of the access to health care, nutrition and food security, basic sanitation, and quality of education.

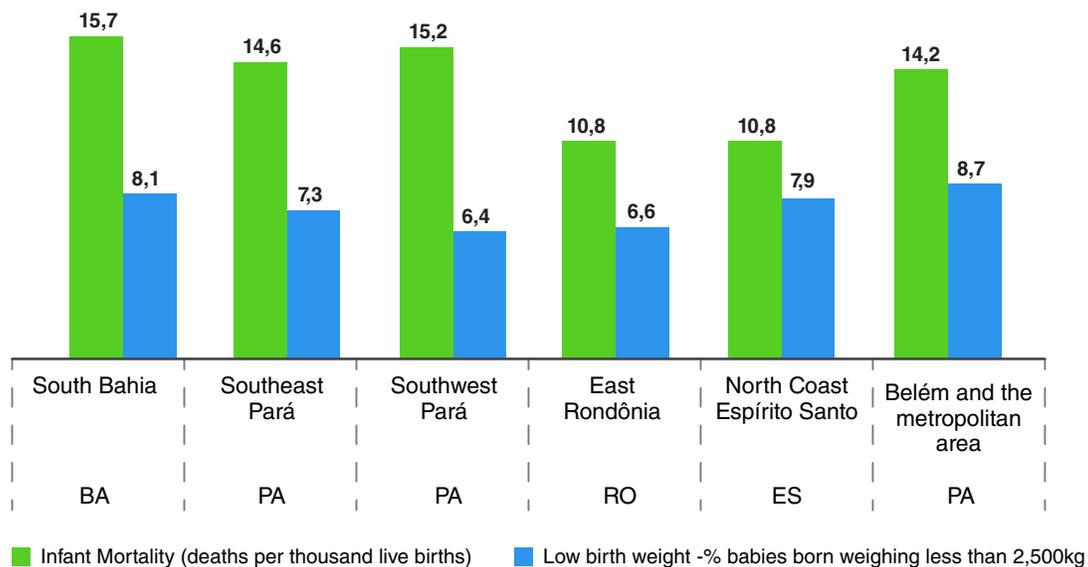
In the cocoa-producing regions, it is possible to observe that the level of infant mortality is similar between South Bahia, Southeast and Southwest Pará and the Belém's metropolitan region. In these regions, this indicator is between 14.2 and 15.7 deaths per thousand live births. East Rondônia and North Coast Espírito Santo have a lower level, with 10.8 deaths for every thousand live births in each area.

On the other hand, low birth weight had greater proportions at the two extremes of the living income values, that is, for the lowest living cost mesoregion, which is South Bahia, and for the highest, which was Belém and its metropolitan area. It should be mentioned that Belém value in this aspect is affected by the high number of poor population living in the outskirts of the city.

It is important to note that although there are differences between cocoa mesoregions in infant mortality rates and percent of births with low birth weight, values are reasonably low for all six cocoa mesoregions.

Graph 5.

Infant mortality rate (2019) and percentage of births with Low Birth Weight, 2019



Source: DataSUS (2019); IBGE (2010).

6.2 Socio-economic aspects

6.2.1 Social Vulnerability

The Social Vulnerability Index (IVS) is an indicator calculated by the Institute for Applied Economic Research (IPEA) based on data from the 2010 Population Census. Its purpose is to indicate the access, absence, or insufficiency of some “assets”.

The index is the unweighted arithmetic mean of the following three sub-indexes: IVS Urban Infrastructure, IVS Human Capital, and IVS Income and Work. These sub-indexes are themselves composed of sixteen indicators.¹⁶

Southwest Pará is the region with the greatest social vulnerability, with all components of this index showing “very high” levels. Southeast Pará, on the other hand, as a consequence of its “middle” urban infrastructure vulnerability, is classified in the category of “high” social vulnerability. Similarly, South Bahia also shows “high” vulnerability, although it has “low” urban infrastructure vulnerability.

East Rondônia and North Coast Espírito Santo have “low” social vulnerability, which can be explained by “very low” urban infrastructure vulnerability and human capital and income and work vulnerabilities in the “middle” category.

Belém and its metropolitan region, on the other hand, showed average social vulnerability for all components of the indicator.

Table 3.

Five largest municipalities in each cocoa mesoregion in terms of total population and in % of total population, 2020

	South Bahia	Southeast Pará	Southwest Pará	East Rondônia	North Coast Espírito Santo	Belém and the metropolitan area
Social Vulnerability Index	High	High	Very High	Low	Low	Middle
IVS Urban Infrastructure	Low	Middle	Very High	Very Low	Very Low	Middle
IVS Human Capital	Very High	Very High	Very High	Middle	Middle	Middle
IVS Income and Work	Very High	Very High	Very High	Middle	Middle	Middle

Source: Demographic Census/IBGE/IPEA.

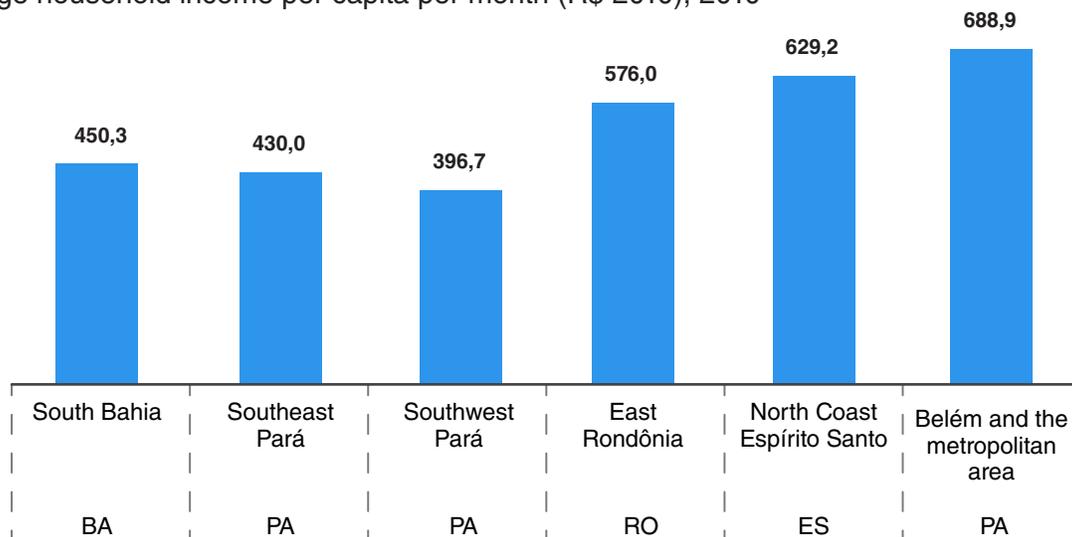
¹⁶ See more detail on this, see: <http://ivs.ipea.gov.br/index.php/pt/sobre>

6.2.2 Household income per capita

Southwest Pará had the lowest average household income per capita per month in 2010 at R\$ 396.7, followed by Southeast Pará (R\$ 430.0) and South Bahia (R\$ 450.3). On the other hand, Belém's metropolitan region (R\$ 688.9) presented the highest average household income per capita, followed by North Coast Espírito Santo (R\$ 629.2), and East Rondônia (R\$ 576.0). It is worth mentioning that all of these cocoa mesoregions had an average household income per capita clearly below the Brazilian average, which was R\$ 794.0 in 2010.

Graph 6.

Average household income per capita per month (R\$ 2010), 2010

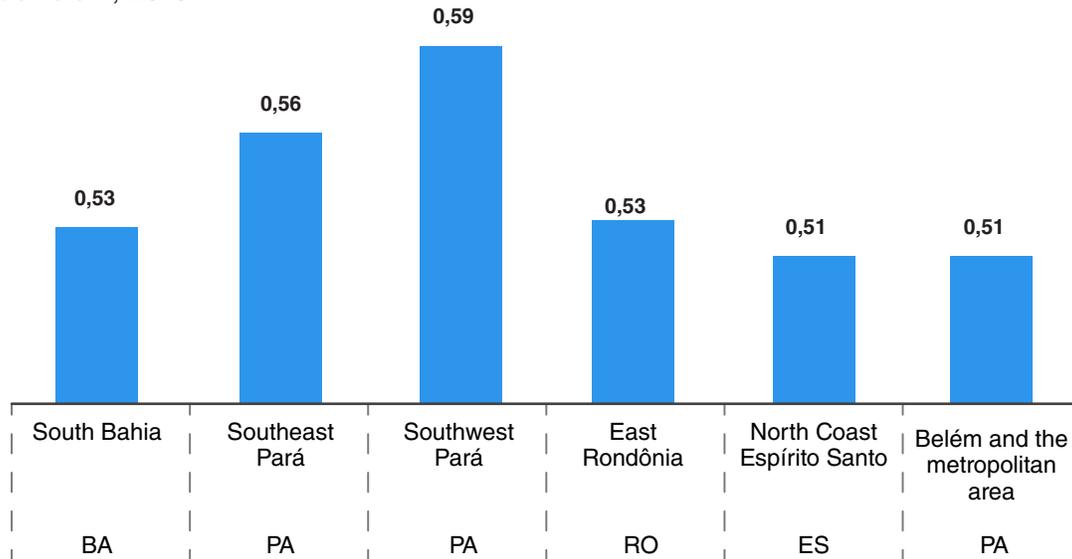


Source: Demographic Census/IBGE.

6.2.3 Income inequality

The Gini coefficient is a measure of income inequality that varies between 0 and 1, where 0 corresponds to complete income equality and 1 corresponds to the highest inequality level. In 2010, Brazil's Gini coefficient was around 0.60. In the cocoa mesoregions, the most unequal in terms of income distribution were Southeast Pará and Southwest Pará, with a Gini of 0.56 and 0.59 respectively. South Bahia and East Rondônia are similar regions in terms of income inequality, with a Gini coefficient of 0.53. North Coast Espírito Santo and Belém's metropolitan area had a Gini coefficient of 0.51.

Graph 7.
Gini coefficient, 2010



Source: Demographic Census/IBGE/IPEA.

6.3 Economics

6.3.1 GDP per capita

As for GDP per capita, Southeast Pará is the richest region, with GDP per capita of R\$ 30,713 in 2018. Although this region is the richest according to GDP per capita, the socio-economic analysis above showed that this is also one of the regions with the greater inequality in income distribution, lower per capita household income, and high social vulnerability.

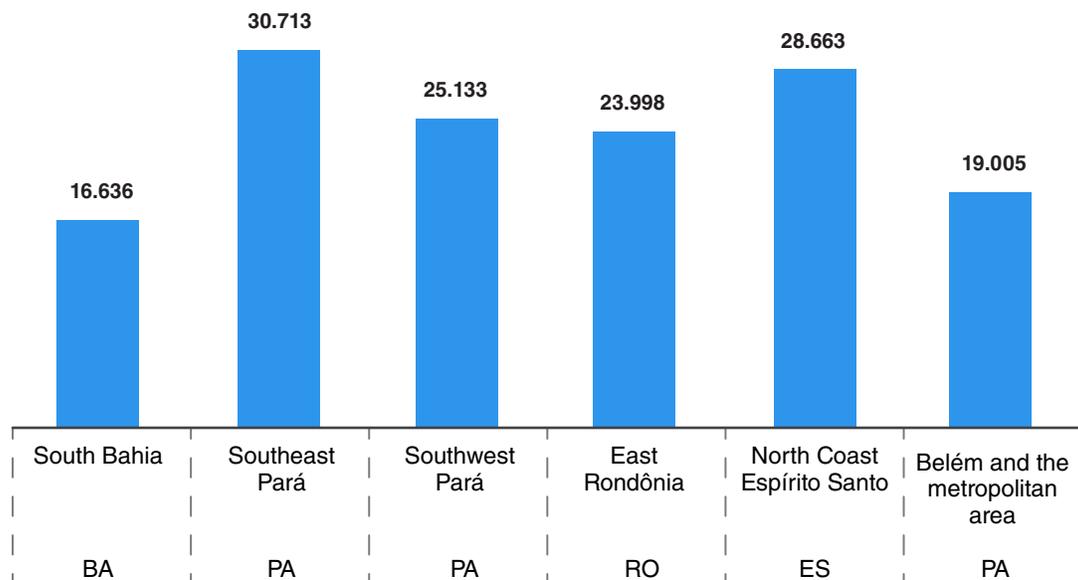
North Coast Espírito Santo is the second highest in terms of GDP per capita, with R\$ 28,663 in 2018. Also, the Gini index is one of the lowest among the analyzed cocoa regions (see below).

On the other hand, the south of Bahia was the region with the lowest GDP per capita, with R\$ 16,636, being a region with a slightly better income distribution than the Southeast of Pará, but one of the lowest average household income and also with high vulnerability.

Belém metropolitan region had the second lowest GDP per capita, with R\$ 19,005, but with the lowest Gini coefficient among the cocoa regions analyzed, presenting also the highest average household income and average social vulnerability.

Graph 8.

GDP per capita (R\$), 2018



Source: National Accounts - GDP of municipalities/IBGE

6.3.2 Value added by sector

The composition of GDP of these regions is quite heterogeneous among themselves, except for the Southeast and Southwest Pará regions. In these two regions, industry is predominant, with 51.3% and 43.2% of value added, respectively, and the service share is also remarkably similar, with 25.1% and 25.4%, respectively, in Southeast and Southwest Pará. Mining is a very important industry here.

In the metropolitan region of Belém, services predominate with 63.3% of GDP from services. Services also predominate in South Bahia, although to a lesser extent with 46.6%.

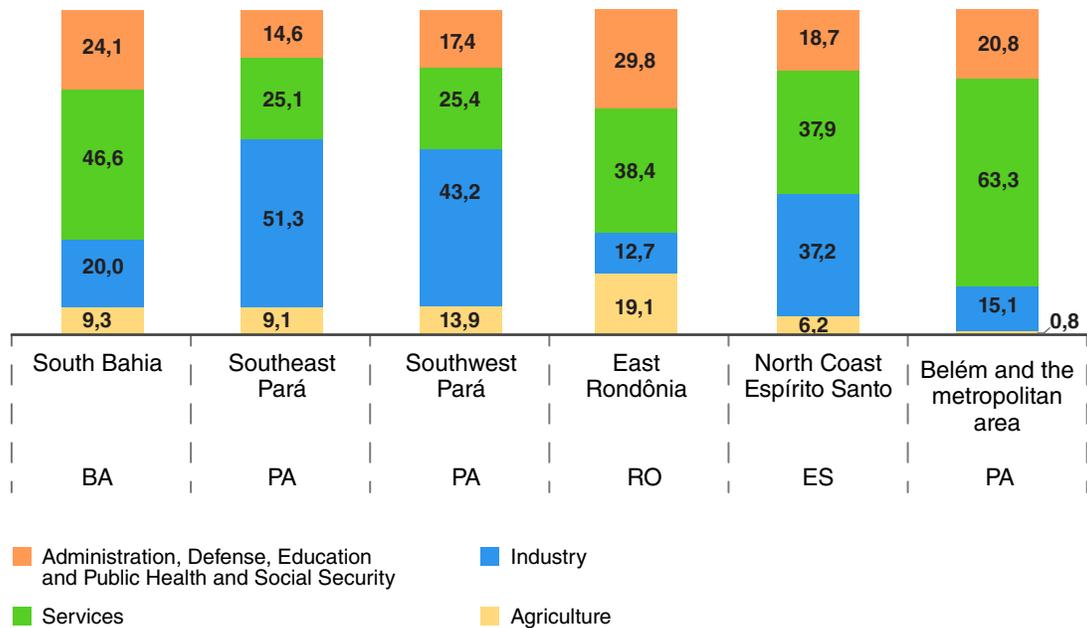
North Coast Espírito Santo has an economy almost equally divided between industry and services, with a share of 37.9% for services and 37.2% for industry.

Although services predominate in East Rondônia, with a share of 38.4%, the 29.8% share of public administration, defense, education and public health and social security is noteworthy.

As these mesoregions are known for cocoa production, the low agriculture value-added percentages probably can be explained by the relatively lower value added in agriculture in general in Brazil. However, East Rondônia and Southwest Pará stand out for their percentages of value added in agriculture being above 10%.

Graph 9.

Value added composition (%), 2018



Source: National Accounts - GDP of municipalities/IBGE.

6.4 Labor market

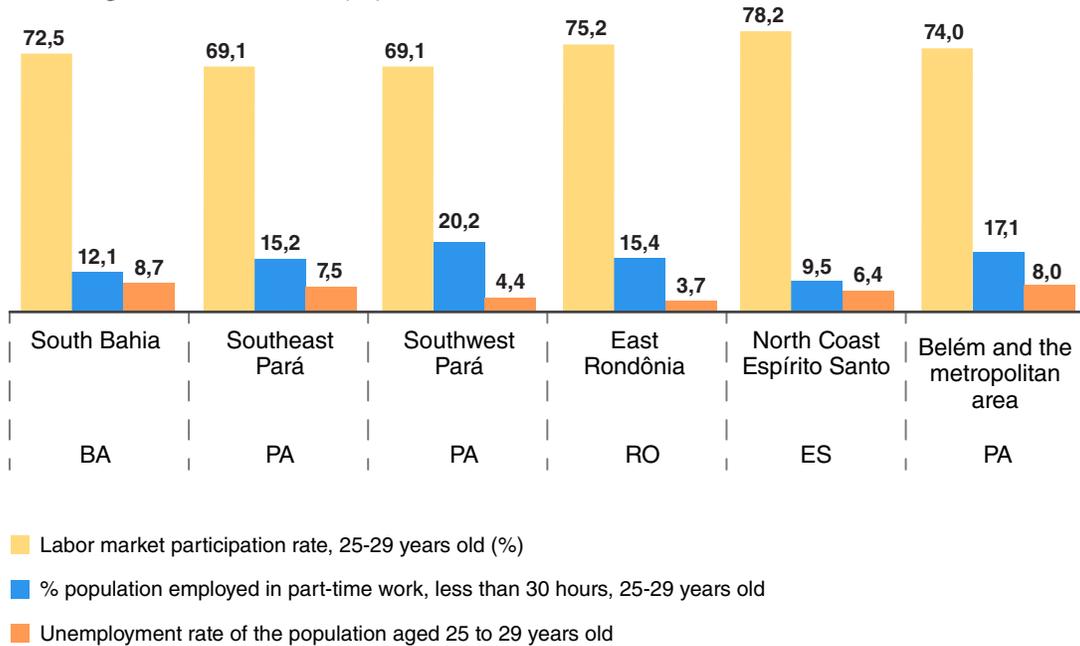
6.4.1 Labor force participation rate rates, unemployment rates and part-time employment rates

The labor force participation rate is the ratio between the economically active population - that is, those who were employed or looking for work - and the working age population. This rate is higher in the two mesoregions with the highest living costs, varying between 74.0% and 78.2%. In South Bahia, Southeast Pará and Southwest Pará, labor force participation rates somewhat lower level, between 69.0% and 72.5%.

The highest unemployment rates among cocoa-producing regions are found in the two regions with the highest and lowest living income/living cost. These regions are South Bahia and Belém's metropolitan area with unemployment rates of 8.7% and 8.0% respectively. The lowest unemployment rates are in East Rondônia and Southwest Pará at 3.7% and 4.4% respectively.

Southwest Pará is the region with the highest proportion of people working part-time, with 20.2%. The second highest in this regard is the metropolitan region of Belém, with 17.1%, and the lowest is North Coast Espírito Santo with 9.5%.

Graph 10.
Labor market general indicators (%), 2010



Source: Demographic Census/IBGE.

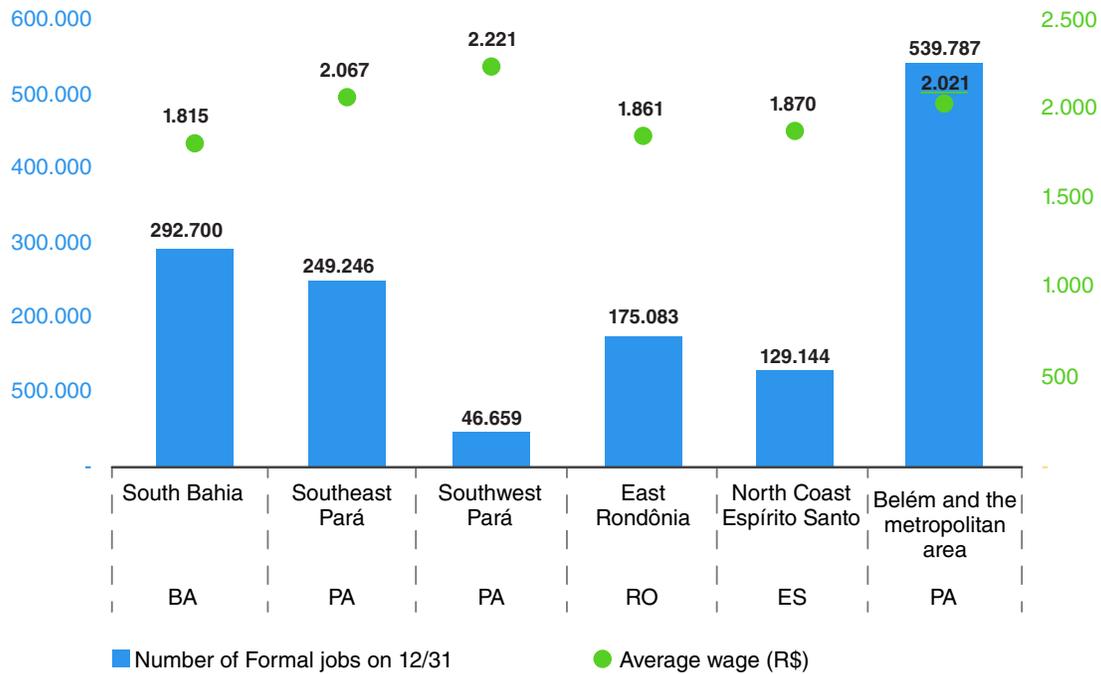
6.4.2 Availability of formal jobs

Graph 11 indicates the number of formal jobs of each mesoregion according to RAIS (a register organized by the Ministry of Labour and Social Security) for 2019 and also the average wages in reais of the same year. Southwest and Southeast Pará are the mesoregions with the highest average wages of formal employment, R\$ 2,221 and R\$ 2,067, respectively, followed closely by Belém's metropolitan region with an average wage of R\$ 2,021. However, it should be pointed out that the share of formal jobs in total jobs is much lower in the first two mesoregions of the state of Pará compared to Belém.

South Bahia has the lowest level of wages for formal jobs among the six cocoa mesoregions, which are a little higher in East Rondônia and North Coast Espírito Santo.

Graph 11.

Number of formal jobs and average wage, 2019



Source: RAIS/ME

6.4.3 Prevailing wages

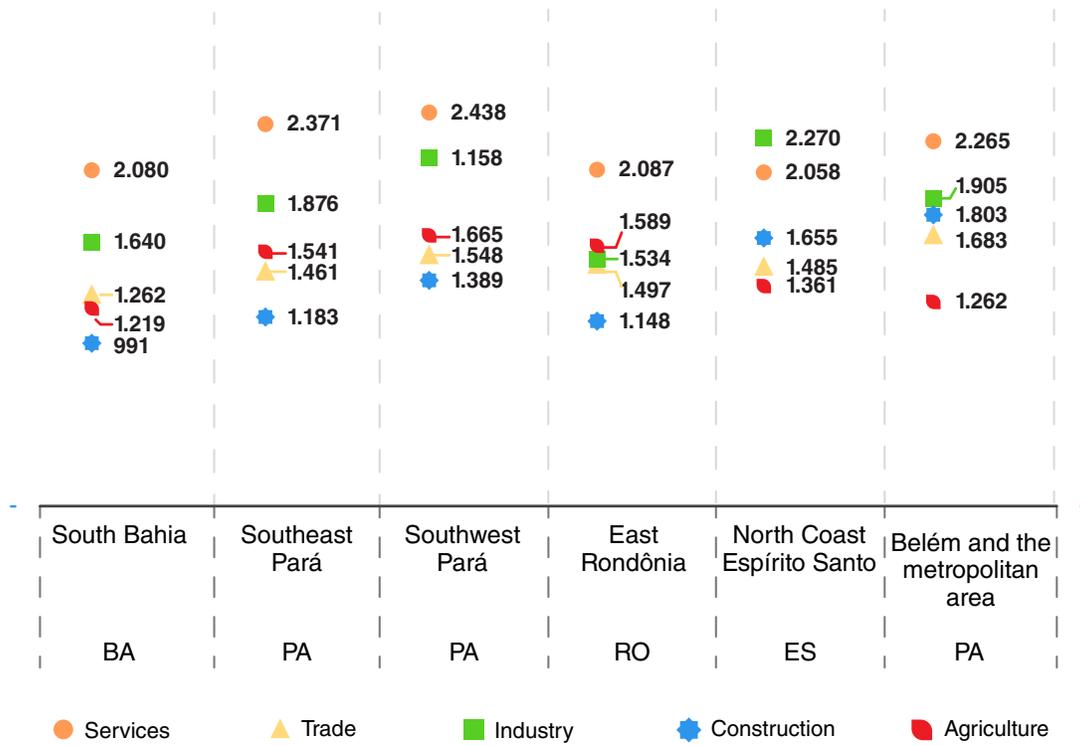
We should bear in mind that the wages in formal jobs differ by economic sector. According to Graph 12, services is the economic sector that pays the highest level of wages in formal jobs, except in North Coast Espirito Santo, where industry pays more than services.

Agriculture is the activity that pays least in the Belém's metropolitan region, with R\$ 1,262 (values from 2019) and in the North Coast Espirito Santo, with R\$ 1,361. Southwest Pará, on the other hand, followed closely by Southeast Pará and East Rondônia, is the region with the highest average wage of formal employment in agriculture among the six cocoa regions, at R\$1,665.

As the focus of this report is on cocoa mesoregions, it is worth mentioning that the average wages in agriculture, in 2019 reais values, range from R\$ 1,219 in South Bahia to R\$ 1,655 in Southwest Pará, a difference of 36%.

Finally, it should be mentioned that the prevailing wages actually paid to wage earners in a specific place should not be compared to family living costs, but to living wages.

Graph 12.
Average wage of formal jobs by economic sector (R\$), 2019



Source: RAIS/ME

6.5 Conclusions

As pointed out above, the relationship between living income/living costs and socio-economic-demographic conditions is complex. A number of factors affect costs of food, housing, and NFNH in these mesoregions, and they do not follow a very clear pattern of higher costs in more developed or richer cocoa producing areas.

For instance, South Bahia has a social vulnerability index better than Southwest Pará. However, the former mesoregion has lower formal sector wages, higher unemployment rate, and lower GDP per capita.

In the case of Southwest Pará and Southeast Pará, we can observe that higher GDP per capita values do not turn into higher average household income per capita, on the contrary. This can be explained by its higher Gini coefficient, that is, higher income inequality. However, these mesoregions tend to have higher average wages in formal jobs due to its more dynamic economy, even though the share of formal jobs in the total number of workers is low.

North Coast Espírito Santo and Belém metropolitan areas have higher average household income per capita and also relatively higher wages in formal jobs. They also have the less unequal income distributions. This can somewhat explain their relatively higher living incomes.

East Rondônia's lower living income compared to Southeast Pará and Southwest Pará is not consistent with its relatively better indicators in terms of social vulnerability, average household income per capita, unemployment rate and distribution of income. However, its living income is consistent with its lower average formal wages. It should not be seen as an outlier in terms of living income. Other factors related to the structure of production and supply of food and housing, and even the distribution of households among different social strata, may help to explain its lower living costs.

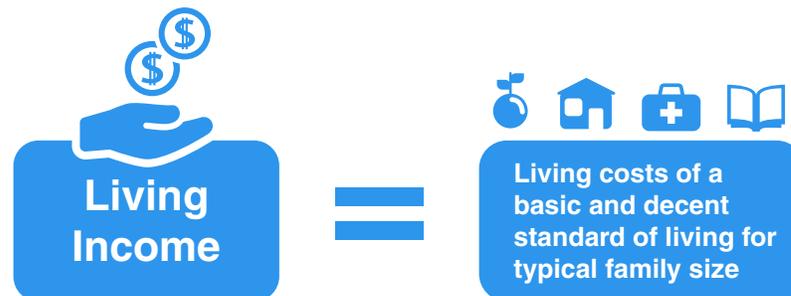
7. APPENDICES

Appendix A. How to estimate living wages and living incomes using above estimated living costs

As mentioned above in this report, living costs are for a family of 4 people because this is a typical family size throughout Brazil. This annex indicates how to convert these family living costs into living income and living wage values.

Living income is similar to the living wage concept in that it is concerned with the income required for basic decency. The difference is that living income is for a family that is not only a unit of consumption, but also a unit of income generation. For example, it may be a farm family. Living income is the net revenue needed (after business/farm expenses and possible income tax) by a producing family to afford a basic and decent standard of living for a typical size family in a location. As we can see in Figure 3, in our case the living income of a typical family size is equivalent to living costs.

Figure 3.
Estimate of living incomes



Source: Anker and Anker, 2017.

On the other hand, the living wage concept refers to the wage required for employees, so that the worker and her/his family can afford a basic but decent living standard. It assumes at least one wage earner in the family and requires an estimate of the proportion of full-time equivalent work expected from the spouse to help support the family. That is why in the case of living wages total family living costs is divided by a ratio between 1 and 2, depending on the labour market conditions of a mesoregion at a specific time. The net living wage (take-home pay) required for decency then needs to be grossed-up to take into consideration payroll deductions and income taxes, as shown in figure 4 below.

Figure 4.
Estimate of living wage

$$\text{Living Wage} = \frac{\text{Cost of basic but decent life for a family}}{\text{Number of full-time workers per family}} + \text{Statutory payroll deductions and income taxes}$$

Source: Anker and Anker, 2017.

Just to give a general idea, the typical number of full-time workers per family, the denominator of figure 4, was 1.71 for south/southwest mesoregion of Minas Gerais in July 2015, and 1.68 for non-metropolitan state of São Paulo region in February 2020.

The idea behind the value of the number of full-time workers per family is the following: the worse labor market conditions are, the lower is the number of full-time workers per family¹⁷ and the higher is the living wage, as fewer people per family are working full-time and so providing support.

Appendix B. Model diet used

The first step was to establish a standard nutritious low-cost diet for Brazil. The first, and important issue we faced, is whether there should be one model diet for all of Brazil or whether there should be different model diets for each region. We decided that one model diet was preferable for all of Brazil based on the normative nature of living wage and so that everyone in Brazil, rich and poor, should have similar quality diets – as long as people across Brazil have similar food habits and food preferences. We were able to confirm, using 2017-18 POF data, that the types and quantities of food consumed across Brazilian regions (North, Northeast, Southeast, South, Center-West) vary only slightly.

Our model diet was established by slightly adapting the model diet used in the Anker Benchmark living wage study for non-metropolitan São Paulo state to accommodate the availability of food price data for specific food items in 2017-18 POF. This provided us with a healthy diet for Brazil, such as required by the Anker Methodology. This model diet is provided below in table B1.

¹⁷ See ANKER & ANKER, 2017, p. 247-256 (especially Equation 2 in p. 255).

Table B1.
Anker model diet per person in grams per day

Major Group	Item	Daily grams per person
Cereal	Rice	182
	Wheat flour	25
	Maize	25
Prepared cereals	Pasta	30
	Bread	50
Roots and tubers	Potato	60
	Cassava	95
Pulses, legumes, beans	Beans	70
Dairy	Milk	240
Eggs	Eggs	61
Meat & Fish	Second class beef	13
	Pork	16
	Chicken	125
Green leafy vegetables	Lettuce	71
	Cabbage	57
Other vegetables	Onion	51
	Tomato	50
Fruits	Banana	62
	Orange	71
Oils and fats	Soybean oil	30
Sugar	Sugar	24
Coffee	Coffee	3.5

Source: Elaborated by the authors.

Appendix C. Housing conditions and definition of healthy housing

Housing costs were estimated using a normative basis. We considered UN-Habitat and IBGE criteria for defining an adequate and healthy dwelling: construction materials, services and utilities, density per person, and house type. More specifically:

- House type: should be a regular and permanent building (a house or an apartment). Favela sheds, improvised shelters and the like are considered inappropriate.
- Walls, roof, and floor: should be made of materials appropriate for construction.
- The water and electricity supply: should be provided by an official service (either a public or private company) – or, in some rural cases, an artesian well and river source of clean water.
- The water must be piped into at least one room of the household

- The toilet must have its sewage collected by an official utility service or disposed in an appropriate domestic septic tank.

On the housing density:

- The building must have at least 2 rooms per resident.
- The building must have at least 0,666 bedrooms per resident.
- The building must have at least 0.5 exclusive bathroom per resident (i.e., not shared with more than one other household).