ANKER LIVING INCOME ESTIMATES FOR COFFEE GROWING REGIONS OF BRAZIL

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ABSTRACT

This report provides Anker Living Income estimates for three coffee growing areas in Brazil: Northwest Espírito Santo; Zona da Mata mineira, and Triângulo Mineiro/Alto Paranaíba. 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. Additional socioeconomic data across regions is presented to contextualize the results.

ACKNOWLEDGEMENTS

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1. INTRODUCTION

The objective of this report is to estimate living income values for 3 locations in Brazil where coffee 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 estimates in previously conducted studies in Minas Gerais state and non-metropolitan São Paulo state.

Living incomes are estimated for the following three mesoregions where coffee is grown:

> Northwest Espírito Santo
> Zona da Mata
> Triângulo Mineiro/Alto Paranaíba

1.1 Definition of living income

This report uses the definition of a living income from the Living Income Community of Practice[1]:

> **"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

Section 2 of this report 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 estimate methodology, which the authors of this report developed to estimate living incomes (i.e. living costs) for different mesoregions in Brazil. Section 4 shows maps of the three selected major coffee regions covered in this report, highlighting their geographic locations and 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 three coffee mesoregions according to their different demographic, socio-economic, economic, and labor market dimensions.

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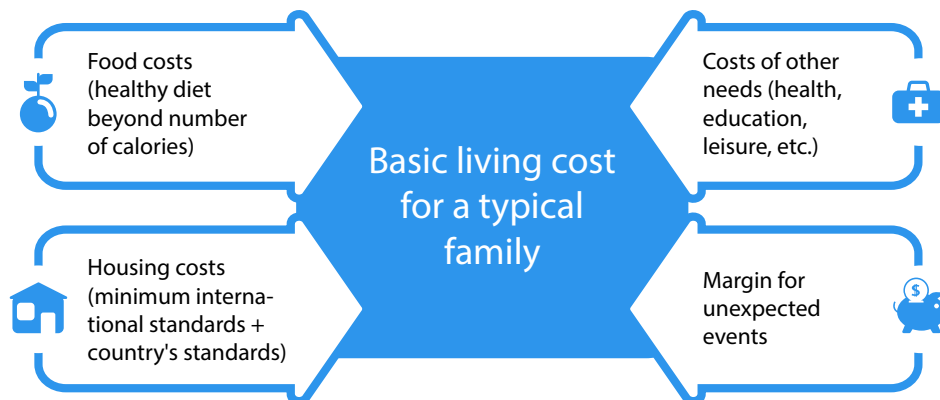
[2] See Annex A for the difference between living income and living wage.

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, etc. and (iv) a small margin (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 families are based on costs for a typical family size, as referred to 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, as in figure 1 below.

Figure 1.
Living costs

Food costs (healthy diet beyond number of calories)

Costs of other needs (health, education, leisure, etc.)

Basic living cost for a typical family

Housing costs (minimum international standards + country's standards)

Margin for unexpected events

Source: Anker and Anker, 2017.

Quality-assured Anker living wage Benchmark studies have been completed by the Anker Research Institute and Global Living Wage Coalition for 36 locations in 23 countries. Researchers are trained, then 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.

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[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 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 Gerais[4] and (ii) the large non-metropolitan area of the State of São Paulo[5] excluding the metropolitan areas of São Paulo 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 coffee producing locations

This section provides an overview of the methology used to estimate living income for 3 coffee producing 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 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 food 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 ring around the capital, and the rest of the state.[7] Since POF regions are not sufficiently disaggregated for "rest of state", especially for large states,

[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 Brasilia, the capital, and some states do not have separate metropolitan rings. We reduced this to 59 POF analytical regions to take into consideration when the sample size was not sufficient for a POF region.

we used regression analysis and selected socio-economic proxy variables to estimate differences in living incomes for mesoregions within "rest of state".

Living incomes for each of the coffee producing mesoregions were 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 São Paulo state) using local food prices[8]; housing costs were determined for healthy housing that meets minimum international norms and Brazilian standards[9]; 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 June 2021 using national price index inflation rates for food, housing and NFNH from January of 2018 to June 2021.

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[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 incomes for each mesoregion are divided 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 3 COFFEE MESOREGIONS ARE LOCATED

Below we present a series of maps. Map 1 is of Brazil with the three coffee mesoregions indicated. Map 2 offers a closer look at these mesoregions including the municipalities of each of them.

Map 1.
Coffee Mesoregions
Source: authors.

Map 2.
Municipalities in the coffee mesoregions
Source: authors.

5. LIVING INCOME VALUES FOR THE THREE COFFEE MESOREGIONS IN JUNE 2021

Graph 1 presents our living income estimates for the 3 coffee mesoregions.[14] Among these coffee mesoregions, the lowest living income (R$ 3,283) is located in Nothwest Espírito Santo and in Zona da Mata, whereas Triângulo Mineiro/Algo Paranaíba presents the highest value ($ 3,920). The highest living income is 19.4% higher than the lowest value for these three coffee mesoregions.

Below graph 1, a table indicates how our estimated living income/living expenses are distributed according to food, housing, and non-food non-housing costs for each of the three coffee mesoregions.

Graph 1.
Living income values for three coffee mesoregions in 2021 Brazilian reais per month for a family of 4 persons
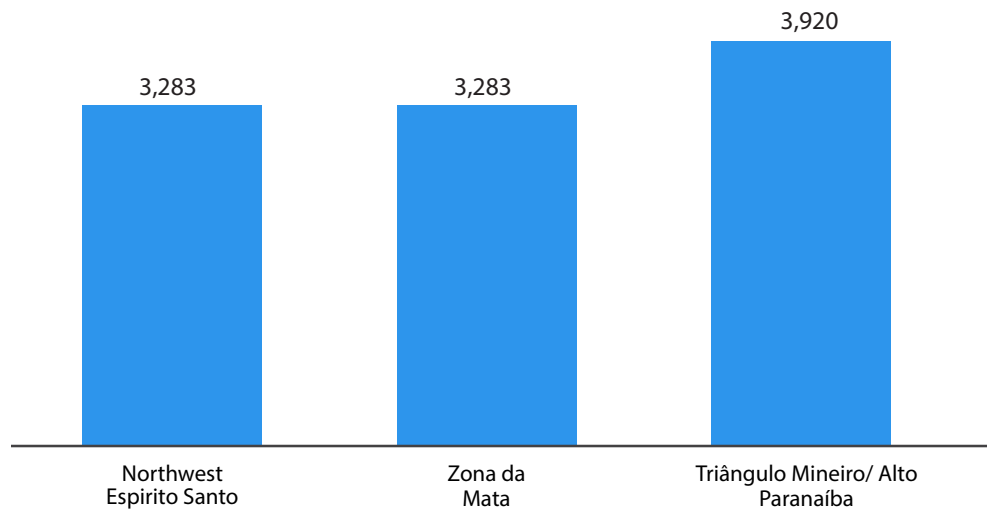
Notes: Values for Northwest Espírito Santo and Zona da Mata are so similar that we decided to merge them into one region and value. This is the reason why they have the same value in this figure.
Source: authors

Table 1.
Food, housing, and other expenses (NFNH) required for a living income for each coffee mesoregion

Mesoregion	Food	Housing	NFNH	Total	Total + 5%
Northwest Espírito Santo	845	803	1,479	3,127	3,283
Zona da Mata	845	803	1,479	3,127	3,283
Triângulo Mineiro/Alto Paranaíba	1,039	906	1,789	3,733	3,920

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.

6. DESCRIBING AND COMPARING THE 3 COFFEE MESOREGIONS

In this section, we present and discuss socio-economic-demographic indicators for the three coffee 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 three 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 coffee producing mesoregions highlighted above, the one with the highest living income is the largest mesoregion in terms of total population. Triângulo Mineiro/Alto Paranaíba is the region with the largest total population (2.4 million) and the highest living income, but with the lowest demographic density, with only 26.6 people per km².

Although Northwest Espírito Santo and Zona da Mata are contiguous mesoregions and have similar socio-economic indicators, the population of the Zona da Mata (2.3 million) is five times larger than that of Northwest Espírito Santo (451 thousand) and the demographic density is almost twice as high - 65.0 compared to 37.5 people per km², respectively. The graph below shows the population and population density in each of the three coffee producing mesoregions.

Graph 2.
Population and population density of three coffee mesoregions, 2020.
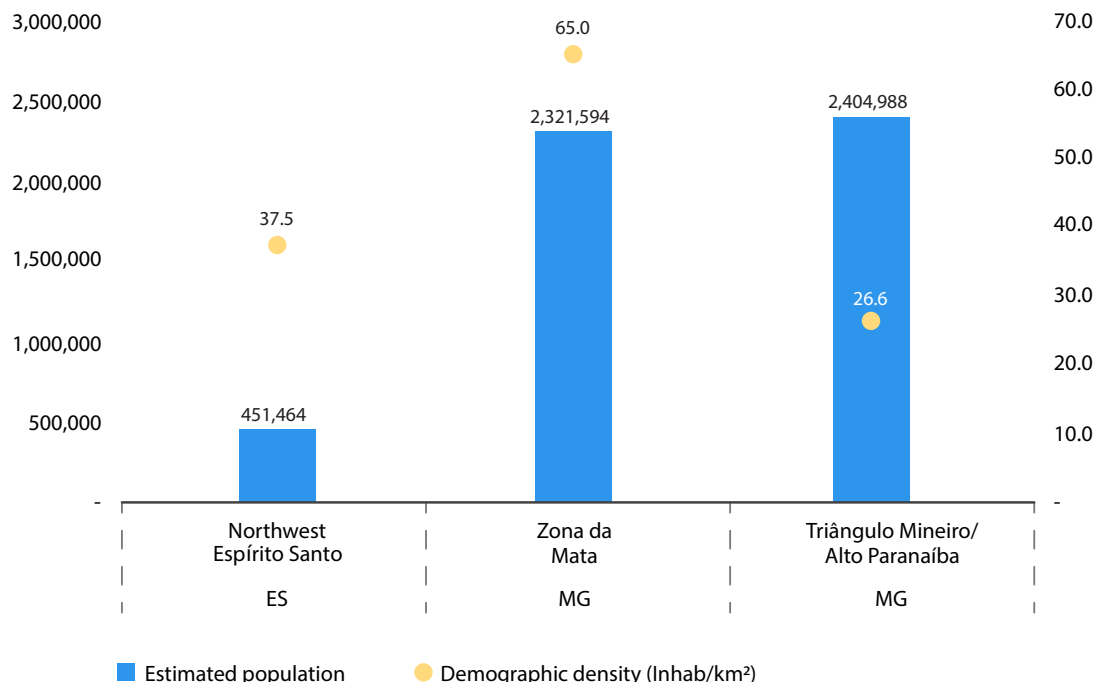
Source: IBGE.

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

Table 2.
Five largest municipalities in each coffee mesoregion in terms of total population and in % of total population, 2020

Municipalities /Mesoregions	Estimated population	%
Northwest Espírito Santo	**451,464**	**100.0**
Colatina	123,400	27.3
Nova Venécia	50,434	11.2
Barra de São Francisco	44,979	10.0
São Gabriel da Palha	38,522	8.5
Baixo Guandu	31,132	6.9
Others	162,997	36.1
Zona da Mata	**2,321,594**	**100.0**
Juiz de Fora	573,285	24.7
Ubá	116,797	5.0
Muriaé	109,392	4.7
Manhuaçu	91,169	3.9
Viçosa	79,388	3.4
Others	1,351,563	58.2
Triângulo Mineiro/Alto Paranaíba	**2,404,988**	**100.0**
Uberlândia	699,097	29.1
Uberaba	337,092	14.0
Patos de Minas	153,585	6.4
Araguari	117,825	4.9
Araxá	107,337	4.5
Others	990,052	41.2

Source: IBGE

Map 3.
Distribution of the total population in the municipalities in each coffee producing mesoregion, 2020
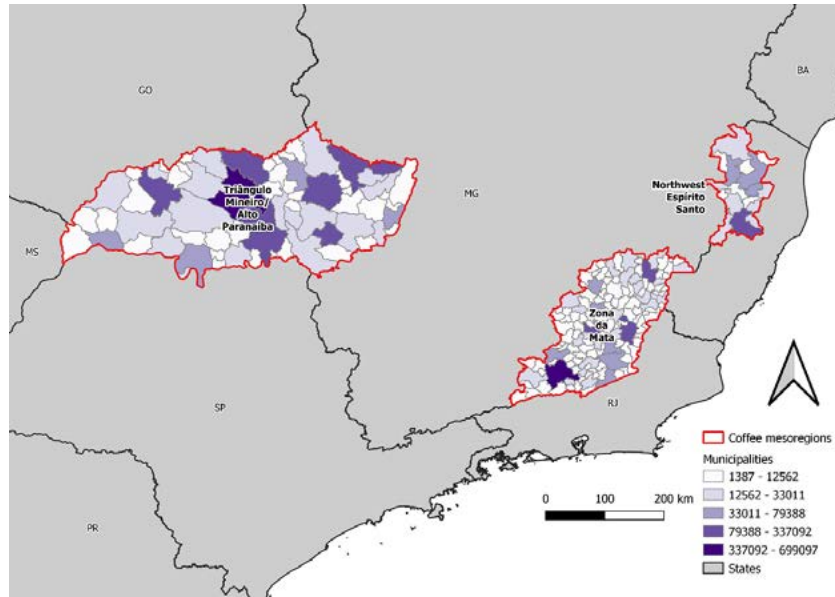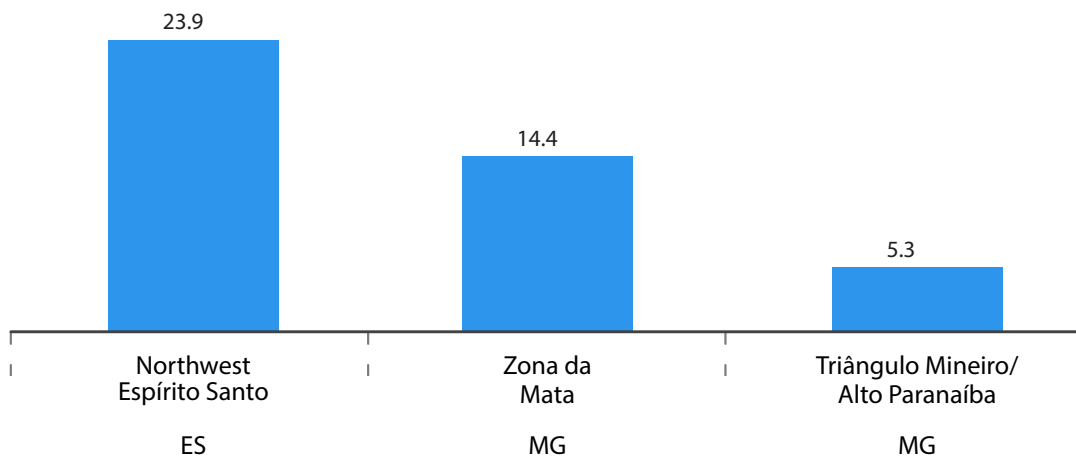

Source: IBGE.

Triângulo Mineiro/Alto Paranaíba area (which has the highest living income) has the smallest share of the population living in rural areas, with only 5.3% of the population in this situation. This compares to 14.4% and 23.9% rural for the other two coffee mesoregions.

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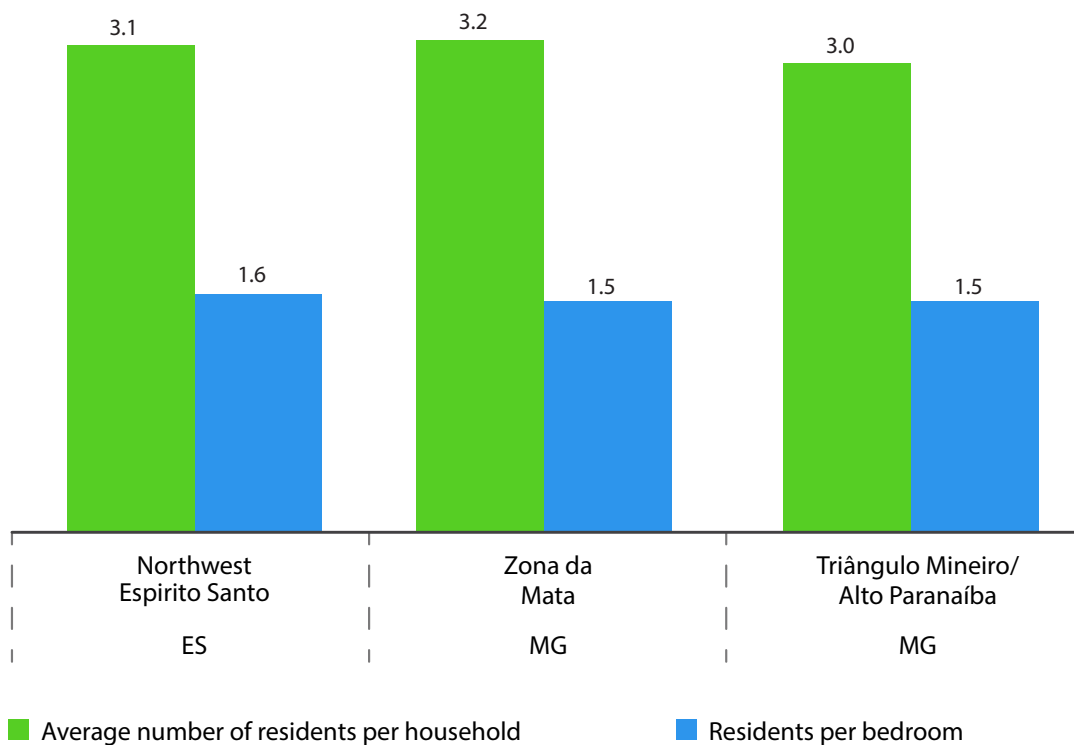Percentage of people living in rural areas of three coffee mesoregions, 2010

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. The three coffee mesoregions are similar regarding the number of people per bedroom and average household size. We observe 1.5 and 1.6 people per bedroom, and average house size only varies from 3.0 and 3.2.

Graph 4.
Average household size and Residents per bedroom in three coffee mesoregions, 2010

	Northwest Espirito Santo	Zona da Mata	Triângulo Mineiro/ Alto Paranaíba
	ES	MG	MG

■ Average number of residents per household   ■ Residents per bedroom

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; and 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 coffee producing regions, it is possible to observe that the level of infant mortality and low birth weight are similar for Zona da Mata and Triângulo Mineiro/Alto Paranaíba. In these mesoregions, we find the infant mortality rate is 11.6 to 11.9 deaths per thousand live births, and 9.2% or 9.1% of births with low birth weight. On the other hand, Northwest Espírito Santo has better indicators: 10.2 infant deaths per thousand live births and 8.0% of births with low birth weight.

Graph 5.
Infant Mortality Rate and Percentage of Births with Low birth Weight for Three Coffee-Producing Mesoregions, 2019
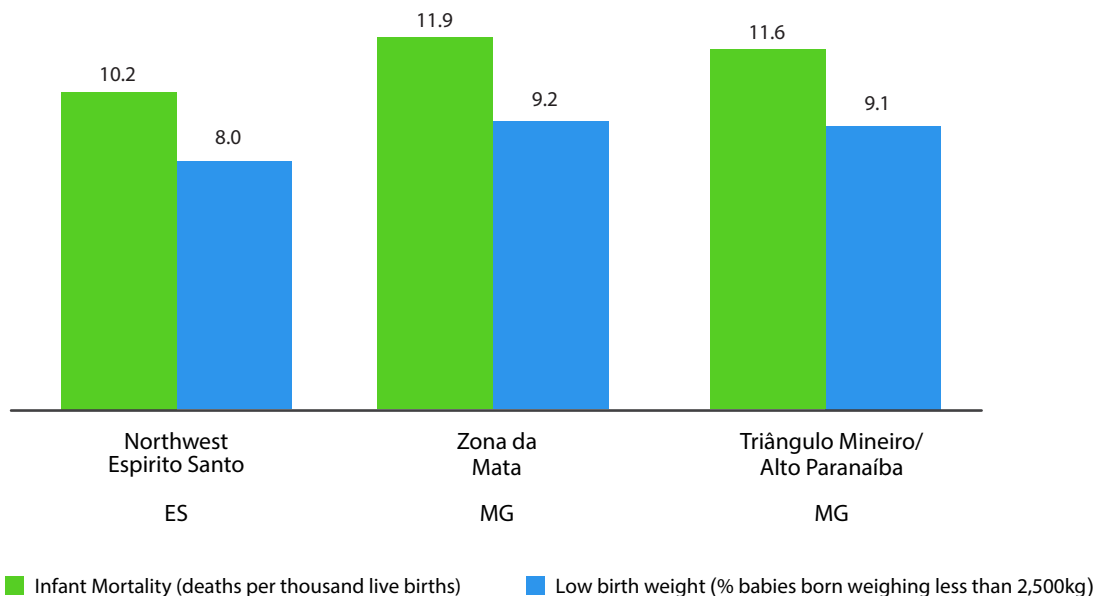
Source: DataSUS (2019); IBGE (2010).

6.2 Socio-economic aspects

6.2.1 Social vulnerablity

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.

Triângulo Mineiro/Alto Paranaíba is the region with the lowest social vulnerability and is the only one with "low" in the income and work vulnerability. Zona da Mata and Northwest Espírito Santo are in the same situation for all vulnerability categories. In Income and Work and in Human Capital their vulnerability is in the "medium" category. In Urban Infrastructure category the vulnerability is "very low" and the total index results in "low" vulnerability (table 3).

Table 3.
Social Vulnerability Index and its components for three coffee mesoregions, 2010

IVS	Northwest Espírito Santo	Zona da Mata	Triângulo Mineiro/ Alto Paranaíba
Social Vulnerability Index	Low	Low	Low
IVS Urban Infrastructure	Very low	Very low	Very low
IVS Human Capital	Middle	Middle	Middle
IVS Income and Work	Middle	Middle	Low

Source: Demographic Census/IBGE/IPEA.

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[15] See more detail on this, see: http://ivs.ipea.gov.br/index.php/pt/sobre

6.2.2 Household income per capita

Nothwest Espírito Santo had relatively low average household income per capita per month in 2010 at R$ 574.6, followed by Zona da Mata (R$ 680.6). On the other hand, the only coffee mesoregion with an average household income per capita clearly higher than Brazilian average (which was R$ 794.0 in 2010) was Triângulo Mineiro/Alto Paranaíba (which was R$ 827.8 in 2010).

Graph 6.
Average household income per capita per month for three coffee mesoregions (R$) 2010
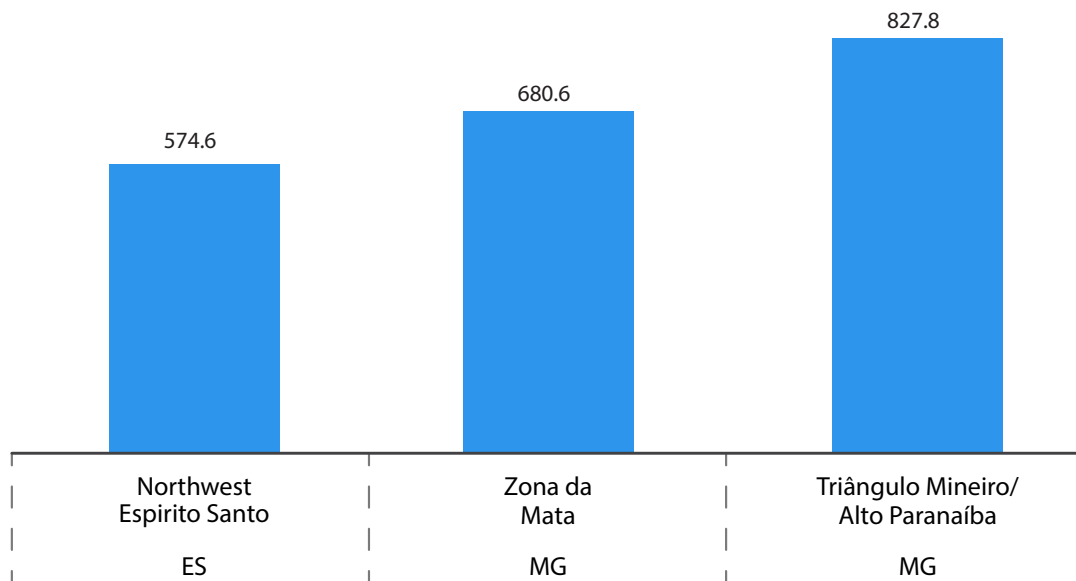
Source: Demographic Census/IBGE.

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. All three coffee mesoregions have similar and relatively low Gini coefficients. The most unequal in terms of income distribution is Northwest Espírito Santo with a Gini of 0.49, followed by Triângulo Mineiro/Alto Paranaíba with 0.48 and Zona da Mata with 0.47.

Graph 7.
Gini coefficient for three coffee mesoregions, 2010
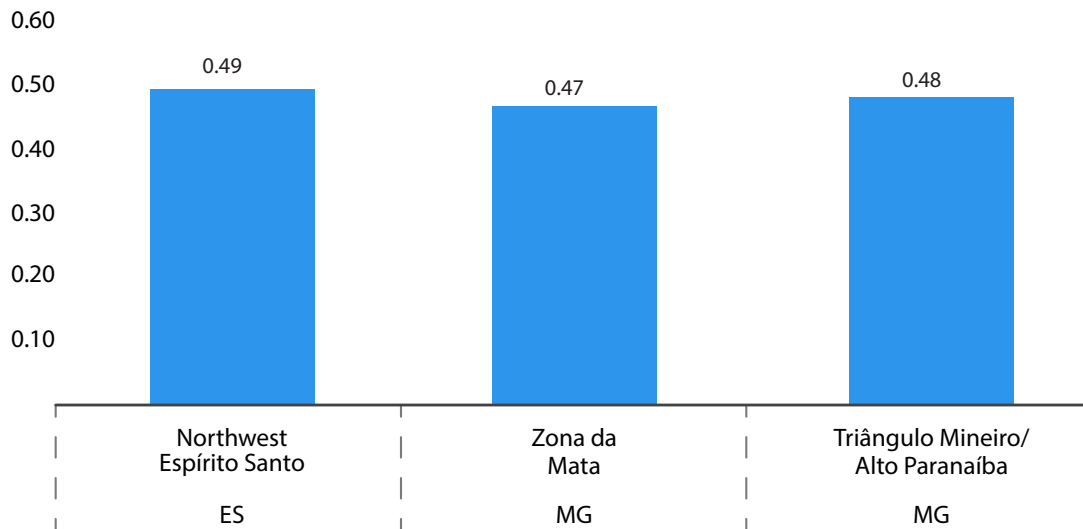
**Source:** Demographic Census/IBGE/IPEA.

6.3 Economics

6.3.1 GDP per capita

As for GDP per capita, Triângulo Mineiro/Alto Paranaíba is the richest region, with GDP per capita of R$ 43,652 in 2018. This region is also better according to the socio-economic analysis above that showed this is also the coffee mesoregion with the highest per capita household income and lowest social vulnerability.

The GDP per capita of Zona da Mata and Northwest Espírito Santo have a very similar level, with R$ 20,762 for Zona da Mata and R$ 20,643 for Northwest Espírito Santo, that is, half of the GDP per capita of Triângulo Mineiro/Alto Paranaíba. It should be noticed these two mesoregions with similar and lower GDP per capita also showed similarity in terms of social vulnerability.

Graph 8.
GDP per capita for three coffee mesoregions (R$), 2018
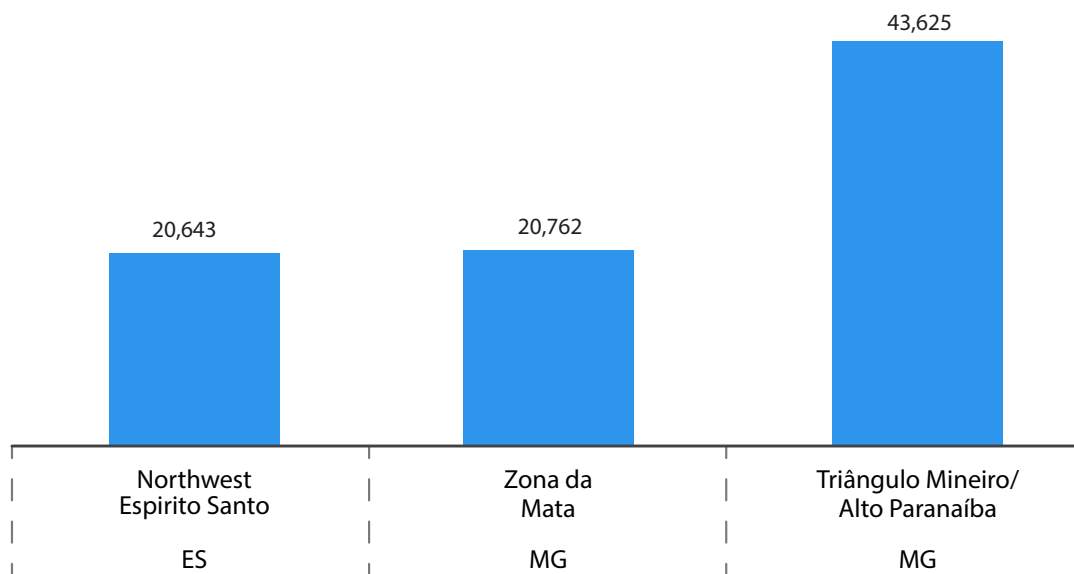
Source: National Accounts - GDP of municipalities/IBGE

6.3.2 Value added by sector

Northwest Espírito Santo and Zona da Mata are also similar in terms of their distribution of value added in their GDP composition. In other words, both have similar shares among the main sectors of the economy. The exception is Agriculture, whose share in Zona da Mata was 4.9%, while in Northwest Espírito Santo, it was 9.1%. In addition, Public Administration had a 23.4% share in Zona da Mata and 23.6% in Northwest Espírito Santo; Services had 53.6% and 45.8%, respectively; and Industry had 18.1% and 21.6%, respectively, in Zona da Mata and Northwest Espírito Santo.

Triângulo Mineiro/Alto Paranaíba, on the other hand, has a slightly different structure, with a larger share of Industry, with 29.0%, and a smaller share of Public Administration, with 12.3%. The percentage of Agriculture is close to Northwest Espírito Santo, with 9.9%.

It is important to stress that differences in terms of the agriculture percentage in value added may not mean that this sector is more or less important, as it can be that a lower value added is related to lesser processing, leading to lower value added, even with a high participation in terms of jobs in this sector.

Graph 9.
Value added composition (%) for three coffee mesoregions, 2018
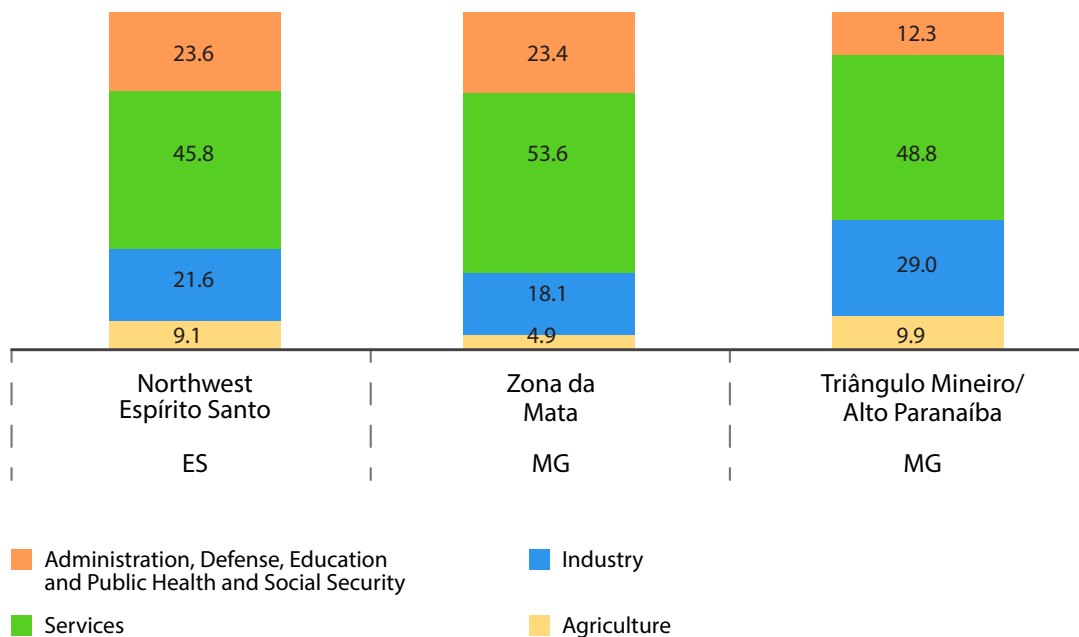
Source: National Accounts - GDP of municipalities/IBGE.
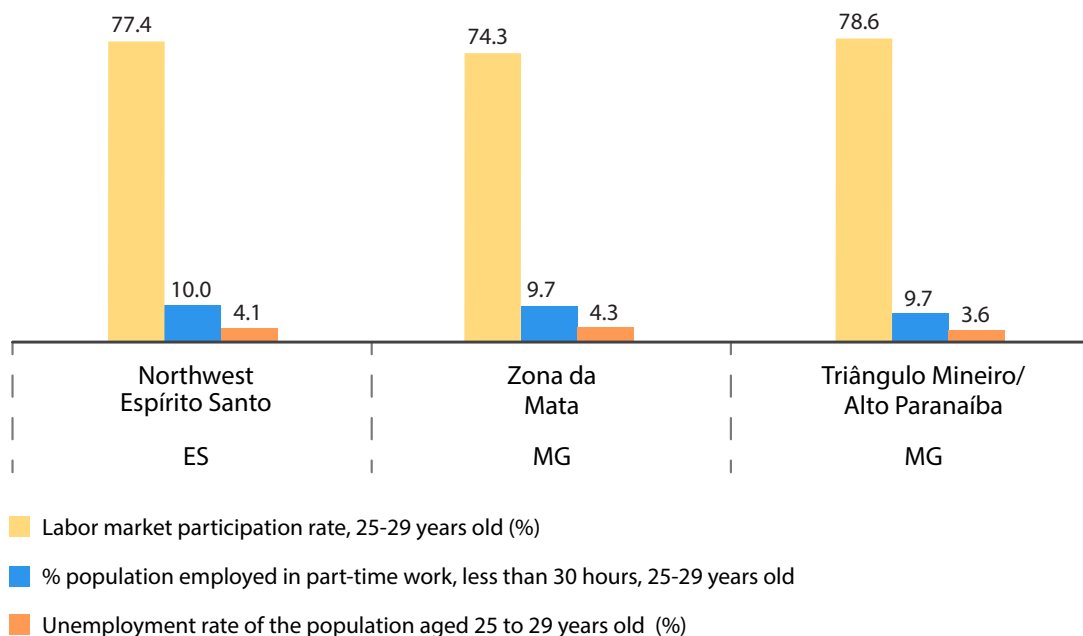
6.4 Labor market

6.4.1 Labor force participation 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 mesoregion with the highest living income, as indicated by the percentage of 78.6% in Triângulo Mineiro/ Alto Parnaíba.

The highest unemployment rates among the three coffee producing mesoregions are found in the two regions with the lowest living income/living cost. These regions are Northwest Espírito Santo and Zona da Mata with unemployment rates of 4.1% and 4.3% respectively.

Northwest Espírito Santo has the highest proportion of people working part-time, with 10.0%. The second highest in this regard is Zona da Mata, with 9.7%, and Triângulo Mineiro/Alto Paranaíba with 8.1%.

Graph 10.
Labor market general indicators (%) for three coffee mesoregions, 2010


Labor market participation rate, 25-29 years old (%)

% population employed in part-time work, less than 30 hours, 25-29 years old

Unemployment rate of the population aged 25 to 29 years old (%)

Source: Demographic Census/IBGE.

6.4.2 Availability of formal jobs

Graph 11 indicates for 2019 the number of formal jobs in each coffee mesoregion according to RAIS (a register organized by the Ministry of Labour and Social Security) and also the average wages in reais. Triângulo Mineiro/Alto Paranaíba is the coffee mesoregion with the highest average wage of formal employment, R$ 2,060, followed by Northwest Espírito Santo with an average wage of R$ 1,848 and Zona da Mata, with R$ 1,610.

Graph 11.
Number of formal jobs and average wage for three coffee mesoregions, 2019
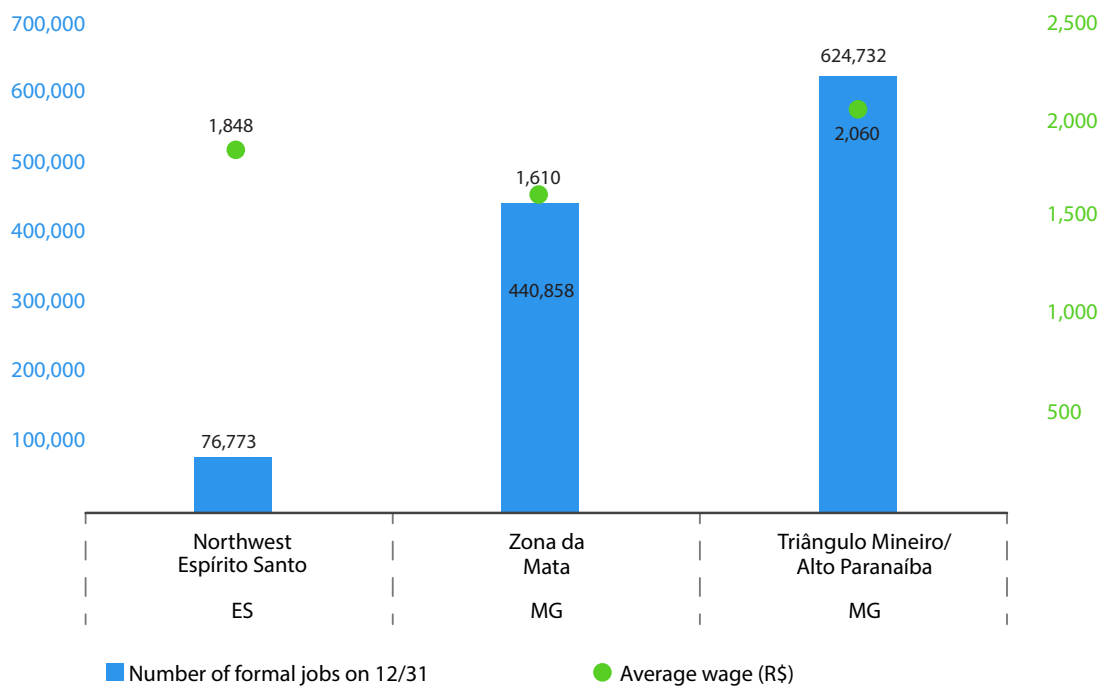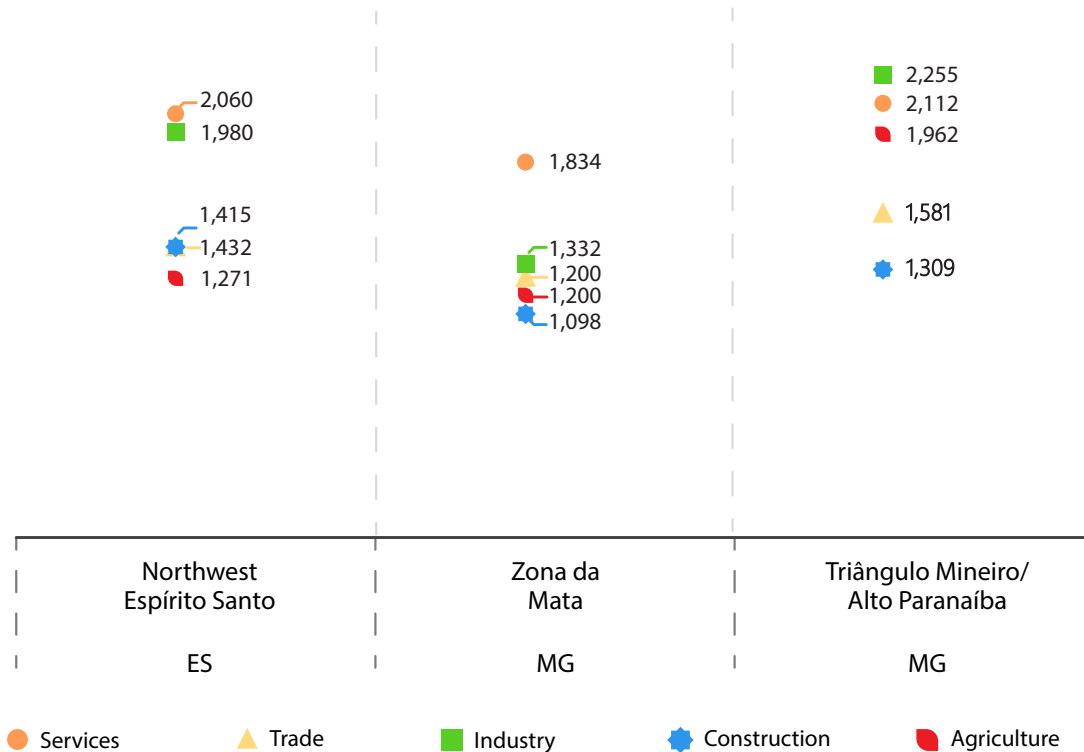

Source: RAIS/ME

6.4.3 Prevailing wages by economic sector

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 average wages in formal jobs, except in Triângulo Mineiro/Alto Paranaíba, where industry pays more than services. Agriculture is the activity that pays least in Northwest Espírito Santo, with R$ 1,271 (values from 2019) and Triângulo Mineiro/Alto Paranaíba is the region with the highest average wage of formal employment in agriculture among the three coffee producing regions (R$ 1,962).

As this report focuses on coffee mesoregions, it is worth mentioning that the difference in terms of average wages in agriculture between the highest average wage and the lowest is 39%. 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 incomes, but to living wages.

Graph 12.
Average wage of formal jobs by economic sector (R$) for three coffee producing mesoregions, 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 mesoregions, which do not always follow a clear pattern of higher costs in more developed or richer coffee producing areas.

However, in our case, Triângulo Mineiro/Alto Paraíba, the coffee mesoregion with higher living income also stands out as the mesoregion with higher GDP per capita and average household income per capita, as well as lower vulnerability levels and better labor market indicators, including higher wages in formal jobs. The other two coffee mesoregions, North-West Espírito Santo and Zona da Mata, which have very similar living income, also have very similar socio-economic indicators among themselves.

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 production. 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 2 in our case, the living income of a typical family size is equivalent to living cost.

Figure 2.
Estimate of living incomes
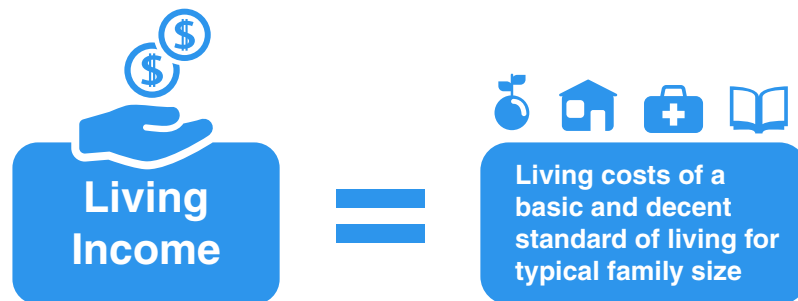
Source: Anker and Anker, 2017.

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 labor market conditions of a mesoregion at a specific time. The net living wage (take-home pay) required for decency then needs to be grossed to take into consideration mandatory payroll deductions and income taxes as shown in figure 3 below.

Just to give a general idea, the typical number of full-time workers per family, the denominator of figure 3, 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 equivalent workers per family[16] is the following: the worse are labor market conditions, the lower is the number of full-time workers per family and the higher the living wage, as fewer people per family are in the labor market and/or able to get a job.

Figure 3.
Estimate of living wage
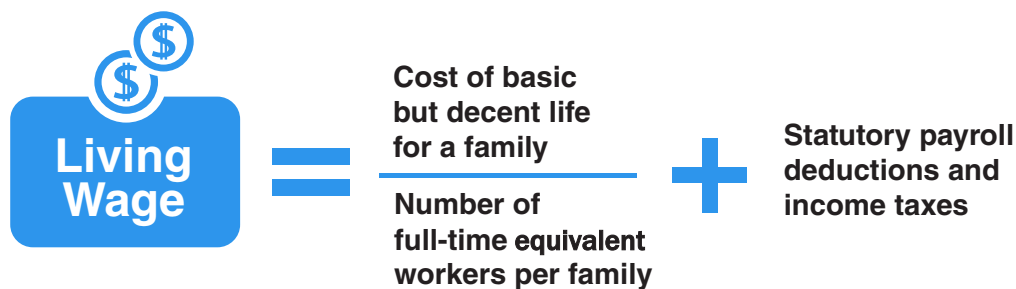
Source: Anker and Anker, 2017.

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 comfirm, 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 accomodate 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.

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

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

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 housing unit must have at least 2 rooms per resident.
- The housing unit must have at least 0.666 bedrooms per resident.
- The housing unit must have at least 0.5 exclusive bathroom per resident (i.e., not shared with more than one other household).