LIVING INCOME AND LIVING WAGE REPORT

RURAL AREAS AND SMALL TOWNS IN NAYARIT, MEXICO

FEBRUARY 2022

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ABSTRACT

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Abstract: This report estimates a living income and living wage for rural areas and small towns in the state of Nayarit (Mexico) for 2022 with a focus on tobacco-growing municipalities. About 48% of the population in these municipalities live in rural areas. This percentage is similar in the rest of the Nayarit municipalities (46%), with the exception of Tepic and Bahía de Banderas, where the population is mainly urban. The poverty rates in the study municipalities are in general higher than the average for Nayarit as a whole and closer to the average for Mexico. The living income and living wage were estimated using the Anker and Anker (2017) Methodology and data from both primary and secondary sources. Local food prices and housing costs were collected through a price survey in the six study municipalities in places where workers shop and live. The costs of goods and services other than food and housing were inferred from secondary data sources representative for the rural and urban areas of Nayarit. The main secondary data sources for this study are the National Income and Expenditure Survey, the National Occupation and Employment Survey, and the Population and Housing Census. The living income for a typical size reference family in the study area in 2022 was MXN 17,535 (USD 857) per month and the living wage for full-time workers in the area was MXN 12,410 (USD 607), which consists of a take-home pay of MXN 10,500 (USD 513) and MXN 1,910 (USD 93) in income and social security taxes.

Keywords: living income, living wage, Anker Methodology, tobacco, Nayarit, Mexico.

Any questions, comments, or observations about this study and the results it reports should be directed to the Anker Research Institute leadership: marthaandrichard@ankerinstitute.org

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Martha and Richard Anker are founding partners of the Global Living Wage Coalition and founders of the Anker Research Institute. They developed the Anker Methodology for measuring living wages and co-authored the book Living Wages Around the World.

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Only the authors are responsible for the results of this study. The opinions and conclusions expressed here do not necessarily coincide with those of the aforementioned individuals and institutions.

SECTION I. INTRODUCTION

This report presents results of a study on living income for rural areas and small towns in Nayarit, Mexico, with focus on the tobacco growing municipalities (with an annex on living wage). Section I discusses the background and the socio-economic context of the study area. Section II estimates the cost of a basic but decent life for a worker and her/his family, and section III presents and discusses our living income estimate for the study municipalities. In an annex, we use our estimate of the living income to infer the living wage for full-time workers in the area.

This study uses the Anker and Anker (2017) Methodology as reference to estimate the living income and the living wage in the study area. This Methodology has been used in more than 40 studies in more than 30 countries. The Methodology uses experts' opinions, and worker and producers views along with an exhaustive investigation of the needs and cost of living of the population under study. It is at the intersection between studies that are based exclusively on primary information sources and those that exclusively use secondary data.

The present report is part of a series of living wage and living income reports of the Anker Research Institute (ARI) and the Global Living Wage Coalition (GLWC) using the Methodology from Anker & Anker (2017).[1, 2]

1. DEFINITION OF LIVING INCOME

Living income is defined as:

> "[...] the net annual income required for a household in a particular place and time to afford a decent standard of living for all members of that household."
>
> **(The Living Income Community of Practice, n.d.).**

This study uses the Anker Methodology to estimate the monthly income that a typical family in the rural areas and small towns of the tobacco growing regions of Nayarit, Mexico, needs to reach a basic but decent living standard. In this context, elements of a decent standard of living include food, water, housing, education, health care, transport, clothing, and other essential needs, including provision for unexpected events (Anker & Anker, 2017).

1 The GLWC is a partnership between influential sustainability standard setting organizations in association with ISEAL and the Anker Research Institute. The GLWC has the shared mission of constantly improving the wages of workers in the farms, factories and supply chains that participate in their respective certification systems, with the long-term goal of workers receiving a living wage. Every living wage estimate anywhere in the world commissioned by the GLWC is made public with the goal of promoting the payment of a living wage.

2 *See Global Living Wage Coalition* (https://www.globallivingwage.org/)

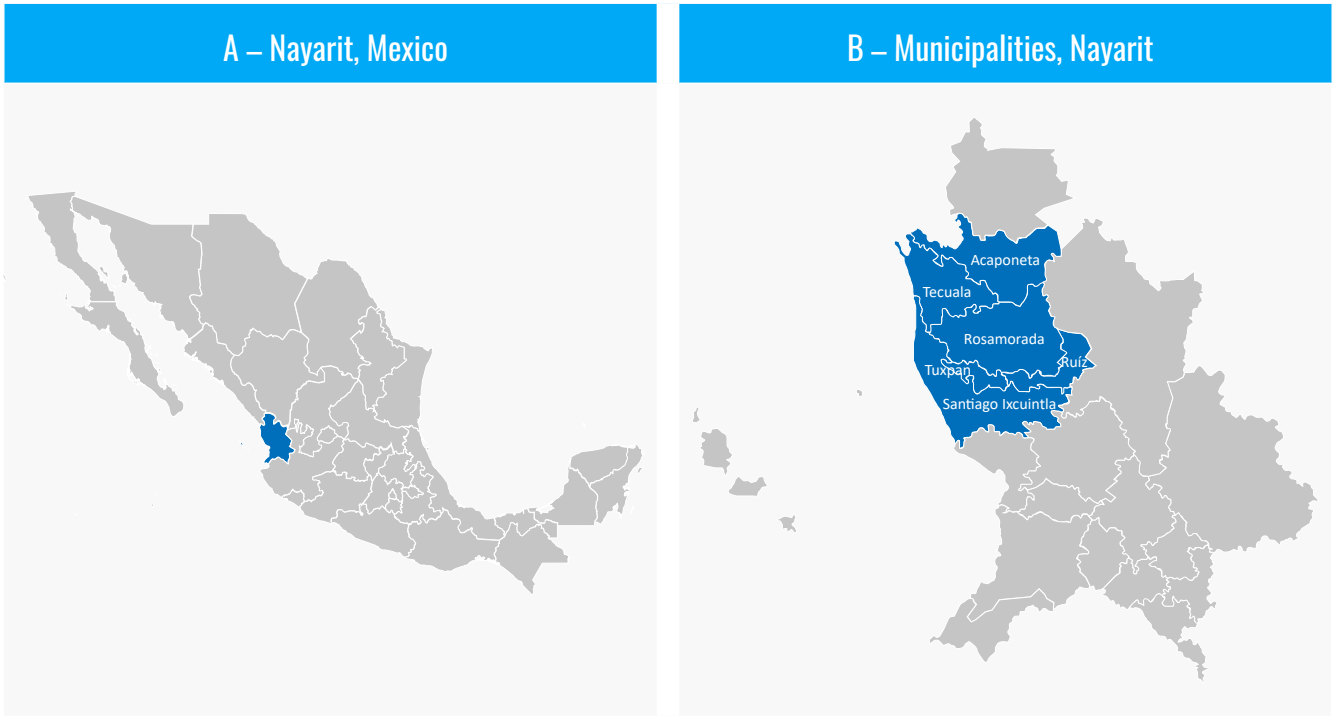
2. CONTEXT

Nayarit is located in the west of México, bordered by the states of Sinaloa, Durango, Zacatecas, and Jalisco and the Pacific Ocean (Map 1A). It has a territorial extension of 27,856 km^2 and a population of 1.24 million people (50.4% women and 49.6% men), 1% of the country's total in 2020. The population density is 44.4 persons/km^2.

Nayarit has a young population with a median age of 29 years, and a large proportion of children and adolescents: the age ranges that make up the largest population are 5 to 9 years (113,942 persons) and 10 to 14 years (113,335 persons). Life expectancy has increased during the last decades, reaching 75.4 years in 2021. This age structure implies a dependency rate of 56 persons for every hundred people of working age.[3]

Nayarit is geographically divided into twenty municipalities, among which Tepic (425,924 inhabitants) and Bahía de Banderas (187,632 inhabitants) are the municipalities with the highest populations. In our analysis of the living income, we focus on six municipalities in tobacco-growing areas: Acaponeta, Rosamodara, Ruíz, Santiago Ixcuintla, Tecuala, and Tuxpan (Map 1B).

Map1. Location of the state of Nayarit and the study municipalities in Nayarit

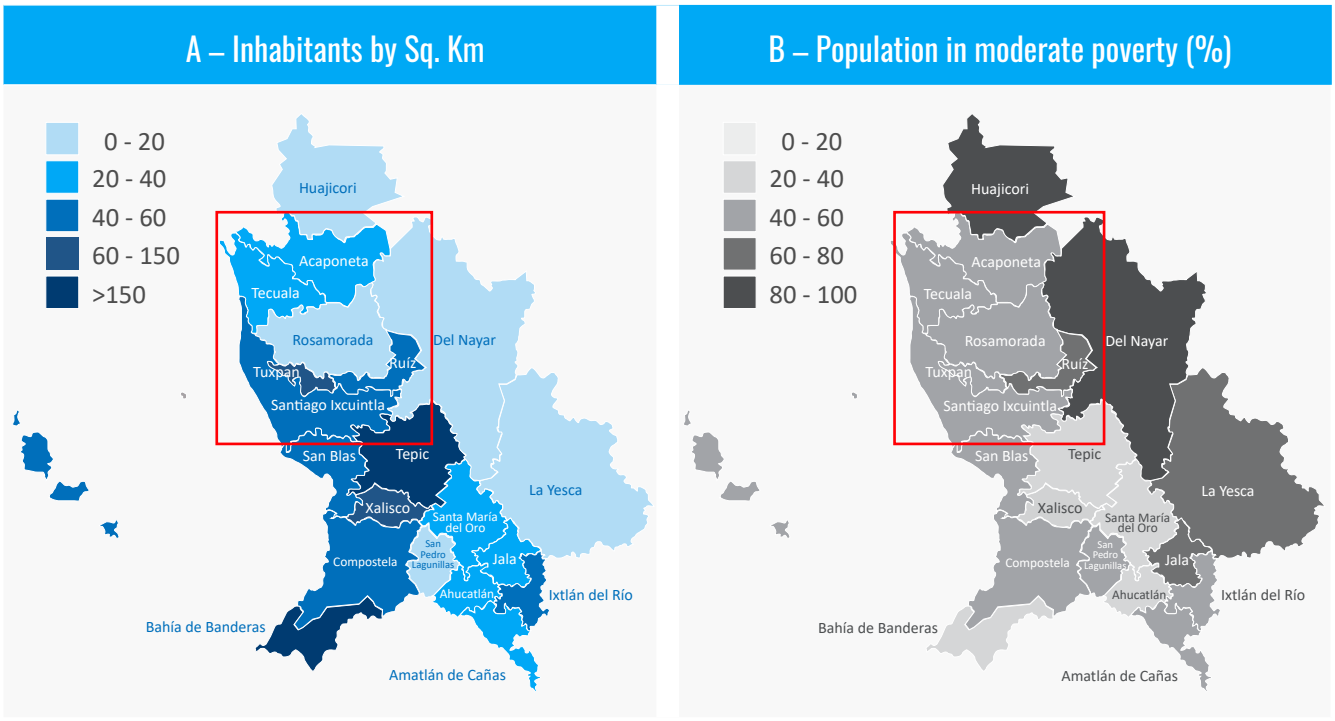


Source: INEGI.

Though these municipalities concentrate most of the state's tobacco production, they are relatively average in terms of population density (Map 2A) and have poverty rates above the state average (Map 2B).

3 Data from the 2020 Population and Housing Census (INEGI, National Statistics and Geography Institute). The dependency ratio is the number of dependent persons (population under 15 years old and over 64 years old) for every 100 people of working age.

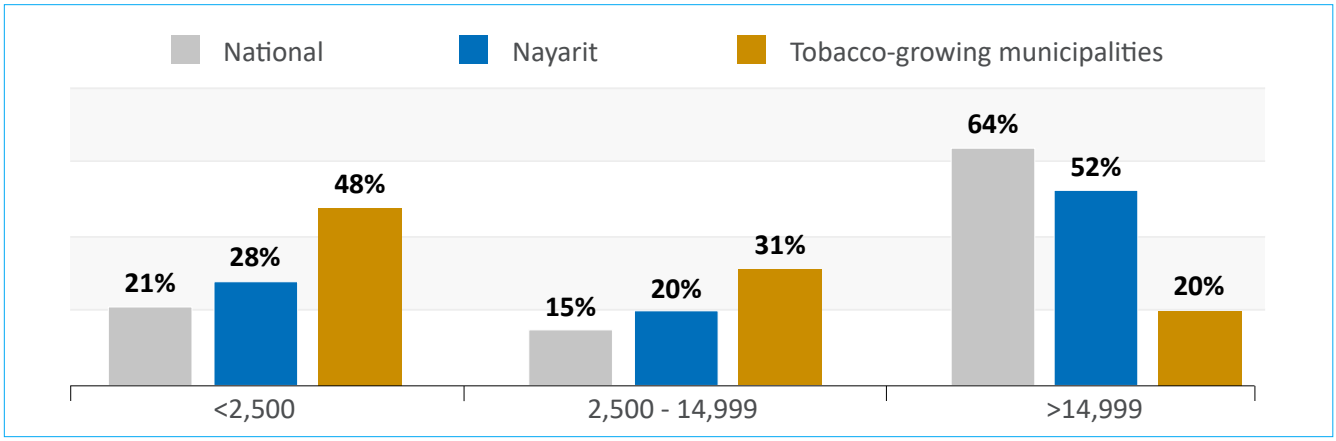
Map 2. Population density and poverty rate in Nayarit



Source: A – 2020 Population and Housing Census; B – Coneval (National Council for the Evaluation of Social Policy).

Analysis of 2020 Census data shows that 72% of the population of Nayarit lives in an urban area (with more than 2,500 inhabitants) and 28% in rural areas. It has a lower degree of urbanization compared to Mexico as a whole. If we consider all the municipalities of the state except Tepic and Bahía de Banderas, then the share of rural population is 46%. The tobacco-growing municipalities are less urbanized, with 48% of the population living in rural areas (Figure 1). However, among these municipalities two are predominantly urban: Tuxpan and Acaponeta – with 73% and 54% of the population living in towns with more than 15,000 inhabitants; and two municipalities are mostly small towns and rural: Rosamodara and Santiago Ixcuintla – with 75% and 54% of the population living in towns with less than 2,500 inhabitants (Image 1).

Figure 1. Distribution of the population of Nayarit and of the tobacco-growing municipalities by the size of locality



Source: 2020 Population and Housing Census (INEGI, 2021a).

Image 1. Degrees of urbanization in the tobacco-growing municipalities

Street views and houses in small towns

Santiago Ixcuintla

Santiago Ixcuintla

Villa Hidalgo

Villa Hidalgo

Acaponeta

Rosamorada

Street views and houses in *ejidos* (small rural villages)

Amapa

Patroneño

La Presa

La Presa

Pozo de Ibarra

Sayulilla

Source: authors' fieldwork

2a. Poverty and social deprivation

The importance of studying poverty stems from its effects on people's wellbeing. Poverty is a multidimensional phenomenon that can undermine people's dignity, limit their fundamental rights and freedoms, prevent the fulfillment of their basic needs, and impede their full social integration (Coneval, 2019).

In México, the methodology for measuring multidimensional poverty, in addition to measuring income, includes indicators of social deprivation such as the educational gap, access to health services, access to food, access to social security, quality and spaces of the dwelling, access to basic services in the dwelling, and the degree of social cohesion. These components make it possible to follow the evolution of social deprivations and the economic wellbeing of the Mexican population (Coneval, n.d.).

Although the percentage of the population that is socially vulnerable[4] is higher in Nayarit than at the national level, poverty and social deprivation are generally less severe than at the national level. Nevertheless, the poverty and social deprivation indicators are higher in some of our study municipalities, especially those that are largely rural and semi-urban.

The percentage of population in poverty is higher in the study municipalities than at the state level, except Santiago Ixcuintla. On average, more than 30% of the population of the study municipalities lives in moderate poverty, according to the Coneval's official definition of poverty (Table 1). These poverty rates are considerably higher than average for the state of Nayarit (26.6%) but lower than average for México (35.4%). On the other hand, the prevalence of extreme poverty is lower in Nayarit and the study municipalities than average for Mexico.

Regarding the prevalence of specific deprivations, the percentage of population lacking access to social security is considerably higher in these municipalities than average for Nayarit (48%) and Mexico (52%): 53.0% in Acaponeta, 71.2% in Rosamorada, 64.6% in Ruíz, 65% in Santiago Ixcuintla, 61.6% Tecuala and 59% in Tuxpan (Table 1). Food insecurity is also much higher in the study municipalities than average for the state (20.4%) and the country (22.5%): 33.2% and 32.8% in Tecuala and Acaponeta, 27.1%, 27.5% and 28.2% in Ruíz, Santiago Ixcuintla and Tuxpan, and 25.9% in Rosamorada. Therefore, these are important aspects to consider in the study of the living income in Nayarit. The prevalence of low-quality housing is not as high as the average for Nayarit and Mexico, except in Acaponeta and Rosamorada.

2b. Economic activity

The product of the state of Nayarit represents 0.7% of Mexico's GDP (while its population is 1.0% of the country's population). The composition of output in primary, secondary, and tertiary activities is 8.3%, 17.8%, and 73.9% respectively. The state of Nayarit stands out in the national economic panorama because of its important contribution to the national production of various agricultural and fishery products.

4 The vulnerable population are people who suffer from at least one social deprivation despite having enough income to acquire the food and non-food baskets.

Table 1. Indicators of poverty in Mexico, Nayarit, and the study municipalities (Percentage of population)

Indicators	Mexico	Nayarit	Acaponeta	Rosamorada	Ruiz	Santiago Ixcuintla	Tecuala	Tuxpan
Poverty								
Population in poverty	43.9	30.4	38.1	39.6	40.4	23.4	31.9	32.2
Moderate poverty	35.4	26.6	34.7	34.5	36.3	22.2	30.2	30.9
Extreme poverty	8.5	3.8	3.4	5.1	4.1	1.2	1.7	1.3
Vulnerable population due to social deprivation	23.7	35.4	38.0	47.2	40.2	57.2	49.9	44.6
Vulnerable population due to low income	8.9	7.1	7.1	3.6	5.2	3.6	3.9	5.4
Non-poor non-vulnerable population	23.5	27.2	16.8	9.6	14.2	15.8	14.3	17.8
Social deprivation								
Population with at least one social deprivation	67.6	65.8	76.1	86.8	80.6	80.6	81.8	76.8
Population with at least three social deprivation	23.0	16.7	17.2	23.5	19.6	22.9	15.3	12.9
Indicators of social deprivation								
Low schooling achievement	19.2	18.3	15.4	19.0	15.9	18.2	16.3	15.1
Lack of access to health services	28.2	24.7	13.7	18.3	24.3	31.5	21.3	21.5
Lack of access to social security	52.0	48.0	53.0	71.2	64.6	65.0	61.6	59.0
Low quality housing	9.3	7.2	9.0	8.8	6.7	5.0	3.8	4.6
Lack of basic household services	17.9	11.8	17.3	28.6	17.7	15.2	9.0	5.1
Food insecurity	22.5	20.4	32.8	25.9	27.1	27.5	33.2	28.2
Well-being								
Population with income below the extreme poverty line	17.2	9.7	15.7	15.1	13.9	5.8	9.5	8.8
Population with income below the poverty line	52.8	37.5	45.2	43.2	45.6	27.0	35.8	37.6

Source: (Coneval, 2021).

Regarding agricultural production, the state is the number one national producer of tobacco, sugarcane (fruit), and rice; the second national producer of eggplant; and comes third in the production of beans and mangoes (SIAP, 2022). Agriculture has 13% of the workforce (79,412 workers) in Nayarit (Data Mexico, 2020).[5]

Regarding the production of tobacco, as mentioned, Nayarit has a prominent place at the national level, producing about 13 thousand tons per year, or 87.8% of the national production in 2020. Tobacco is grown in 9 of the 20 municipalities in Nayarit. The municipalities included in this study produce 77.3% of the national production and 84.5% of the state production. The municipality that produces the most is Santiago Ixcuintla, with 65.8% of the state production (Table 2).

Table 2. Municipalities with tobacco production in Nayarit (2020)

Study municipalities	Production (Tons)	%
Santiago Ixcuintla	8,361.6	65.8%
Rosamorada	1,081.0	8.5%
Tuxpan	444.6	3.5%
Ruiz	385.7	3.0%
Acaponeta	378.0	3.0%
Tecuala	82.8	0.7%
Other municipalities		
Compostela	1,497.8	11.8%
San Blas	459.9	3.6%
Tepic	17.5	0.1%
Total	**12,708.9**	**100%**

Note: Study area includes first six municipalities.
Source: SIAP (2022).

Nayarit´s level of fish production represents 3.7% and 6.0% of Mexico's total gross fishing production and employment. Rosamorada and Acaponeta had the most important gross production in 2018 (Table 3). There are 1,292 establishments working on aquaculture and fishing activities in the state, and they are mostly concentrated in Santiago Ixcuintla, Tecuala, and Rosamorada (INEGI, 2020). According to the volume of production, the state is the number one national producer of northern red snapper (Lutjanus campechanus) and red porgy (Pagrus pagrus); the second national producer of grunter (Haemulinae), bagre (Ariopsis seemanni) and shark; and comes third in the production of shrimp and oyster. In terms of employment in fish activities, the municipality of Rosamorada ranks second at the national level in aquaculture, with 7.1% of employment (INEGI, 2021b), and it has the most employees at the state level.

5 Figures for the second quarter of 2021.

Table 3. Fish production in study municipalities, Nayarit and Mexico

Municipality	Number of establishments	Employed personnel	Total gross production (millions of MNX)
Santiago Ixcuintla	285	2,174	128.6
Tecuala	249	2,243	126.5
Rosamorada	163	2,396	315.8
Acaponeta	70	532	230.1
Tuxpan	42	419	14.4
Nayarit´s total	**1,292**	**12,964**	**1,271**
Mexico´s total	**23,293**	**213,246**	**34,374**

Note: Study area includes first five municipalities.
Source: (INEGI, 2020).

Nayarit does not stand out at the national level for its manufacturing production. However, this activity engages 9.7% of the labor force at the state level. The study municipalities contribute 13.7% of Nayarit's total gross production in manufacturing (Acaponeta contributes 7%), and 20.7% of Nayarit's employment in manufacturing (8% is located in Santiago Ixcuintla). As of 2019, there were about 4,800 manufacturing workers in the study municipalities, with approximately 62% of them working in processed food. The majority of these businesses are involved in the production of bakery goods and tortillas. The second most important manufacturing industry in Nayarit is the beverage industry.

Concerning tertiary activities, the economic sectors with the highest total income in 2020 in Nayarit were retail trade, wholesale trade, and hotels and food preparation.[6] Moreover, tourism is one of the most important activities in the state, with 32.7% of the state's total gross value added. Employment in this sector accounts for 28.9% of the total personnel employed in Nayarit (INEGI, 2021c). However, tourism is highly concentrated in the southeast of the state, and does not include the municipalities in this study.

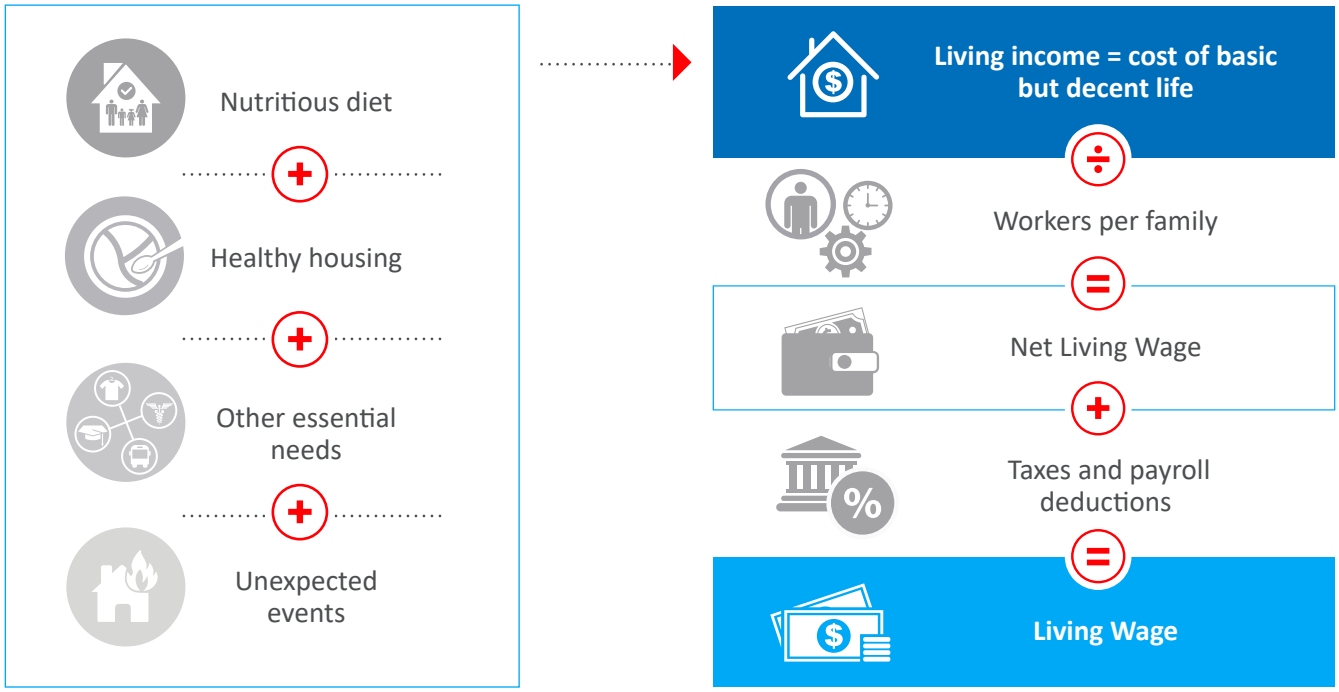
3. HOW LIVING INCOME IS ESTIMATED

The Anker Methodology used in this report aims to estimate a living income (and living wage) that allows comparisons between different countries, but that at the same time reflects the situation at the local level. To ensure that the living income estimate is robust and credible for the study location, information from local primary data and secondary data from state or national surveys are used. Food prices, housing costs, and costs of children's education, medical care, and transportation, are collected locally through fieldwork to ensure that there are sufficient funds available to satisfy these needs. Local food prices are obtained from a representative survey of the different types of establishments where people buy food in the study area. In the case of local housing, the costs are estimated based on the rental price of homes that meet both international and national standards

6 Data Mexico (2020).

for decent healthy housing.[7] The methodology also requires the participation of local people and organizations to increase its credibility and acceptance by stakeholders. During a scoping visit to the study municipalities in January 2022 before our fieldwork and collection of local prices and costs, we had discussions with three focus groups of tobacco growers in the municipalities of Santiago Ixcuintla and Tuxpan. In these group discussions, we asked about the types of foods consumed and where they are bought; health care expenses; the type and cost of housing; as well as about children's education and family transportation expenses. It is important to mention that the estimation of the living income is independent of whether farmers or other workers actually receive a living income or living wage. The secondary data we use in this study are from the National Survey of Occupation and Employment 2021 (4th quarter), the National Household Income and Expenditure Survey 2018 and 2020, and the Population and Housing Census of 2020. All of these are coordinated by Mexico's statistical office, the National Institute of Statistics and Geography (INEGI). We also relied on the 2012 National Health and Nutrition Survey, coordinated by the Ministry of Health and the National Institute of Public Health, and on the official methodology for measuring the poverty rate (Coneval, 2019). Figure 2 depicts a summary of the Anker Methodology. The definition and estimation of the living income (and living wage) consider four relevant aspects of the cost of living: the cost of nutritious food, the cost of healthy housing, the costs of other essential needs (including children completing high school and the family having adequate health care), and a margin to face unforeseen expenses.

Figure 2. Living income and living wage calculation



Source: Adapted from Anker and Anker (2017).

7 The survey and opinion polling company Suasor Consultores carried out a survey of food prices and rental costs in Acaponeta, Rosamodara, Ruíz, Santiago Ixcuintla, Tecuala, and Tuxpan. Additionally, they collected information on the cost of basic privately provided medical services in the area. The survey company did not collect information on educational costs. These costs were obtained from interviews and focus group discussions with farmers. We used the same data collection forms as those from other Anker living income studies previously carried out in other countries—although we adapted and translated them to the Mexican reality. Prior to this fieldwork, the survey team was trained by the authors to ensure that the survey was carried out in accordance with the methodology adopted for the project.

SECTION II. COST OF BASIC BUT DECENT LIFE FOR REFERENCE SIZE FAMILY

4. FOOD COSTS

Food cost per person per day is based on the cost of a nutritious model diet that complies with recommendations of the World Health Organization (WHO) on calories, macronutrients, and micronutrients for people depending on sex, age, height, and activity level. This model diet is also consistent with the local food preferences and prices and the country's level of development. This approach to establishing a low-cost nutritious diet uses a much stricter nutrition standard than those that only guarantee a sufficient number of calories.

4a. Establishing a model diet with adequate nutrition

Based on the Schofield equations, recommended by the WHO, it was estimated that the calories required per person per day for our reference family of four (2 adults and 2 children) was 2,367 calories. This requirement is determined taking into account the average adult height in Mexico, of 1.67 m for men and 1.55 m for women from the National Health and Nutrition Survey (Ensanut), 2018.[8] It also assumes that one of the adults in the reference family has vigorous physical activity and that their spouse/partner and children have a moderate level of physical activity.

To develop our model diet, we first considered the food basket used in the official poverty estimate for Mexico (Coneval, 2019). Then, we adjusted consumption levels and basket components to achieve adequate nutritional levels. This was done while maintaining consistency with local food preferences and keeping the cost of the diet relatively low. We increased the amount of beans, eggs, and chicken in the diet and decreased the amount of pork and beef, products that are a more expensive source of protein. We also ensured that the edible percentage of fish and beef reflects the fact that in both cases families typically purchase fish fillets and boneless steak. Similarly, we replaced spinach, which is relatively expensive and little consumed in this area, with lettuce, which is a green leafy vegetable that local people include in their diet. Likewise, we have included ground coffee in the diet, instead of instant coffee. Regarding fruits, we also changed slightly the composition of the official food basket (which includes bananas, orange, and apple). In the focus group discussions with tobacco growers, they mentioned that fruit intake is relatively low in their families and in general limited to seasonal and/or local fruits produced. Because apple is a relatively expensive fruit not produced in Nayarit, we replaced it with watermelon, which is a widely consumed fruit throughout the year.

Our model diet, which meets WHO nutrition standards, has:

- 2,367 calories.
- 13.3% of calories come from proteins, which is between the 10-15% recommendation of WHO. Proteins come from a variety of sources and in particular beans and animal sources.

8 There is no updated information on the average adult height for Nayarit. We considered it more appropriate to use the most up-to-date national measurement (2018).

- 27.7% of calories come from fats. This is within the WHO recommended range of between 15% and 30%.
- 59.0% of calories come from carbohydrates. This is within the WHO recommended range of between 55% and 75% of calories should come from carbohydrates.
- The diet includes 2 cups of milk per day for children.
- 294 grams of vegetables and fruits per day (350 grams per day including legumes), to provide enough micronutrients and minerals.
- Limited number of grams of sugar (30) and cooking oil (30).

Foods in our model diet are consistent with local preferences. For example, chili peppers and tortillas were included in the diet. Likewise, bottled water is included in the model diet because its consumption is very common in the study area, and in Mexico generally. In this case, one liter of bottled water is included per person per day.

4b. Determining local food prices

To estimate the cost of the model diet, a survey company collected prices of fresh and processed foods in the study municipalities during the second fortnight of February 2022. Prices of local foods corresponded to the types, qualities, and quantities/sizes of foods that families in the study area usually buy. The set of establishments visited was determined based on the results of focus group discussions with farmers about the types of foods they eat regularly and the local grocery and retail stores, supermarkets, and open markets where workers typically shop (Image 2). Information was collected on the price, weight, presentation, and brand of 4,307 products for 174 different types of food. Food items were not included in the final model diet when they were not widely available or when less expensive options were available. Therefore, we used the prices of 1,903 food items to estimate the costs of our model diet.

To determine the price of each food item (e.g. chicken, tomato, potato, rice, pasta, coffee, sugar, etc.) in the study municipalities, we proceeded as follows. First, we discarded the highest prices and lowest prices of each product. Second, we computed the average, standard deviation, and quartiles of the distribution of the remaining prices. Third, we used box-plot diagrams to identify extreme prices (outliers). We used the convention that a price is an outlier or extreme if it lies outside the bounds of the box-and-arms plot. The lower bound was determined by [quartile 1 - 1.5 × (quartile 3 - quartile 1)], while the upper bound was [quartile 3 + 1.5 × (quartile 3 - quartile 1)]. Finally, the fourth step depended on the presence or absence of extreme values. For products without outlier or extreme prices, we used the average price calculated in the second step. For products with extreme prices, we eliminated the outliers and recalculated the average price over the remaining observations. We also explored if any unusually high prices were due to packaging with small quantities and we excluded these products. This was sometimes the case with coffee, for example.

Image 2. Photos of food stores in the study municipalities, Nayarit

Source: authors' fieldwork

4c. Cost of the model diet

Once we estimated the average price for each food item for the study municipalities as whole, we entered this information into the model diet, and the cost of the model diet per person per day was computed. The resulting value is MXN (Mexican pesos) 48.28 (Table 4). We added additional expenses after considering that the food budget must be sufficient, not only to cover the cost of nutrients and minimum calories but also to contribute to the goals of dignity and well-being associated with food.

These additional expenses are:

- Salt, spices, sauces, and condiments (1% of the cost of the model diet as this is the percentage found in household expenditure survey data);
- Food not consumed because it is lost during cooking or storage, or because it is not in good condition, or because it is discarded (4%);
- An allowance for additional variety in the model diet, whether for taste, quality, or seasonal availability of food and variation in prices (15%).

With these additional expenses, the final cost of the model diet per person per day is MXN 57.93 (USD 2.83) (Table 4). To obtain the family's food budget per day, we multiplied the cost per person of the model diet by the number of members of a typical family in the study area (4 persons, see below). To obtain the monthly value, we multiplied the family´s budget per day by 365 days and divided it into 12 months. Our model diet is more expensive than Coneval's model diet for rural areas (MXN 49.98) but cheaper than Coneval's model diet for urban areas (MXN 65.01) as of February 2022. In addition, our living wage model diet is closer to the concept of a decent diet, because it entails a more adequate balance of nutrients and allows for a greater variety of meals to be prepared.

Table 4. Composition and cost of the model diet per person per day, Nayarit (MXN, February 2022)

Food item	Edible grams	Purchased grams	Cost per kilo	Price
Tortilla	242	242	20.71	5.00
Rice	36	36	27.20	0.98
Maize (corn)	49	49	21.29	1.04
Bread, dulce	36	36	91.19	3.33
Bread, white	34	34	58.33	1.97
Pasta	36	36	37.17	1.34
Potato	54	72	23.53	1.70
Beans	56	56	32.42	1.82
Milk	180	180	21.21	3.82
Cheese	12	12	111.99	1.29
Eggs	44	50	36.92	1.85

Food item	Edible grams	Purchased grams	Cost per kilo	Price
Chicken	49	65	48.76	3.19
Fish	5	5	71.68	0.36
Beef	24	25	149.35	3.74
Pork	24	33	89.20	2.93
Ground beef	24	24	110.34	2.68
Lettuce	42	66	16.45	1.08
Onion	42	47	25.73	1.20
Tomato	42	46	11.53	0.53
Carrots	42	47	16.44	0.78
Watermelon	42	81	15.85	1.28
Orange	42	58	15.33	0.88
Banana	42	66	21.52	1.41
Oil for cooking	30	30	46.11	1.38
Sugar	30	30	21.89	0.66
Coffee	2	2	330.70	0.60
Chili peppers	10	12	27.64	0.33
Drinking water (ml)	1,000	1,000	1.13	1.13
			Subtotal excluding additional costs	**48.28**
			Total, including additional costs	**57.93**

Additional 1: Percentage added for salt, spices, sauces, and condiments, 1%.
Additional 2: Percentage for spoilage & waste, 4%.
Additional 3: Percentage added for variety, 15%.

5. HOUSING COSTS

The cost of local healthy housing is estimated with: (i) primary data on the rental prices of houses in the study areas that meet our healthy housing standard, and (ii) utility costs based on data from household surveys.

5a. Local healthy housing standard

To determine our local housing standard, we used international standards for healthy housing from the WHO, UN, ILO, and UN-Habitat, as reported in Anker and Anker (2017), as well as official national standards and norms. Table 5, column 2, presents the minimum international standards, while column 3 lists the national standards, adjusted

to local conditions. Coneval uses these national standards to identify the population that suffers from deprivation in relation to housing and, therefore, lives in conditions associated with poverty. Column 4 of Table 5 present figures on the percentage of homes that meet the Coneval standard in the six study municipalities in Nayarit (according to the 2020 Population Census). Given that the Coneval standard reflects minimum requirements for a healthy home and that the degree of local compliance with these standards is high and higher than the international minimum standards, we decided to adopt the national standard to determine the local standard. The only aspect of our local healthy housing standard that is missing from the Coneval standard is the amount of living space. In past studies for Mexico, we have used the minimum size of 50 square meters recommended by the National Housing Commission for adequate housing in Mexico. However, based on the information we obtained during our exploratory visit to Nayarit, which was later confirmed by the price researchers who collected the information on the cost of rent, housing in general in Nayarit is usually larger. For this reason, we have determined a size between 50 and 100 square meters as a standard.[9]

According to 2020 Census figures, 98% or more of the homes in the study municipalities meet the national standard for walls and roof; 97% meet the standard for floor; and 95% or more of the houses conforms to the standard for electricity and safe toilet. The Census does not report the percentage of houses that are in a poor state of repair. During our visit to the area, however, we observed that it is common for houses to be in poor state of repair. Therefore, we determined that a home does not meet our healthy housing standard if it is visibly damaged, partially collapsed, or has serious moisture problems or cracks in the walls or foundation. The 2020 Census does not provide data on the square meters of floor space that the dwellings have.

Although the Population Census reports that 97% of homes in the study municipalities have the kitchen in a separate room inside the home with good ventilation (Table 5), during our visit to the area we learned that it is not uncommon in this area for people to cook outside the house, usually on the porch of the house. Neither is it uncommon for households to use wood as cooking fuel instead of LP gas. Therefore, the standard that we used to define acceptable housing in this regard was that the stove either runs on LP gas and is located inside the home in a separate room; or that wood is the cooking fuel, as long as the kitchen is in a separate room and has a chimney and good ventilation. We also consider it acceptable if the stove runs on LP gas or wood and is located on the porch of the house. The kitchen is not acceptable if wood or charcoal is used as cooking fuel, and the kitchen is inside the house without a chimney or good ventilation because of the danger of indoor air pollution.

Compliance with our housing standard is lower in the study area in terms of having piped water in the house. In the study municipalities, only 73% of homes meet this requirement according to the Population Census 2020. This is important, because it is a minimum requirement for a house not to be considered officially poor in terms of housing. However, during focus groups with farmers in the study area, we found that the quality of piped water is very poor in some of the rural villages. Focus groups participants characterized piped water as muddy, ferrous, and unsafe for drinking, cooking, or even bathing, and only acceptable for toilets or house cleaning. Thus, drinking water is bought in 20L jugs. Farmers also reported that piped water outages are very common. They mentioned that many homes have a private well to pump their own water. Given this situation, we adjusted the standard of access to safe water that was used in the government survey of housing costs. We consider an acceptable level of compliance for water is when the dwelling has a connection to the public network inside the

9 The housing law of the state of Nayarit (Poder Legislativo del Estado de Nayarit, 2016) establishes that a house of average socio-economic level has an area between 55 and 101 square meters. The cost of rent used in this study approximately corresponds to the median rent of dwellings in that size range (Section 5b).

house or on the property, or water is pumped from a private well – as long as the water is suitable for cooking and bathing. Access to water is not acceptable if the dwelling has access to the public network, but outside the house or the property, or when the water is from a well but is not suitable for cooking and bathing or if it is rainwater, or it is collected from rivers or lakes. And also keep in mind that our model diet includes bottled drinking water because of poor quality water in the study area.

The Census does not report the environmental situation around the home. For example, it does not report if there are sewage drains on the surface, or pollution, or if the house is built in a place exposed to floods or landslides. To get an estimate of the situation in this regard, in Table 5, in the last row of column 4, we report the percentage of homes with drainage connected to the public network or to a septic tank in each municipality. This reaches 95% of the houses in the study area. However, this figure may not be very indicative of the proportion of houses in the area that are subject to some environmental hazard. During our visit to the study area, we were informed that serious flooding had occurred in some of the villages and small towns over the years, and that the houses near the large rivers were in some danger. We considered this in our fieldwork.

Table 5. International, national and local standards for healthy housing

Housing characteristics	International minimum requirements	National and local healthy housing standard	Compliance in study area
Materials			
Walls	Durable material providing protection from elements.	Durable material providing protection from elements: the non-acceptable standards are waste material, cardboard, metal or asbesto sheet, mud.	98%
Roof	Durable material without leaks.	Durable material without leaks: the non-acceptable standards are waste material or cardboard sheet.	98%
Floor	Durable material.	Durable material: the non-acceptable standard is dirt floor.	97%
Amenities			
Toilet	At least pit latrine with slab.	Flush toilet or pit latrine with slab.	95%
Water	Safe water not far from home (maximum 30 minutes total collection time per day).	Piped water inside the home or outside the home but on the grounds, or pumped water from a private well, as long as it is suitable for cooking and bathing.	73%
Electricity	Yes generally, but not required if not common in study area.	House with electricity.	98%

Housing characteristics	International minimum requirements	National and local healthy housing standard	Compliance in study area
Ventilation & Lighting			
Ventilation quality	Good ventilation. Especially important when cooking indoors.	Good ventilation. Kitchen with good evacuation if cook indoors.	N.A.
Lighting	Adequate	Electricty	N.A.
Number of windows	Sufficient for adequate lighting and ventilation.	Sufficient for adequate lighting and ventilation. Generally at least one window per room.	N.A.
Living Space			
Number of square meters of living soace	≥30 sq. m. (increases with economic development).	50-100m^2, according to local housing standards.	N.A.
Kitchen location	If kitchen is inside house, adequate ventilation for cooking needed.	Inside house in separate room with adequate ventillation, or outside on the porch of the house.	97%
Condition			
	In good state of repair.	In good state of repair.	N.A.
Environment			
	Not a slum.	Not a slum.	N.A.
	No site hazards such as: surface water drainage, industrial pollution, danger of landslides, flood zone.	No site hazards such as: surface water drainage, industrial pollution, danger of landslides, flood zone.	95%

Note: N.A. indicates data not available from sources.
Sources: 2020 National Population and Housing Census for compliance in study area, and Conavi's guidelines for national healthy housing standard.

5b. Rental cost for local healthy housing

We obtained the data on housing characteristics and costs in the study area through visits to local housing. These data allowed us to identify the homes that meet our housing standard and estimate their cost. In the field survey, complete information was collected on 96 homes, which were available for rent in February 2022. Image 3 includes a selection of photos of acceptable and unacceptable houses mainly in the small towns of the study area.

Image 3. Homes available for rent in the study municipalities, Nayarit

Selection of acceptable housing	Selection of unacceptable housing

Source: authors' fieldwork

We thus obtained information on the materials of the walls, floors, and roofs; access to utilities and services; living spaces; number and types of rooms; general conditions of the house, particularly regarding kitchen and toilet, and of the surrounding areas. We also obtained information on the cost of rent per month, and estimated monthly costs of electricity, water, cooking fuel, and maintenance.[10] Analysis of this information made it possible to identify 51 homes that met our healthy housing standard, and 46 that did not. Based on their rental prices, we estimated a median rental cost of MXN 1,350 for acceptable houses, and median rental cost of MXN 1,000 for unacceptable houses.

Most of the dwellings that did not meet the standards for healthy housing fail to have a kitchen in a separate room, use wood as cooking fuel, and have insufficient ventilation. They also sometimes have an unsanitary toilet/bathroom, usually a latrine in bad conditions or without piped water. Sometimes these homes have a toilet that is an outhouse, which is far from the house or shared with another household. We have deemed a home unacceptable due to any of these factors. Unacceptable homes often also have maintenance and repair problems. In Table 6A, we present a selection of unacceptable homes and show the dimensions in which they fail to satisfy the standard for healthy housing.

Acceptable dwellings visited have an average size of 99 square meters. To avoid using rental costs for acceptable large houses that are well above our minimum acceptable house size of 50 square meters, we did not consider acceptable houses larger than 100 square meters (or houses smaller than 50 square meters that were otherwise acceptable) in our estimation of the rent for an acceptable house. Also since most houses in the area (acceptable and unacceptable) were reasonably large, we analyzed in detail the relationship between size and rental price. Among acceptable houses with sizes from 50 to 100 square meters, those in the lower part of this size range have a median rent of MXN 1,350, while those in the upper part of this size range have a median rent of MXN 1,500 (Table 6B). For houses above 100 square meters in size, the rent exceeds MXN 1,500. Therefore, we concluded that MXN 1,350 rent is necessary to ensure access to acceptable housing.

5c. Utility costs and routine maintenance and repairs

For the estimation of the costs of utilities, basic housing services, and routine maintenance and repairs, we used the data from the 2018 National Income and Expenditure Survey (ENIGH). These data include expenditures on maintenance and housing repair services, water, garbage collection, electricity, gas, and other fuels, etc.

We estimated these expenses for rural and urban households of the state of Nayarit for household expenditure deciles 4, 5 and 6 as the reference group. This group is clearly above the poverty while not being high income. In the case of the urban (rural) population, average monthly household expenses are MXN 470.2 (MXN 415.3). As mentioned in Section 2, 48% of the population of these municipalities live in rural localities and 52% in urban localities. We use these percentages to calculate the weighted average cost of utilities, MXN 443.85 per month. We then updated these values by the headline inflation rate during the period between August 2018 and February 2022 (18.40%) to reach the final estimate of MXN 526.

10 These costs for utilities, services and maintenance were obtained from the person in charge of showing the house to the price investigator, so they are only indicative. In our calculation of the living income, we estimate the cost of these items in rural and urban areas of Nayarit with data from the National Household Income and Expenditure Survey (2018).

Table 6A. Characteristics and monthly rent of unacceptable homes (MXN of Feb 2022). Selection of homes in study municipalities, Nayarit

Location	Municipality	Bedrooms	Kitchen in separate room	Cooking fuel	Good ventilation	Source of water	Toilet	Outhouse (distance, m)	Cots of rent (MXN)	Comments
Acaponeta	Acaponeta	2	No	LP Gas		Piped water			$2,500	Kitchen not in a separate room
Acaponeta	Acaponeta	2	No	LP Gas	No	Piped water			$2,000	Kitchen not in a separate room, ventilation problems
Acaponeta	Acaponeta	3	No	LP Gas		Piped water			$2,000	Kitchen not in a separate room
Centro	Ruiz	1	No	LP Gas		Piped water			$2,000	Kitchen not in a separate room
Tuxpan	Tuxpan	1	No	LP Gas		Well	Latrine		$2,000	Kitchen not in a separate room, latrine with no piped water
Tuxpan	Tuxpan	2	No	LP Gas		Piped water	Latrine	1	$2,000	Kitchen not in a separate room
Acaponeta	Acaponeta	2		Wood		Piped water			$1,800	Cooking fuel is wood
Acaponeta	Acaponeta	2	No	LP Gas		Piped water			$1,500	Kitchen not in separate room
San Felipe Aztatan	Acaponeta	3		LP Gas		Well	Latrine	1	$1,500	Latrine with no piped water
Santiago Ixcuintla	Santiago Ixcuintla	1		Electricity		Piped water	Shared	2	$1,500	Shared toilet
Villa Hidalgo	Santiago Ixcuintla	2		Wood		Piped water	Latrine		$1,500	Latrine, cooking fuel is wood
San Felipe Aztatan	Acaponeta	3	No	LP Gas		Piped water			$1,000	Kitchen not in a separate room
San Felipe Aztatan	Acaponeta	1		LP Gas		Well	Latrine		$1,000	Latrine with no piped water

Location	Municipality	Bedrooms	Kitchen in separate room	Cooking fuel	Good ventilation	Source of water	Toilet	Outhouse (distance, m)	Cots of rent (MXN)	Comments
San Felipe Aztatan	Acaponeta	1	No	LP Gas	No	Well	Latrine		$1,000	Latrine with no piped water, ventilation problems
Botadero	Santiago Ixcuintla	1		LP Gas		Piped water	Latrine	2	$1,000	Latrine
Botadero	Santiago Ixcuintla	1		LP Gas		Piped water	Latrine	3	$1,000	Latrine
Amapa	Santiago Ixcuintla	1		LP Gas		Piped water		5	$1,000	Outhouse far from the house
Amapa	Santiago Ixcuintla	3		LP Gas	No	Piped water		3	$1,000	Outhouse far from the house, ventilation problems
La goma	Santiago Ixcuintla	2		LP Gas		Well	Latrine	7	$1,000	Latrine with no piped water, outhouse far from house
Coamiles	Tuxpan	3		LP Gas		Well	Latrine	1	$800	Latrine with no piped water
La culebra	Santiago Ixcuintla	3		Wood		Piped water	Latrine	3	$800	Cooking fuel is wood
La culebra	Santiago Ixcuintla	1		Wood		Piped water	Latrine	3	$800	Cooking fuel is wood
Botadero	Santiago Ixcuintla	2		Gas		Well	Latrine	6	$700	Latrine, no piped water, outhouse far from house
Botadero	Santiago Ixcuintla	3		Gas		Piped water	Latrine	8	$600	Outhouse far from house
San Felipe Aztatan	Acaponeta	3	No	Gas		Piped water			$500	Kitchen not in separate room, problems with drainage
Sayulilla	Acaponeta	3		Gas		Well			$500	Well with unsafe water
Guasima	Acaponeta	3		Gas		Well			$500	Well with unsafe water
La goma	Santiago Ixcuintla	2		Gas		Well	Latrine		$500	Latrine with no piped water

Source: Authors' fieldwork.

Table 6B. Monthly rent of acceptable homes by size of dwellings (MXN of Feb 2022). Selection of homes with 50-100 m² in study municipalities, Nayarit

Location	Municipality	Size (m²)	Bedrooms	Windows	Cost of rent (MXN)
Santiago Ixcuintla	Santiago Ixcuintla	50	2	1	$600
San Vicente	Rosamorada	50	3	5	$500
Patroneño	Santiago Ixcuintla	50	2	4	$500
Guasima	Acaponeta	55	2	2	$600
Sayulilla	Acaponeta	55	3	4	$1,000
Rosamorada	Rosamorada	60	2	8	$2,000
Villa Hidalgo	Santiago Ixcuintla	60	2	1	$1,750
Santiago Ixcuintla	Santiago Ixcuintla	60	2	2	$1,300
Sayulilla	Aca poneta	60	1	2	$1,000
Centro	Ruiz	64	2	2	$1,500
Santiago Ixcuintla	Santiago Ixcuintla	64	3	3	$1,500
Patroneño	Santiago Ixcuintla	64	2	5	$1,000
Pozo de Ibarra	Santiago Ixcuintla	65	1	3	$1,400
Villa Hidalgo	Santiago Ixcuintla	65	2	4	$1,000
Villa Hidalgo	Santiago Ixcuintla	70	2	3	$1,500
Villa Hidalgo	Santiago Ixcuintla	70	2	3	$1,300
San Vicente	Rosamorada	70	1	2	$1,300
Villa Hidalgo	Santiago Ixcuintla	70	1	3	$1,200
Amapa	Santiago Ixcuintla	70	2	2	$1,000
Centro	Ruiz	75	3	3	$1,500
San Vicente	Rosamorada	80	2	3	$1,200
Rosamorada	Rosamorada	80	2	4	$1,000
Pozo de Ibarra	Santiago Ixcuintla	81	2	2	$1,000
Santiago Ixcuintla	Santiago Ixcuintla	85	2	4	$1,500
Amapa	Santiago Ixcuintla	90	2	4	$1,500
Santiago Ixcuintla	Santiago Ixcuintla	90	3	2	$1,500

Location	Municipality	Size (m^2)	Bedrooms	Windows	Cost of rent (MXN)
Pozo de Ibarra	Santiago Ixcuintla	90	2	4	$1,500
Centro	Ruiz	100	3	3	$2,000
Santiago Ixcuintla	Santiago Ixcuintla	100	2	3	$2,000
Centro	Ruiz	100	2	2	$1,500
San Vicente	Rosamorada	100	3	2	$1,500
Villa Hidalgo	Santiago Ixcuintla	100	2	4	$1,500
San Vicente	Rosamorada	100	3	2	$1,500
San Vicente	Rosamorada	100	2	2	$1,000
Tuxpan	Tuxpan	100	3	2	$1,000

Source: Authors' fieldwork.

6. COSTS OF NON-FOOD NON-HOUSING (NFNH) GOODS AND SERVICES

For practical reasons, the cost of all other goods and services (in addition to food and housing) to satisfy essential needs is estimated based on household income and expenditure survey data. This is done by multiplying the cost of our model diet by the NFNH/Food ratio reported in data from the National Income and Expenditure Survey of 2018 for households at deciles 4-6 of the household expenditure distribution. As it was mentioned before, this group is clearly above the poverty line while not being high income. NFNH costs include expenses such as alcohol, tobacco (which we exclude from the basket), clothing and footwear, home equipment and household furnishings, medical care, education, transportation, telecommunications, recreation and culture, restaurants and hotels, personal care and other miscellaneous costs. It is important to note that we then revised these estimated NFNH costs (see the next subsection) – when needed - to ensure that sufficient funds for medical care and education are included in NFNH, because adequate health care and children's education through secondary school are considered as human rights in the Anker Methodology.

Before using these survey data, we made several adjustments. First, we excluded tobacco expenses (which we do not consider necessary for reasons of decency). Second, we assumed that half of the cost of the meals purchased outside the home is properly due to the food included in these meals, and the other half is due to services, profits, and overheads. For this reason, we assigned one-half of these costs to be food expenditures and the other half to be NFNH expenditures.

We did not adjust the reported transport spending from the household survey, which includes the cost of private and passenger transportation. We assumed that a private motorbike is necessary for decency, as it is a common private means of transportation to travel to nearby small towns, to attend high school in the case of school-age children, to go to the supermarket, and to visit the doctor. It is worth noting, however, that the farmers who

participated in the focus group discussions indicated that they needed to have a private car in order to meet transportation needs related to work and family life.[11]

We estimated the NFNH/Food ratio with data from the National Income and Expenditure Survey of 2018, which is available for rural and urban populations of the state Nayarit. For reasons akin to those mentioned above in sections 2 and 5c, here we estimated the NFNH costs as a weighted average of costs reported for rural and urban areas. This allowed us to estimate the NFNH/Food ratio for rural areas (0.90) and urban areas (1.25) (Tables 7A and 7B). The weighted average NFNH/Food ratio is 1.08. Finally, we estimated the preliminary non-food and non-housing expenses (NFNH) by multiplying the NFNH/Food ratio indicated above by the cost of our model diet for the reference size family. This equals MXN 7,612 (1.08 x the cost of the model diet) for the reference family in the study municipalities.

7. POST CHECKS TO ENSURE SUFFICIENT FUNDS AVAILABLE FOR EDUCATION AND HEALTH CARE

Education through secondary school of children and adequate health care for all are considered human rights in the Anker and Anker Methodology (2017), which is why we investigated in this section whether the amount needed to cover these services included in our preliminary estimate of non-food non-housing (NFNH) costs of goods and services is sufficient.

7a. Education

There are about 300,000 students registered in basic mandated education (preschool through middle school) and high school in Nayarit.[12] Boys and girls participate evenly according to their share in the population: 51% and 49%.[13] The preschool period is for children between 3 and 5 years of age. The educational system includes both publicly and privately funded schools. From preschool to high school, around 91% of students attend public schools, which make up 88% of all schools available in the state. While daycare is not mandatory in the country, half (52%) of children in daycare attend a public educational institution (Figure 3A).

On average, the proportion of students in private schools is only around 9% of all students. The greatest differences in attendance at public and private schools are in daycare: 48% of children in daycare attend a private daycare. We observe a similar pattern for high schools; the share of students attending private school is 21% and the share of high schools that are privately-funded is 40% (Figures 3A and 3B). Given that daycare students account for less than one percent of the whole student population (0.75%) daycare does not affect the overall student distribution between private and public schooling much. Note that public schools are larger (93 students per school) than private schools (71 students per school).

11 In 2020, 22.8% of households in Nayarit owned a motorcycle or scooter, and 45.6% of households owned a car or truck, according to that year's National Population and Housing Census.

12 All the statistics reported in this section for the state and municipalities of Nayarit refer to the school year 2020-2021, and were obtained from the Federal Secretary of Education website: http://planeacion.sep.gob.mx/principalescifras/

13 National Population and Housing Census 2020.

Table 7A. Monthly household expenses in Nayarit: Rural

Major expenditure group	Secondary data		Adjustments	
	Sub-major expenditure group	% Exp. in secondary data	Adjustments explanation	% after adjustment
FOOD	Food & non-alcoholic beverages	42.1%	2.0% added for the food in meals away from home (Restaurants)	44.1%
HOUSING		16.0%		16.0%
NON-FOOD AND NON-HOUSING (NFNH)				
Alcohol and tobacco	Alcohol	0.1%	No adjustment	0.1%
	Tobacco	0.3%	Excluded as unnecessary	Excluded
Clothing & footwear		4.5%	No adjustment	4.5%
Household contents and appliances		1.9%	No adjustment	1.9%
Healthcare		2.5%	No adjustment	2.5%
Education		5.2%	No adjustment	5.2%
Transport	Purchase of personal vehicles	1.0%	No adjustment	1.0%
	Maintenance and operation of personal vehicles	4.0%	No adjustment	4.0%
	Passenger transport sevices	5.2%	No adjustment	5.2%
Communication		2.3%	No adjustment	2.3%
Recreation & culture		0.0%	No adjustment	0.0%
Restaurants		4.0%	Transfer 50% of this to food as around 50% of cost of meals away from home is for the food in them	2.0%
Miscellaneous goods & services		10.9%	No adjustment	10.9%
TOTAL NFNH		**41.9%**		**39.6%**
NFNH/Food ratio		**1.00**		**0.90**

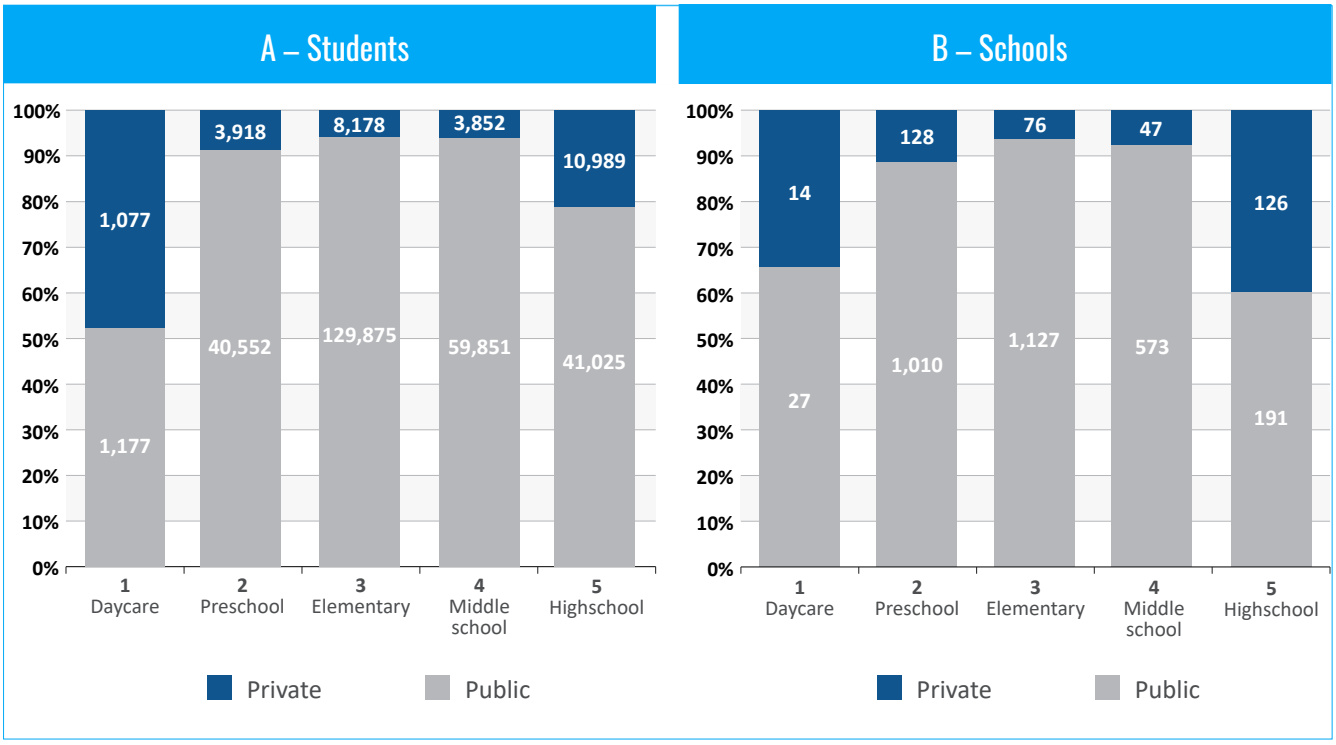
Source: INEGI (2018). The percentages presented in this table correspond to the average for deciles 4, 5 and 6 of the rural household expenditure distribution.

Table 7B. Monthly household expenses in Nayarit: Urban

Major expenditure group	Secondary data			Adjustments	
	Sub-major expenditure group		% Exp. in secondary data	Adjustments explanation	% after adjustment
FOOD	Food & non-alcoholic beverages		31.2%	3% added for the food in meals away from home (Restaurants)	34.2%
HOUSING			23.0%		23.0%
NON-FOOD AND NON-HOUSING (NFNH)					
Alcohol and tobacco		Alcohol	0.1%	No adjustment	0.1%
		Tobacco	0.1%	Excluded as unnecessary	Excluded
Clothing & footwear			5.2%	No adjustment	5.2%
Household contents and appliances			1.4%	No adjustment	1.4%
Healthcare			2.4%	No adjustment	2.4%
Education			5.6%	No adjustment	5.6%
Transport		Purchase of personal vehicles	2.1%	No adjustment	2.1%
		Maintenance and operation of personal vehicles	4.8%	No adjustment	4.8%
		Passenger transport sevices	4.9%	No adjustment	4.9%
Communication			2.4%	No adjustment	2.4%
Recreation & culture			0.7%	No adjustment	0.7%
Restaurants			6.1%	Transfer 50 % of this to food as around 50 % of cost of meals away from home is for the food in them	3.1%
Miscellaneous goods & services			10.2%	No adjustment	10.2%
TOTAL NFNH			**45.9%**		**42.8%**
NFNH/Food ratio			**1.47**		**1.25**

Source: INEGI (2018). The percentages presented in this table correspond to the average for deciles 4, 5 and 6 of the rural household expenditure distribution.

Figure 3. Number of students and schools in Nayarit, by level and source of funding (2020-2021)



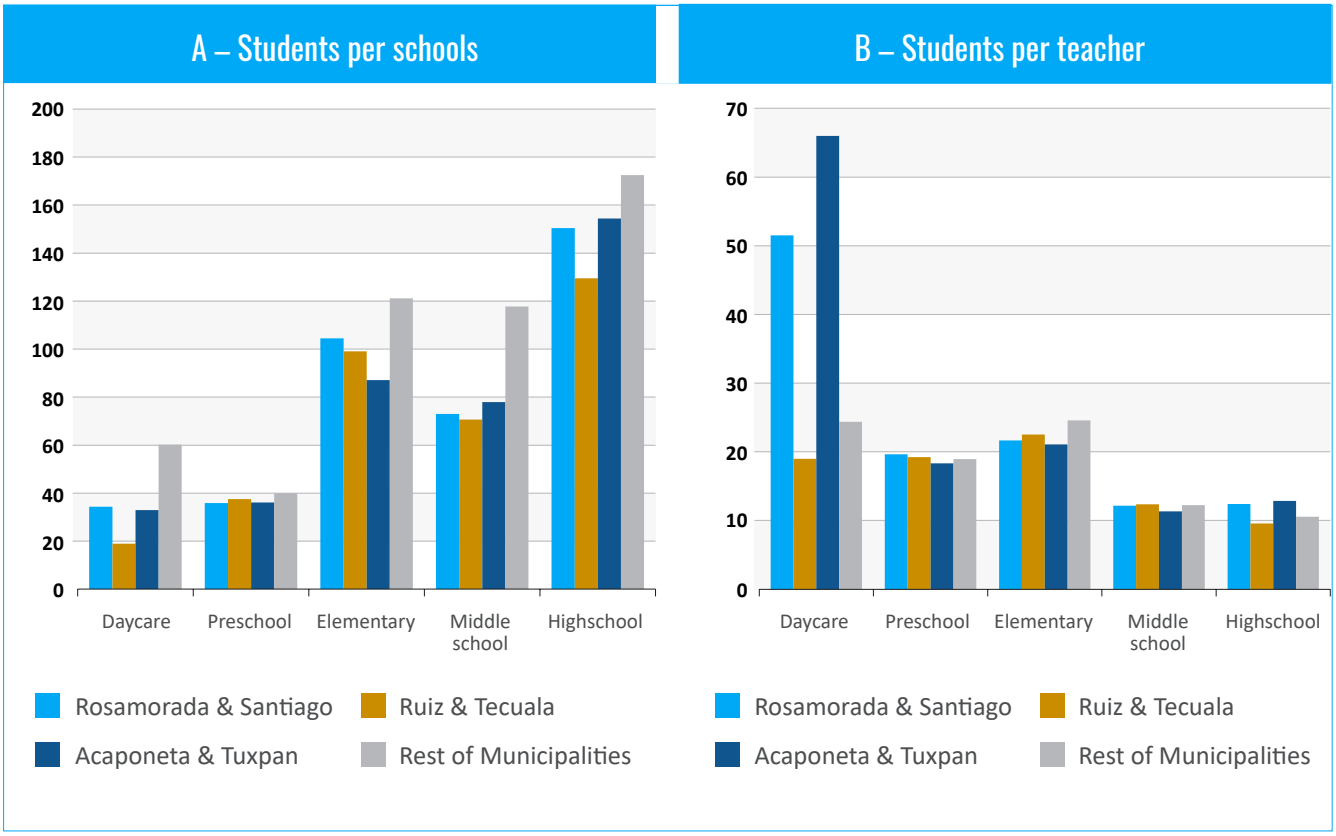
Source: Federal Secretary of Education (2020-2021).

Around 22,500 students are registered in schools located in the municipality of Santiago Ixcuintla (7.5% of all students in the state), the most populous municipality in our study and third most populous in the state. The rest of the municipalities include 50,700 students overall with an average of 8,500 students in each municipality. Schools are on average smaller in the studied municipalities than in the rest of the municipalities of Nayarit (Figure 4A).

The average number of students per teacher, however, does not seem to be different in the study municipalities relative to the rest of the municipalities in Nayarit (Figure 4B) except in daycare, although it is a very small proportion of students. There are about 19 students per teacher in preschool, 22 students per teacher in elementary school, 12 in middle school, and 11 in high school. All of the studied municipalities are close to or under the average of the rest of the state.

In relation to the cost of education for our reference family, the amount for educational expenses that is already included in the preliminary NFNH costs for urban and rural areas of Nayarit is MXN 1,005. We estimated this figure as follows. First, we computed the weighted average of the percentage that households spend for education for rural and urban households in income deciles 4-6 according to the 2018 National Income and Expenditure Survey (5.45%). Second, we calculated the percentage that this represents of adjusted NFNH expenditure, 13.2 % (i.e., 5.45/41.3, see Tables 7A and 7B). Third, we multiplied these percentages by the preliminary NFNH estimates, which yields MXN 1,005. We assume that this amount is a good proxy for the funds available for education in the preliminary NFNH budgets of reference families in the study municipalities.

Figure 4. Indicators of education quality in Nayarit, by level and study municipalities (2020-2021)



Source: Federal Secretary of Education (2020-2021).

Our conclusion – based on data we collected on local costs for education as discussed below - is that this amount already included in the preliminary NFNH costs is sufficient to afford the education expenses of children attending public schools in the municipalities studied. During our interviews and focus group discussions in Nayarit, participants reported the household expenditures related to their children's education. Workers reported that public schools do not typically charge any enrollment fee to students attending grades between pre-school and middle school (that is, the mandated 12-year basic education program established by the government). It is not until high school that enrollment fees are charged more commonly, which according to the farmers we spoke to amount on average to MXN 1,500 per year. Nevertheless, there are some monthly school fees for pre-high school students related to school maintenance and teacher supplies that add up to around MXN 1,350 per year. As farmers in the focus groups categorized education spending depending on whether it is for pre-high school education or high school education, we followed that same model when computing educational expenses here, for many reasons. Firstly, there are new behaviors and responsibilities in older teens; e.g., they get their own spending money. Secondly, most rural villages do not have high schools, thus a transport budget needs to be included. Finally, school regulations are different in high schools; for instance, they do not require uniforms, which are obligatory for younger students. Another difference are special events or community holidays, which are celebrated in preschool through secondary school, but not in high schools. Focus groups participants agreed that children must participate in 10 such events every year, and they spend around MXN 80 on either decorations, costumes or other party costs totaling MXN 800 a year for all years except in high school.

Most parents consulted agreed that their main educational expenses during the period between preschool and middle school are on school uniforms and school supplies. A simple average of the amounts reported indicated that MXN 1,275 is needed for school uniforms per child per year in preschool, elementary school, and middle school, (uniforms included tops and bottoms but no shoes or sportswear). High school students do not wear uniforms. The amounts for school supplies are MXN 1,000 per year before high school and MXN 1,500 per year for high school (Table 8).

Table 8. Average monthly educational costs in MXN of February 2022 (For reference family with two children attending public school)

Type of expense	Pre-school (3 years) + Elementary school (6 years) + Middle School (3 years) expenses per year	High School expenses per year (3 years)	Total expenses
School fees	$1,350	$1,500	
Special events	$800		
Uniforms	$1,250		
School supplies	$1,000	$1,500	
Transport		$4,740	
Meals		$6,750	
Total (1)	$4,400	$14,490	
Number of years in each level (2)	12	3	
Total cost x number of years in each level (3) = (1) x (2)	$52,800	$43,470	$96,270
Average cost per child per year (4) = (3)/18	$2,933	$2,415	$5,348
Average cost for reference family per month (5) = (4) x number of children in reference family/12	**$489**	**$402**	**$891**

Children attending preschool through middle school take a lunch bag to school, and the cost of the food children take to school is included in the family food budget. However, high school students usually get some pocket money from their parents to buy snacks, sandwiches and bottled water or juice. The farmers we spoke to considered that MXN 37 per day is enough for these expenditures, which add up to MXN 6,750 per year (assuming high schools run for twenty days every month, nine months per year). Regarding transportation to and from school, the producers mentioned that education up to high school is usually in walking distance, with older children in high school using public transportation. Transportation usually costs $26 for a round trip, which for a school year of 180 days equals MXN 4,740 annually.

Considering all this information, we estimate the minimum educational expenses per child per month to be MXN 891 among the growers we interviewed (Table 8). This amount is smaller than the educational expenses

included in the preliminary NFNH cost estimates previously discussed (MXN 1,005), which reflect the situation of households in deciles 4 to 6. This means that a sufficient amount is included in the preliminary NFNH estimate for education even considering these possible additional education expenses - and a post check adjustment was not required for education.

Due to the COVID-19 pandemic, since schools are closed and children take classes remotely and asynchronously or online, daycare and telecommunication costs have increased. Our MXN 891 figure does not include expenditures that households in Mexico might consider necessary because of current safety measures during the pandemic. Examples of these expenditures are access to printing services, internet access for their electronics, and a device with which to connect to remote classes. Most households interviewed described their children preferring smartphones over computers, where older children get their own (a MXN 3,000 device) and younger children use their parents' phones; both require a monthly budget for internet access on the devices they use of around MXN 200. However, since we estimate the living wage for a situation of normality regarding attendance at school, these new and probably temporary additional costs are not included in the above analysis.

7b. Health care

In this section, we report that, in contrast to the education expenditures post check discussed above, the post check of health care costs reveals the need to increase the budget of the reference family for medical care above the amount already included in the preliminary estimate of NFNH costs. We first explain how the social protection and health insurance system is organized in Mexico, and then we present our estimate of out-of-pocket expenses for health care of the reference family in the study area. Finally, we show how much we should adjust the budget for health care included in the preliminary NFNH costs.

In Mexico, social security is a countrywide system consisting of two institutions (IMSS and ISSSTE) that provide health care, disability and retirement insurance for workers formally employed in the private and public sectors, and health insurance for their dependent family members. Additionally, there are workers and their families who have access to an insurance package similar to social security's through autonomous and private systems, such as those provided by the company Petróleos Mexicanos (PEMEX) and the Mexican armed forces to their employees. Workers in the informal sector (55.8% of the national labor force and 60.0% in Nayarit, as of the 4th quarter of 2021) and their families can access medical insurance in two different ways. First, through a private company's pre-paid scheme or through voluntary affiliation to IMSS, for which they have to pay a fee as well. Second, by joining without charge the Mexican government's health institute (INSABI), which serves people without formal coverage, but provides medical attention of a lower quality relative to that provided by IMSS or ISSSTE. A part of the population (about 26.8% nationwide as of June 2021) does not have access to health care through any of these insurance schemes, and only a very small portion of this group has private insurance for major medical expenses.

An undesirable result of this fragmentation of health care coverage is that, while one part of the population has double or triple coverage (they have access to health insurance from two or three institutions), a large part of

the population does not have any type of protection.[14] Workers affiliated with social security, or with health care coverage from PEMEX or the armed forces, have access to free medical care. Overall, out-of-pocket spending on health care is relatively low in this group. In contrast, workers with health insurance from prepaid systems, INSABI, or without any coverage have a relatively higher out-of-pocket expense for health care. In the latter case, out-of-pocket expenses can reach catastrophic levels in the case of chronic diseases. It is important to mention that the share of the population subject to the possibility of catastrophic health expenditures greatly decreased during the last 20 years. According to Aban Tamayo et al (2020), however, even Mexicans affiliated with social security consider that social security health services are not very good or timely in case of an emergency, need for some medical specialties, dental care, and ophthalmology care. Therefore, Mexicans consider that it is necessary to have an additional budget for such occasional or otherwise regular health care expenses.

As noted above, the preliminary NFNH costs estimate includes 2.37% for health care expenditures for urban areas and 2.48% for rural areas of Nayarit (e.g., a weighted average of 2.42%, which is 5.86% of adjusted NFNH expenditures, 2.42/41.3). This implies that the preliminary estimate of NFNH costs includes MXN 446 for health care.

To determine the out-of-pocket health care expenditures needed to achieve a decent standard of living, during fieldwork we visited eighteen medical services providers such as hospital, clinics and pharmacies in the study municipalities. We collected the costs of consultations, treatment, laboratory tests and medical examinations. We then used these costs along with assumptions on the number of visits per year to public and private health care providers to determine typical out-of-pocket expenditure for health care per person and per family per year and per month. We found that these amounts are higher than our estimate of the health care spending included in our preliminary NFNH estimate – and therefore a health care post check adjustment is needed of MXN 165 per month for insured households and MXN 548 per month for uninsured households (Table 9).

We took into account four elements to estimate local health care costs. First, we used the suggestion in Anker and Anker (2017) of 3.5 medical visits per year per person. Second, we used the opinion of the Mexican population reported by Aban Tamayo et al (2020) indicating the quality and timeliness of medical care provided by social security medical services. Third, we used the IMSS recommendation to make at least one visit a year to the dentist. Fourth, we used the assumption that all members of the reference family are in good health. This means that in the event of a chronic illness or disability they will use the medical services of social security or INSABI (both in principle free of charge). Our health care cost estimates are also based on the following assumptions: 2.5 visits per year to either a general doctor or a specialist; one laboratory test per year; one visit per year to the dentist; and one visit every two years to the ophthalmologist for every other person in the family. We consider that family members purchase medicines, and undergo an examination or require a nurse's care only every other visit to the general practitioner or specialist. Likewise, we assume that family members undergo a procedure or require the equivalent of an X ray exam only every other visit to the dentist. We also add a purchase of medicines directly from the pharmacy every two years. Finally, we assume that every other member of the family changes glasses and frames every two years.

14 According to an analysis by INEGI (Mexico's national statistics office) carried out with data from the 2020 Population and Housing Census, 92.6 million people are affiliated with some type of insurance or have some health coverage, while about 33 million people have no affiliation whatsoever. 51.0% of the total population of Mexico is affiliated with the IMSS, 8.8% with the ISSSTE, and 35.5% with INSABI. Additionally, 1.3% is in the PEMEX or the armed forces system and 2.8% is in an institution or private company. Finally, 2.2% of the country's population has health insurance from another public or private institution. These percentages add up to more than 100% due to double or triple affiliations. In the same analysis, INEGI reports that 26.8% of the population is not affiliated with any institutions or health systems. Source: https://www.inegi.org.mx/temas/derechohabiencia/#Informacion_general

The prices, the assumptions of the number of visits, and our estimate of out-of-pocket health care expenditures are shown in Table 9. Prices are quite reasonable by international standards. The result is an out-of-pocket expense for the reference family of four members of MXN 611 per month in the study municipalities, if the family is affiliated with social security. The amount rises to MXN 994 if the family does not have access to social security system.

The difference between the estimated out-of-pocket expenditure for the family with and without social security is due to the fact that in the first of these, each member makes two visits to the general practitioner or specialist without payment, and one visit with payment every two years (0.5 per year). In contrast in the second, each uninsured family member makes 2.5 visits per year in the private sector. In the latter case, the lab test and medications are also all out-of-pocket expenses (Table 9).

Our assessment of the cost of adequate health care therefore suggests that funds included for health care in the preliminary NFNH estimate (MXN 446) are not sufficient. The post check adjustment needed is MXN 165 for the reference family with access to social security system. This value is MXN 548 for the reference family without social security coverage.

8. PROVISION FOR UNEXPECTED EXPENSES TO GUARANTEE SUSTAINABILITY

A marginal amount is also added to the family budget estimated above for unexpected events in order to ensure the sustainability of family income and help prevent families from falling into a poverty trap. The household budget should be large enough to allow households to save for unforeseen expenses. Income fluctuations or unexpected catastrophic health expenditures can jeopardize the economic stability of the household. Instability and unsustainability are not attributes of a decent family life, especially since households' access to savings and credit through the financial system is very limited in Mexico. In general, they only have access to credit informally through family networks. We considered this, and added 5% to the household budget for this (i.e., 5% of the amount that results from the sum of the cost of food, housing, and nonfood and non-household expenses).

Table 9. Estimated out-of-pocket medical expenses per year and per month in the study municipalities, Nayarit (for reference family with two children with and without access to social security system)

Type of provider	Cost per visit (MXN of February 2022)	Cost per visit (USD of February 2022)	No. of visits per year per person [with social security]	No. of visits per year per person [without social security]	Cost per year per person [with social security]	Cost per year per person [without social security]
	(1)		(2)	(3)	(4) = (1) x (2)	(5) = (1) x (3)
Public provider / General or family doctor						
Consultation fee	0	0	2	0	0	0
Medicine when provided						
Medicine purchased privately						
Laboratory test (every four years)						
Private provider / General or specialty doctor						
Consultation	268	13	0.5	2.50	417	1,566
Lab test	346	17	0.5	1		
Medicine/Exam/Healing	440	22	0.25	1.25		
Private provider / Ophthalmology						
Consultation	700	34	0.25	0.25	575	575
Glasses	850	42	0.25	0.25		
Frame	750	37	0.25	0.25		
Private provider / Dentistry						
Consultation	100	5	1	1	789	789
Procedure	954	47	0.5	0.5		
X Ray	423	21	0.5	0.5		
Private provider / Pharmacy						
Medicine	103	5	0.5	0.5	52	52
TOTAL cost per person per year					**1,832**	**2,981**
TOTAL cost per family per month					**611**	**994**

Notes. For the cost of consultations with the general practitioner or specialist physician, we used the average amount indicated by hospital and clinic staff that we visited during the field information survey carried out in February 2022. For the price of the consultation with an ophthalmologist or a dentist, we used the price in the specialized clinics that we visited during our fieldwork. The cost of the lab test is the simple average of the cost of urine, blood, influenza, and HIV tests, and the average for X ray and imaging studies. In the case of the cost of medicines, cures or exams that accompany a visit to the general practitioner or specialist, we used the simple average of the costs of a nurse's care (for healing, injection, etc.), antibiotics, and care for a bone fracture. The cost of eyeglasses and frame is the average value reported by the staff of the specialized clinics we visited. Finally, the cost of the dentist's procedure takes into account the price of dental cleaning and cavity fixing.

SECTION III. THE LIVING INCOME

9. FAMILY SIZE TO BE SUPPORTED BY LIVING INCOME

To determine the size of the reference family, that is, a typical family size for the study area, first we calculated the total fertility rate in the state of Nayarit adjusted by the mortality rate of children under 5 years (with data from the Population Census 2020, and the World Bank 2020). The figure is 2.05 for Nayarit.

In a second stage, we estimated the average size of households from the distribution of households by the number of members for the state of Nayarit for urban and rural areas in the state, using data from the National Household Income and Expenditure Survey (ENIGH) of 2020. The results are 3.67 people per household on average in the study municipalities, with 3.63 and 3.75 people per household in urban and rural areas.

Third, with data from the Population Census 2020, we calculated the average household size for households with 2-8 members (i.e., excluding one person households that definitely do not include children and households with 9+ members that are probably households with more than one nuclear family). The result of this calculation is 3.65 for the study municipalities, with 3.68 and 3.62 for urban and rural areas. The figures for the state of Nayarit are 3.71, 3.69 and 3.76, respectively.

Considering the above calculations, we consider the most appropriate reference family size for Nayarit is four, with 2 adults and 2 children. This is consistent with the child mortality adjusted total fertility rate of around 2 and the adjusted average household size of just under four indicated above.

10. LIVING INCOME

We estimated living income using the local costs of food, housing and non-food non-housing items discussed in Section II, and the number of household members in the reference household indicated in the previous subsection. The results are shown in Table 10. The monthly budget for a basic but decent life, according to the definition used in this study, for a family of four (two adults and two children) with access to the social security based health care system amounts to MXN 17,535 (USD 857) in the municipalities of Acaponeta, Tecuala, Rosamorada, Ruiz, Tuxpan and Santiago Ixcuintla (Table 10).

We feel that this living income is also valid for the rest of the state of Nayarit, except the municipalities of Tepic and Bahía de Banderas. We base this view on the fact that (i) the percentages of urban and rural population in these areas (54% and 46%) are very similar to those in the study area (52% and 48%), and (ii) economic activity is concentrated predominantly in the primary sector in both the study area and these areas.

For a reference family without social security the net living income is MXN 17,937 (USD 877). Families without access to the social security system have higher out-of-pocket health care expenditures than the families with access to health care provided by social security (Table 10).

In Table 11, we list some of the key parameters we used in the calculation of the living income. The exchange rate used to determine the USD value for this living income estimate is the average MXN/USD exchange rate for February 2022 of 20.46. The reference family size is 4, and the number of children is 2. Finally, 1.08 is the ratio of expenses other than housing and food to the cost of the model diet.

Table 10. Living income for reference family with and without access to social security system, Nayarit, Mexico (MXN and USD, February 2022)

CONCEPT	With social security		Without social security	
	MXN	USD	MXN	USD
Food cost per month for reference family (1)	**7,048**	**344**	**7,048**	**344**
Food cost per person per day	57.93	2.83	57.93	2.83
Housing costs per month (2)	**1,876**	**92**	**1,876**	**92**
Rent per month for acceptable healthy housing	1,350	66	1,350	66
Utility costs and minor repairs and maintenance per month	526	26	526	26
Non-food non-housing (NFNH) costs per month taking into consideration possible post check adjustments (3)	**7,777**	**380**	**8,160**	**399**
Preliminary estimate of NFNH costs per month	7,612	372	7,612	372
Healthcare post check adjustment	165	8	548	27
Education post check adjustment	-	-	-	-
Additional amount (5%) for sustainability and emergencies (4)	**835**	**41**	**854**	**42**
TOTAL LIVING COSTS PER MONTH FOR BASIC BUT DECENT LIVING STANDARD FOR REFERENCE FAMILY SIZE (5) [5=1+2+3+4]	**17,535**	**857**	**17,937**	**877**

Table 11. Key parameter values

Variable	Value
Reference family size	4
Number of children in reference family	2
Ratio of non-food non-housing costs to food costs	1.08
Percentage of rural population	48
Exchange rate of local currency to USD	20.46
Date of study	February 2022

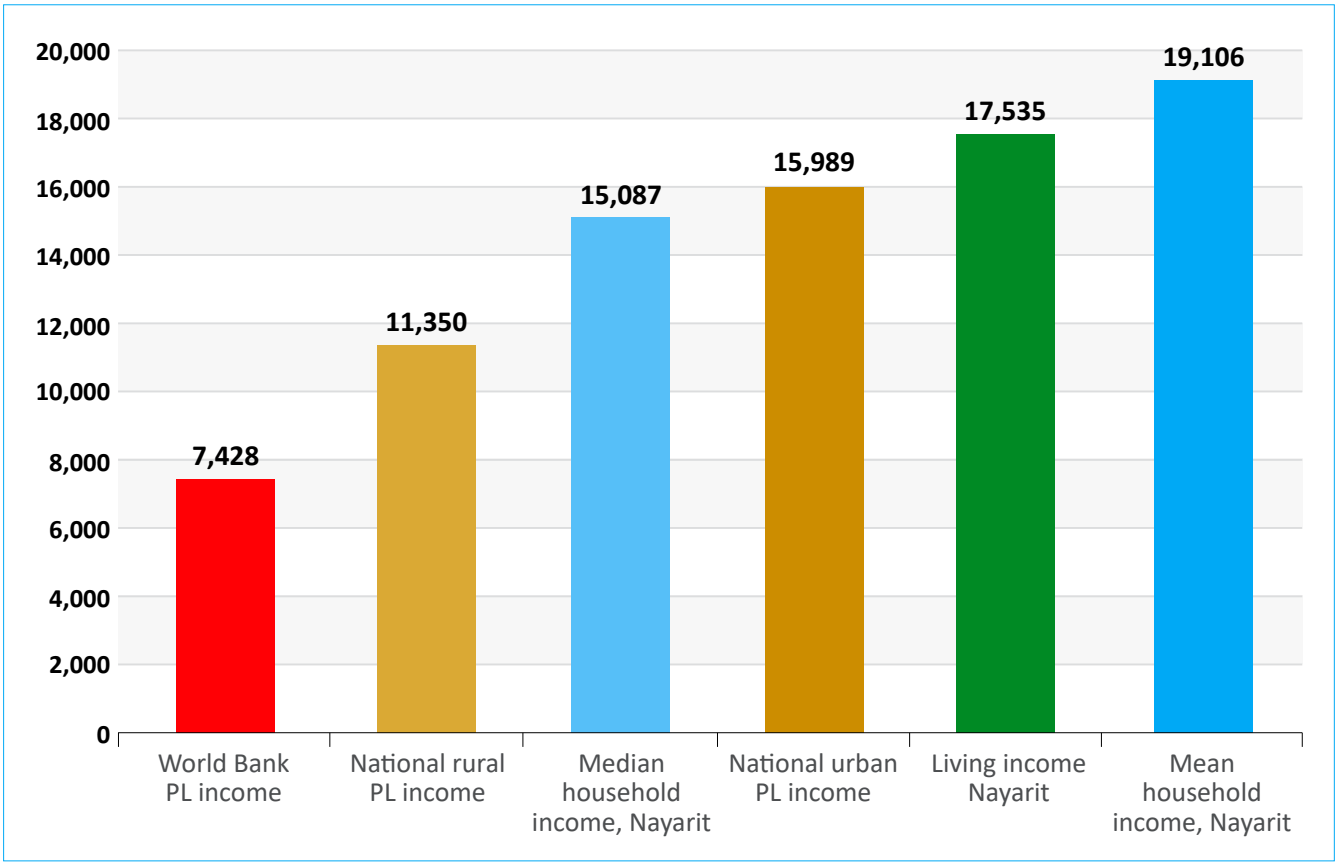
11. FAMILY INCOME LADDER

According to the most recent National Household Income and Expenditure Survey (ENIGH, 2020), the mean household income per month in Nayarit was MXN 17,322 in August 2020. This figure adjusted by inflation is MXN 19,106 in February 2022. Likewise, the median household income per month was MXN 13,678 in August 2020, or MXN 15,087 in prices of February 2022. As was shown in the previous section, the living income per month for the reference family estimated for Nayarit is MXN 17,535, which falls below the mean income for Nayarit (Figure 5).

The national (urban and rural) poverty line income for a reference household of 4 persons based on Coneval poverty lines estimates, and the World Bank international poverty line for upper middle-income countries like Mexico, are below the living income for Nayarit. The estimate based on the World Bank international poverty line of US$ 5.50 per day for upper-middle income countries is MXN 7,428 (PPP 2022 of 11.10), while the one resulting from the Coneval rural poverty line in Mexico is MXN 11,350. The urban equivalent of the latter is MXN 15,989, higher but still below the living income (Figure 5).

This result of our living income estimate being higher than these poverty line income values is consistent with the definition of decent income, which should allow for a standard of living above poverty in the rural areas and small towns where tobacco growers live.

Figure 5. Monthly household income ladder, Nayarit, Mexico (MXN of February 2022)



Source: Table 10, and authors' calculation with data from World Bank, Coneval and Inegi.

12. CONCLUSION

This paper estimated living income and living wage for the municipalities of Acaponeta, Tecuala, Rosamorada, Ruíz and Santiago Ixcuintla, in the northern part of the state of Nayarit, Mexico. It used the Anker Methodology (Anker and Anker, 2017) which has already been used in living income and living wage studies worldwide in more than 40 countries, and it yields internationally comparable estimates of living wages and living incomes.

Study municipalities are comprised of rural areas and small towns (48% of the population lives in rural localities with less than 2,500 inhabitants). We believe that our living income and living wage estimates are also valid for the rest of the state of Nayarit, except the municipalities of Tepic and Bahía de Banderas. This view is based on the fact that: (i) the percentages of urban and rural population in these areas (54% and 46%) are very similar to those in the study area (52% and 48%), and (ii) economic activity is concentrated predominantly in the primary sector in both the study area and these areas.

This study included extensive field research and data collection on local food prices, housing rental prices, health care costs, education costs, and transportation costs for a reference family of four people (2 adults and 2 children). Secondary sources of information from household surveys and the population census were also used for rural and urban households at the state level on household expenditures, employment patterns, and household size.

A family of four requires, as of February 2022, a monthly net income of MXN 17,535 (USD 857) to have a basic but decent life in the study municipalities. In an annex, we show that this figure translates into a take-home pay net living wage for full-time workers in these municipalities of MXN 10,500 (USD 513). Taking into account mandatory social security contributions and income taxes for a full-time worker at the net living wage, we estimate a gross living wage (aka living wage) of MXN 12,410 (USD 607) per month. Though the gross living wage for informal sector workers – those without access to social security and without health insurance – is slightly lower[15] at MXN 11,929 (USD 583) per month, the operative living wage for Nayarit should be the one for formal sector workers in part to avoid a race to the bottom on wages and because informal sector workers have additional insecurities.

15 The difference from the living wage for formal sector workers is that while informal workers and their families have higher out-of-pocket health care expenditures, they do not pay social security contributions (although we assume they still have to pay income tax).

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ANNEX. THE LIVING WAGE IN NAYARIT, MEXICO

To estimate a living wage from a living income (i.e., family living expenses), it is necessary to determine the number of full-time equivalent workers in the reference family, because it is realistic in today's world to expect more than one worker per family to provide financial support. We obtain the living wage (take-home pay) by dividing the living income by the number of full-time equivalent workers in the reference family.

A.1. Number of full-time equivalent workers in reference family

The number of full-time equivalent workers in the reference family was estimated using data from the National Employment and Occupation Survey (ENOE, 4th quarter of 2021) for Nayarit. We calculated the labor force participation rates (LFPR), unemployment rates, and part-time employment rates (less than 35 hours per week) in rural and urban areas and for men and women in the prime working ages 25 to 59. The values we report in Table A.1 for men and women are the average for rural and urban areas. We assumed that one member of the reference family is a full-time worker, while the time dedicated to work by the other adult depends on the three rates just mentioned. We found that the number of full-time equivalent workers in the reference family is 1.67 for the state of Nayarit (Table A.1).

Table A.1. Number of full-time equivalent workers in reference family Nayarit, Mexico

Variable	Males	Females
Labor force participation rate (LFPR)	94.5	67.7
Unemployment rate	2.0	1.6
Part-time employment rate	23.7	43.4
Percentage of full-time work of spouse	81.6	52.2
Number of full-time workers in family equals: 1 + [LFPR x (1.0-unemployment rate/100) x (1.0-part-time employment rate/100/2)]	**1.67**	

Note: Labor force participation rates, unemployment rates, and part-time employment rates are for prime working ages 25-59. Values are for Nayarit in the 4th quarter 2021.

A.2. Net living wage, payroll deductions and income taxes, and gross living wage

As mentioned in Section III, the monthly budget for a basic but decent life, according to the definition used in this study, for a family of four (two adults and two children) with access to social security system amounts to MXN 17,535 (USD 857). Given that the number of full-time equivalent workers per family in these municipalities is 1.67, a full-time worker would need to receive a net monthly take-home payment of MXN 10,500 (USD 513) (Table A.2). Formal workers in Mexico, however, have a payroll deduction contribution to social security and have to pay income tax. For this reason, it is necessary to add these taxes to our net living wage estimate - to ensure that workers have enough net salary for decency. We estimate that workers who receives a net salary equivalent to the estimated living wage (MXN 10,500) currently have to pay about MXN 1,243 in income tax and MXN 667 in social security. When we add them to our net living wage (that is, the take home pay), a gross living wage of MXN 12,410 (USD 607) is obtained for the study municipalities of Nayarit (Table A.2).

Table A.2. Living wage for formal and informal sector workers, Nayarit-Mexico (MXN and USD, February 2022)

CONCEPT	With social security		Without social security	
	MXN	USD	MXN	USD
TOTAL LIVING COSTS PER MONTH FOR BASIC BUT DECENT LIVING STANDARD FOR REFERENCE FAMILY SIZE (1)	**17,535**	**857**	**17,937**	**877**
NET LIVING WAGE PER MONTH (2) [2=1/#full time workers]	**10,500**	**513**	**10,741**	**525**
Statutory deductions from pay (3)	**1,910**	**93**	**1,188**	**58**
Social security tax (3A)	667	33	0	-
Income tax (3B)	1,243	61	1,188	58
GROSS LIVING WAGE PER MONTH (4) [4=2+3]	**12,410**	**607**	**11,929**	**583**

Source: Table A.2, and authors' calculation with data from World Bank, Conasami and Coneval.
Note: The operative living wage should be the living wage for formal sector workers with social security, in part because it is important to avoid a race to the bottom on wages and in part because informal sector workers have additional uncertainties and insecurities.

The living wage indicated in the preceding paragraphs applies to formal workers affiliated with social security institutions. The equivalent calculation for informal workers without social security requires a different calculation. On the one hand, informal workers such as farmers who are not affiliated with the social security system have a higher net living wage because they have greater health care costs and so a greater upward adjustment in the budget for health care compared to formal workers who are affiliated with the social security system. On the other hand, informal workers such as farmers do not have payroll deductions for social security. As a result and after consideration of income tax which we assume would be paid, the gross living wage for informal workers such as farmers at MXN 11,929 (USD 583) is similar to and slightly lower than that for formal workers at MXN 12,410 (USD 607). Despite this, the operative living wage for Nayarit should be the one for formal sector workers in part because it is important to avoid a race to the bottom on wages and in part because informal sector workers have additional uncertainties and insecurities.

A.3. Wage ladder

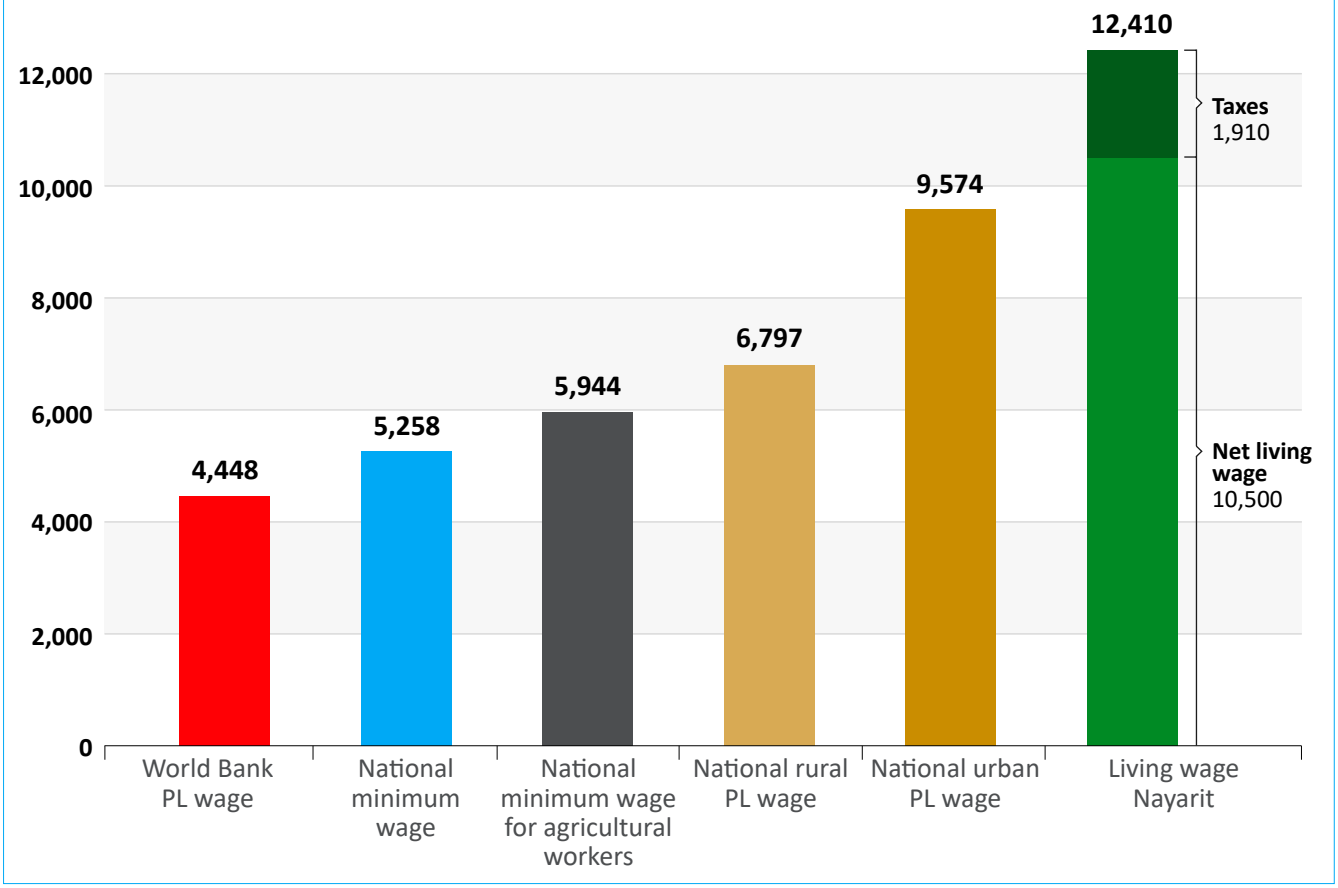
Since January 1st, 2022, the national minimum wage in Mexico is MXN 172.87 (USD 8.45) per day. If we assume (365/12) days per month, this is equivalent to a gross monthly payment of MXN 5,258 (USD 257). The national minimum wage for agricultural workers in 2022 is MXN 195.43 (USD 9.55) per day, which is equivalent to a gross monthly payment of MXN 5,944 (USD 290). The estimated living wage in this study for Nayarit is 2.4 times the current national minimum wage, and 2.1 the national minimum wage for agricultural workers - see Figure A.1. Although the increase in the national minimum wages in 2022 was important (22%), it is still too low. Note that both the national minimum wage and the national minimum wage for agricultural workers are so low that they would not enable a typical size family in a rural area to live above the poverty level as defined by the government.

The level of the minimum wage in Mexico exhibits a historical lag, having lost ¾ of its purchasing power in the three decades prior to 2015. Since 2015, however, an effort has been made to raise it, but, as demonstrated in this report, it still does not comply with the requirements of the Federal Labor Law and the Mexican Constitution, which establishes the minimum wage (Article 123.VI, Title Six. Labor and Social Security).

> "The general minimum wage must be sufficient to satisfy the normal material, social, and cultural needs of a family, and to provide the compulsory education of children. The professional minimum wage shall be fixed by taking into account the conditions of the different industrial and commercial activities.
>
> A national commission composed by representatives of the workers, employers, and the Government shall fix minimum wages. Special advisory committees may assist this national commission, if it considers them necessary for a better performance of its duties."

The national (urban and rural) poverty line wages determined by Coneval, and the World Bank international poverty line wage for upper middle-income countries like Mexico, are also below the living wage of Nayarit. The estimate based on the international poverty line of US$ 5.50 per day of the World Bank for upper-middle income countries is MXN 4,448 (PPP 2022 of 11.10) for Nayarit, while the one resulting from the rural poverty line in Mexico is MXN 6,797 (USD 332). The urban equivalent of the latter is MXN 9,574 (USD 468), higher but still well below the living wage (Figure A.1). This result of our living wage being higher than these poverty line wages is consistent with the definition of decent salary, which should allow for a standard of living above poverty. The size of the gap, however, indicates that national poverty lines and minimum wage are set at quite low levels.

Figure A.1. Monthly wage ladder, Nayarit, Mexico (MXN of February 2022)



Source: Table A.2, and authors' calculation with data from World Bank, Conasami and Coneval.