



Living Wage Report

Michoacán, Mexico

Non-metropolitan urban and rural northwestern regions

Study date: October 2020

By: Marcelo Delajara, Rocío Espinosa and Claudia Fonseca,
with Martha Anker and Richard Anker



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SECTION I. INTRODUCTION

This report discusses the research carried out to estimate the living wage in the northwest of the state of Michoacán, Mexico, as well as the results, scope, and limitations of the investigation.

It is organized as follows. This section provides background of the study and the socioeconomic context in the study area. Section 2 addresses conceptual issues involved in the estimation of living wages and provides information on the cost of a basic and decent life for a farm worker and his family in the study area. Section 3 presents the estimation of the living wage. Finally, section 4 presents conclusions. The Appendix includes a discussion about the validity of the results for the much larger region encompassing the study area.

1.1. BACKGROUND

This report is the first of its kind in Mexico for focusing on workers living in an area of the country with urban non-metropolitan and rural populations, and for the methodology used. It follows the guidelines proposed by Martha Anker and Richard Anker (2017), which have been used in more than 40 living wage studies around the world. The methodology is located in an intermediate approach, between studies in which the living wage is estimated based on international minimum standards and location-specific conditions, and those in which an exhaustive investigation of the expressed needs of the population under study is carried out. This methodology is also between studies that exclusively rely on primary data and studies that exclusively rely on secondary data. The Espinosa Yglesias Research Centre (CEEY) has been a pioneer in estimating the living wage in Mexico using a needs-based and public consultation approach. The study by Aban Tamayo et al. (2020) reports CEEY's estimate of the minimum income standard required to achieved a decent life in the large metropolitan areas of Mexico, following the approach developed by the Center for Research in Social Policy (CRSP) at Loughborough University, United Kingdom.

The present report is part of a series of living wages reports from the Global Living Wage Coalition (GLWC), which are prepared following the Anker methodology developed by Martha Anker and Richard Anker. This methodology is widely accepted, and has been used to estimate living wages

in rural, urban and semi-urban areas of more than 23 countries.¹ The GLWC includes Fairtrade International, Rainforest Alliance, and Social Accountability International (SAI), in partnership with ISEAL Alliance and Richard Anker and Martha Anker.²

1.2.CONTEXT

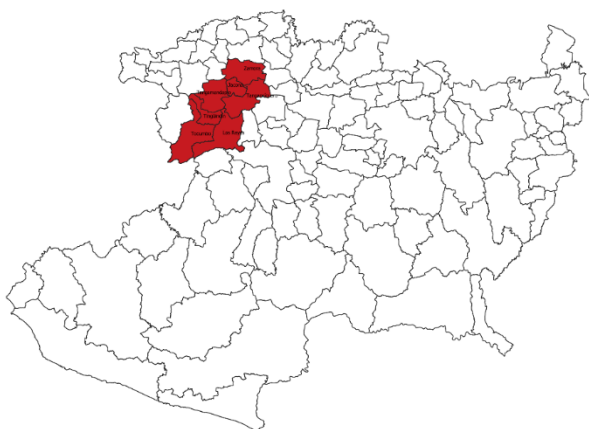
1.2.1 Poverty in Michoacán and selected municipalities

The state of Michoacán is located in the north-central region of Mexico (Map 1). It has a population of 4.3 million people, of which 48.3% are men and 51.7% are women. The average age of the population is 26 years, with a demographic dependency rate of 58.6%, and a population density of 78.2 inhabitants per square kilometer.³ The seven municipalities of Michoacán considered in the study are Los Reyes, Tangamandapio, Tingüindín, Tangancícuaro, Tocuambo, Jacona and Zamora (Map 2). The municipalities in the study were selected because they met a series of characteristics of interest. First, the composition of agricultural production is reasonably representative of the country and of the export products; this allows the study results to be comparable with all other studies that have used this methodology across the world. Additionally, as will be discussed later, the social development situation in the area can be considered similar to the average for Mexico.

Map 1: Location of the State of Michoacán in Mexico



Map 2: Municipalities of the State of Michoacán in this study



¹ See *Global Living Wage Coalition* (<https://www.globallivingwage.org/>).

² GLWC's mission is to contribute to the improvement of workers' wages on farms, factories, and supply chains that participate in their certification systems, with the long-term goal that workers could receive a worthy living wage. Every glwc commissioned living wage study is made public with the goal of promoting and increasing the collaborative opportunity to pay a dignified living wage (GLWC 2020).

³ Population density (inhabitants per square kilometer), demographic dependence (number of people in dependent ages, 0 to 14 and 65 and over years old, for every hundred in economically productive age, 15 to 64 years old) and average population age for 2015 (INEGI 2020a).

According to the National Council for the Evaluation of Social Development Policy (CONEVAL, 2019a), the extent of poverty among the population in Michoacán is lower than that observed at the national level. On the one hand, 46.0% of the population in the state of Michoacán is in a situation of multidimensional poverty, a lower figure than that observed at the national level (49.6%). On the other hand, 50.9% of the population of Michoacán has an income below the poverty line, and the national level the figure is 58.1% (Table 1, first and last rows).

In the locations of this study, however, the incidence of multi-dimensional poverty is higher than in Michoacán taken as a whole. In the municipalities of Jacona, Tocuambo and Zamora, the poverty rate is as high as in the rest of Mexico (close to 50%), and in the other municipalities, poverty is higher than that observed at the national level. In Los Reyes, Tingüindín and Tangancícuaro the percentages of the population living in poverty are 52.3%, 57.8% and 60.8%, respectively. In Tangamandapio, 71.2% of the population is poor (Table 1, first row).

A similar situation occurs in relation to the percentage of people with income below the poverty line. The percentage observed at the level of the municipalities is higher than the average for Michoacán, and the figures are close to the national level. Thus, the municipalities of Los Reyes, Jacona, Zamora and Tocuambo have a level of income poverty similar to the national one; in Tingüindín and Tangancícuaro income poverty is slightly higher than the national figure; and in Tangamandapio, there is significantly more income poverty (73.4%, Table 1, bottom row).

Regarding the indicators of social deprivation, the situation in Michoacán and in the municipalities of this study - relative to the national one - varies depending on the type of deprivation.

In the case of food insecurity, Michoacán does slightly better than Mexico, but the municipalities analyzed are in a somewhat worse situation, with an incidence of food insecurity that is between 2.5 and 9.3 percentage points above the national level.

In the dimensions of low housing quality and lack of basic household services, Michoacán also exhibits a better situation than the rest of Mexico. However, there is again a great heterogeneity among the studied municipalities. While Jacona, Tingüindín, Tocuambo and Zamora have lower rates of deprivation than the rest of the state, in Los Reyes, Tangamandapio and Tangancícuaro, these rates are higher.

The percentage of population lacking access to health services and social security is greater in the state of Michoacán than in Mexico. The situation is even worse in the study area; with the exception of Los Reyes and Tocuambo for the case of access to health services. Tangamandapio and Tangancícuaro stand out: more than 80% of people is not affiliated with social security, and more than 28% does not have access to health services (Table 1).

We find the same pattern for low schooling achievement; however, in this case the level of deprivation is very high. In Michoacán, the indicator is more than 3 times greater than at national

level (24.2% vs. 7.3%). For the municipalities of interest, the indicator varies between 30% (Zamora) and 39% (Tangancícuaro).

The analysis in this section indicates that overall the state of Michoacán is slightly better than average for Mexico on poverty and deprivation dimensions, excepting affiliation to social security, access to health care and schooling achievement. However, the municipalities in the study area are worse than average for Michoacán on all these dimensions. Therefore, we can conclude that poverty and deprivation in the study area are similar to the average for Mexico as they are as great as or even greater than average for Mexico.

Table 1: Indicators of poverty in Mexico, Michoacán, and the municipalities of this study (% population)

Indicators	Mexico	Michoacan	Municipalities						
			Jacona	Los Reyes	Tangaman- dapio	Tangancí- cuaro	Tingüindín	Tocumbo	Zamora
Poverty									
Population in poverty	49.6	46.0	49.4	52.3	71.2	60.8	57.8	49.6	49.9
Moderate poverty	40.3	40.0	43.4	43.0	53.7	48.9	49.5	42.9	41.5
Extreme poverty	9.3	6.1	5.9	9.3	17.5	11.9	8.3	6.7	8.4
Vulnerable population due to social deprivation	23.4	34.8	30.3	32.9	22.0	32.3	32.3	29.8	26.4
Vulnerable population due to low income	8.5	4.9	7.0	4.3	2.2	1.9	3.4	7.7	7.1
Non-poor non-vulnerable population	18.4	14.3	13.4	10.5	4.6	5.0	6.6	12.9	16.6
Social deprivation									
Population with at least one social deprivation	73.1	80.9	79.7	85.2	93.2	93.1	90.0	79.4	76.3
Population with at least three social deprivations	19.6	22.6	24.6	32.1	40.9	43.4	25.8	20.9	28.7
Indicators of social deprivation									
Low schooling achievement	7.3	24.2	33.7	31.1	37.2	39.0	30.4	34.5	30.0
Lack of access to health services	14.3	21.2	25.9	15.1	28.5	37.9	22.9	14.1	25.7
Lack of access to social security	61.1	69.5	62.3	72.7	85.4	81.7	79.7	54.8	60.5
Low quality housing	15.5	12.7	10.3	18.6	24.7	15.4	11.9	8.7	8.6
Lack of basic household services	23.4	17.7	9.3	27.4	21.8	29.6	15.2	14.5	18.8
Food insecurity	23.9	21.1	26.4	29.6	31.7	33.6	26.3	28.5	32.5
Well-being									
Population with income below the extreme poverty line	21.8	15.6	14.3	16.7	30.5	19.9	19.3	17.8	17.1
Population with income below the poverty line	58.1	50.9	56.3	56.6	73.4	62.7	61.2	57.4	57.0

Source: CONEVAL.

Note: national and state data are from ENIGH 2018, while municipal-level data are from Encuesta Intercensal 2015.

1.2.2 Production and employment in Michoacán and in the selected municipalities

Michoacán is one of the strategic regions of Mexico regarding the production of avocado, strawberry, berries, sugar cane and corn. It is also one of the high-potential production regions in the country.

According to Mexico's Secretary of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA 2017c), avocado is one of the most important agricultural products exported by the country. Mexico is the main supplier to the international market, with a contribution of 45.9% of the value of world exports. World imports have increased by 171.97% in the last decade, which has generated an increase in Mexican exports, mainly to the United States, Japan, Canada and Netherlands. Currently, 100% of the national consumption is supplied by internal production.

Strawberry production represents 1.14% of agricultural GDP, of which 52.2% are exports. Mexico ranks third among the world suppliers of strawberry to the international market (14.8% of the value of world exports). World imports of strawberries have increased 35.5% during the last decade, which is reflected in an increase in Mexican exports, mainly to the United States and Canada (SAGARPA 2017a).

Regarding blueberries, raspberries and blackberries, their production corresponds to 2.1% of Mexican agricultural GDP, of which 40.9% are exports; with a significant percentage going to Chile, the United States and Canada. World imports have increased by 117.9% during the last decade, which has prompted an increase in Mexican exports, mainly to the United States, Canada and the Netherlands (SAGARPA 2017b).

Another agricultural product cultivated in the region is sugar cane. Besides being the raw material in the sugar industry, it also ranks as one of the crops most consumed by Mexican families. Most of the Mexican exports of sugar cane go to the United States and Puerto Rico: during the 2016-2017 season, Mexico exported 1.11 million tons of sugar, of which 67.60% was destined for these two countries (SAGARPA 2017d).

Corn is the most representative crop in Mexico due to its economic, social and cultural importance. With an average per capita consumption per year of 196.4 kg of white corn, especially in the form of tortillas, it represents 20.9% of the total food expenditure by Mexican families (SAGARPA 2017e).

All these agricultural products are important in the study area. According to Michoacán's Bureau of Information for Rural Sustainable Development (OEIDRUS, 2020), the share of avocado in the cultivated area ranges from 15.6% in Tocuambo to 68.3% in Tingüindín. The share of corn in the cultivated area is 17.8% in Tingüindín, but it can be as high as 41.9% in Tangamandapio. Sugar cane's share of cultivated land is highest in Tocuambo (23.8%). Finally, strawberry and berries' share ranges from 15.4% of the cultivated land in Tocuambo to 29.4% in Los Reyes. Los Reyes is the municipality in the study area with the largest number of cultivated hectares (17,759); here, the cultivated area is divided mainly between avocado (33.8%), strawberry and berries (29.4%) and corn (28.2%).

Although agriculture is very important in the state of Michoacán, the share of employment in the primary sector (agriculture, livestock, forestry, fishing and hunting – of which agriculture is by far the most important) is 24.6%. The majority of the labor force in Michoacán is in retail trade and services (57%); while the rest of the workers (18.4%) are in the energy, construction and manufacturing sectors (STPS-SNE, 2020).

Labor informality is widespread in Michoacán: 60.9% in trade and services, 81.3% in the transformation (secondary) sector, and 83.8% in the primary sector [i.e. only 16.2% of the workers in the primary sector are formally hired].

In five of the seven municipalities of the study area, however, the share of formal workers in the primary sector is much higher than the average for Michoacán: Zamora (29.2%), Jacona (42.8%), Los Reyes (59%), Tocuambo (64%), and Tangancícuaro (82.4%). In the other two municipalities studied, Tangamandapio and Tingüindín, it is the share of formal workers in the secondary sector which is higher than the average for Michoacán, at about 50 % (STPS-SNE, 2020).

SECTION II. METHODOLOGY

According to the methodology of Anker and Anker (2017), the living wage is:

“Remuneration received for a standard work week by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, health care, transport, clothing, and other essential needs, including provision for unexpected event”.

The Anker Methodology aims to estimate living wages that are internationally comparable, but also locally relevant. To make the methodology simultaneously practical and credible, the estimation relies on a combination of local primary data and secondary data from state or national level surveys.

Local food prices and local housing costs are collected together with local costs for children’s education through secondary school, adequate health care, and transportation to ensure that workers are paid enough to cover these needs since nutritious diet, healthy housing, education through secondary school, and adequate healthcare are considered human rights in the Anker methodology. Housing costs are estimated from the rental price of homes that satisfy international, national and local standards for decent healthy housing. By estimating the cost of renting a home with such standards, the methodology allows different estimates of the living wage within countries and helps ensure that workers can afford decent healthy housing.

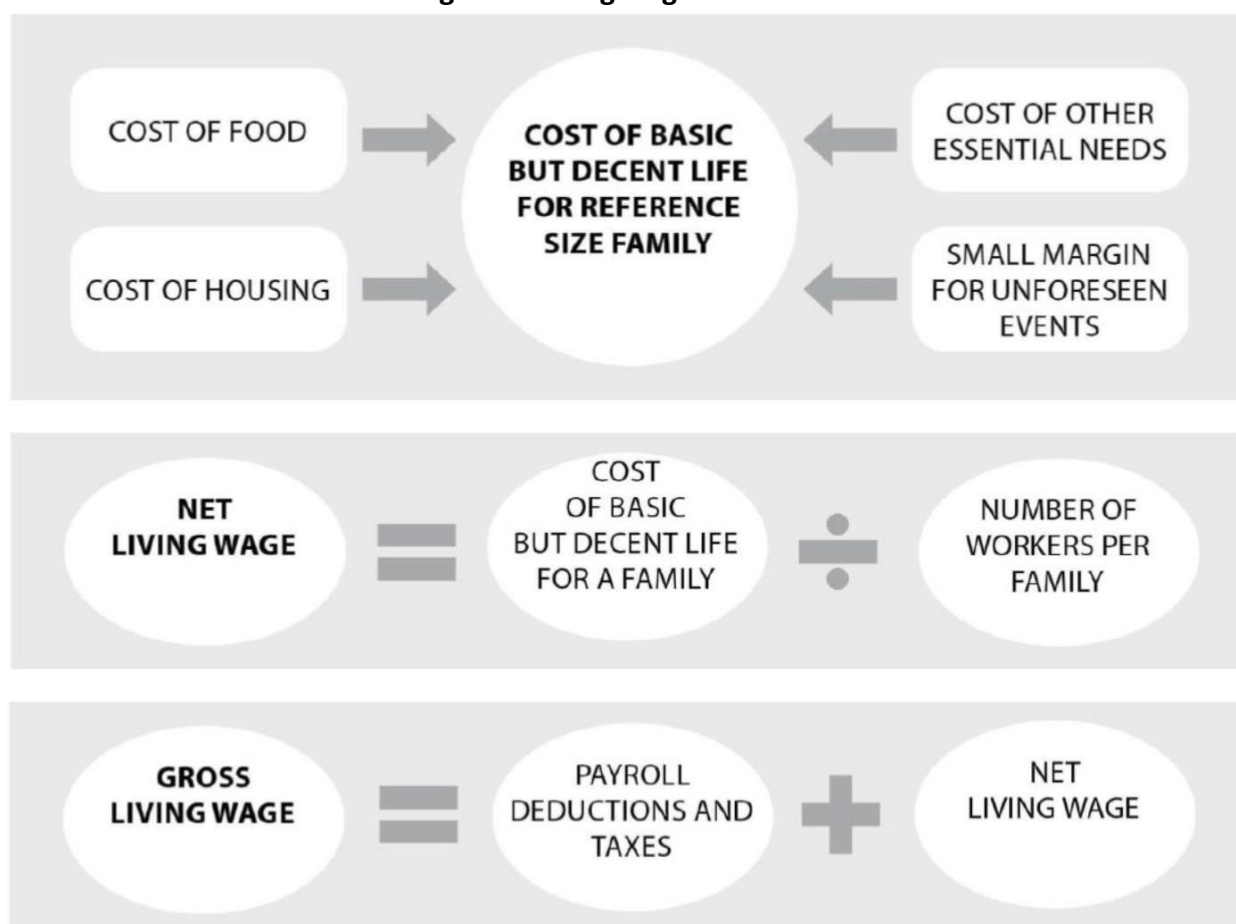
The methodology also requires the participation in the study of local people and organizations, transparency, documentation, and detailed analysis to increase its credibility and acceptance by stakeholders. Thus, for this study we met with four groups of farm workers in the municipalities of Los Reyes, Jacona and Tangancicuaro. Two focus groups discussed the type of food they eat regularly and where they buy it, as well as the types of health expenses they have to afford. In the other two focus groups, we inquired about their homes and rental costs, as well as their educational expenses.

There is a critical evaluation of available secondary data and adjustment to these data when necessary. The sources of the secondary data analyzed in this study were the National Occupation and Employment Survey (ENOE, 2019, third quarter), the National Household Income and Expenditure Survey (ENIGH, 2018), and the Intercensal Survey 2015; all published by the National Institute of Statistics and Geography (INEGI). We also used data from the National Health and Nutrition Survey (ENSANUT, 2012), the demographic adjustment 1950-2015 and population projections for 2016-2050 from the National Population Council (CONAPO), and the database for the measurement of multidimensional poverty of CONEVAL (2019).

Finally, the estimation of the living wage of course does not mean that workers receive a living wage, or that employers pay a living wage.

A summary of the methodology is depicted in Figure 1. Panel 1 indicates the main components of the cost for a basic but decent living standard. The definition and estimation of the living wage considers four relevant aspects of the cost of living: the cost of food, the cost of housing, the costs of other essential needs, and a margin to face unforeseen expenses. Panel 2 indicates how the net living wage (i.e. take-home pay required for decency) is estimated from the living costs from panel 1 by taking into consideration the number of full-time equivalent workers in the family. Panel 3 indicates how the gross living wage is estimated by also taking into consideration mandatory payroll deductions and income tax that reduce take home pay and would need to be paid on the estimated living wage.

Figure 1: Living wage calculation



Source: Anker and Anker (2017).

2.1.FOOD COSTS

Food cost per person per day is based on the cost of a nutritious model diet that complies with the recommendations of the World Health Organization (WHO) on calories, macronutrients, and micronutrients for people depending on sex, age, height, and activity level, and that is consistent with the local food preferences and the country's level of development. This approach to the

nutritious diet uses a much stricter nutrition standard than those that only guarantee a sufficient number of calories.

2.1.1 Model diet

The number of calories required per day for our reference family of 4 (2 adults and 2 children) was determined to be 2,361 calories per person. For this calculation we used the Schofield equations recommended by WHO and the average adult male height (1.66 m) and female height (1.54 m) from the National Health Survey of 2012 (ENSANUT 2012). We assumed that one adult in the family has vigorous physical activity (a worker on a farm), and her or his spouse and children have moderate activity level. Considering all these more detailed factors associated with height and physical effort, it led to the average calories per person in the home being slightly higher than the standard in the national Mexican food basket.

To develop our model diet, we first considered the rural and urban food baskets used in the official poverty estimate for Mexico (CONEVAL 2019b). We then adjusted these food baskets to obtain an adequate nutritional standard, while maintaining a relatively low-cost model diet. For example, we increased the amount of beans, chicken and eggs in the diet, in order to lower the protein contributions from beef and pork, which are more expensive.

Regarding fruits, however, we kept the same composition as in the official food basket (which includes banana, orange and apple). We decided to do it this way because, first, in the focus groups with farm workers, they mentioned that they don't eat fruit because it is expensive. Second, in practically all the establishments where the prices of fruits and vegetables were quoted, availability of these three fruits was found. Thus, it seemed to us that the fruits included in the food basket should be the ones prescribed in the official basket.

We based the adjustments on the nutritional contents of foods reported by the United States Department of Agriculture (USDA), and ensured that WHO nutrition standards were met:

- At least 10% of calories must come from proteins. In addition, proteins must come from a variety of sources, including animal sources and legumes.⁴
- Between 15% and 30% of calories must come from fats.
- Between 55% and 75% of calories must come from carbohydrates.
- Dairy products must be included, especially for children.
- The diet must include at least 300 grams of vegetables and fruits per day, including legumes, to provide enough micronutrients and minerals (350 grams for an upper-middle income country such as Mexico).
- Maximum of 30 grams of sugar and 34 ml of oil.

⁴ The percentage of calories coming from proteins increases with economic development and household income. For this reason, Anker and Anker (2017) recommends that 12-14% of calories come from proteins in an upper-middle income country such as Mexico.

The percentage distribution of calories in our model diet is 13.3% from proteins, 28.0% from fats, and 58.6% from carbohydrates.

Foods considered must be consistent with local preferences. For example, for the case of this study in Mexico, we included tortillas and chili peppers in the model diet. Also bottled water is included, as it is a common and safe source of drinkable water around the country.

2.1.2 Food prices

The survey and opinion polling company Suasor Consultores collected the food prices, the rental prices, as well as the cost of basic privately provided health services, in the seven living wage municipalities. For this, they used the forms for collecting prices of previous Anker living wage studies in other countries —although adapted to the Mexican reality. Prior to this fieldwork, the price interviewers were trained by the authors to ensure that the survey was carried out according to the methodology adopted for the project.

To estimate the cost of our model diet, the prices of fresh and processed food were collected in the seven study municipalities: Zamora, Jacona, Tangamandapio, Tangancicuaro, Tingüindín, Tocombo and Los Reyes, during the second fortnight of February 2020. Researchers collected local food prices corresponding to the types, qualities and quantities of food that the workers in the study area usually buy. The set of establishments visited was determined based on results of two focus group discussions with farm workers about the types of food they eat regularly and local retail and grocery stores, supermarkets and open markets where workers typically shop.

The information collected for each food item included: the price, weight, presentation (packaging), and brand. Price information was collected for 2,957 items, corresponding to 194 different types of food in 64 establishments, with an average of 15 observations per product. About 30% of the data were collected in markets and the rest in supermarkets or grocery stores. In particular, 1,279 observations were used to estimate food prices and the cost of our model diet, with an average of 51 observations for each of the food items included in our food basket.

Once these food price data were available, the price of each product in the food basket was calculated. We followed the following steps:

1. We discarded the highest and lowest prices of each product. Then we computed the average and standard deviation of the remaining prices, and plotted box-plot diagrams to identify outliers.
2. Then, we followed two alternative paths:
 - a. We kept the average price computed in step 1 for the products without atypical prices.
 - b. For products with atypical prices, these extreme prices were identified and removed, and the average price of the remaining observations was recalculated. In doing this:
 - i. We established whether atypical prices corresponded to brands or types of foods that are more expensive. For example, in the case of cooking oil, the

highest prices corresponded to olive oil prices; or in the case of rice, we found that the most expensive prices belonged to specific brands. We excluded these from our calculation of average price.

- ii. We also explored whether any unusually high prices resulted from prices for small packages, which artificially raised the price per kilo of the products; this was sometimes the case of instant coffee. We excluded these from our calculation of average price.

2.1.3 Cost of model diet

Having estimated the average price for each food item, we computed the cost of the daily diet per person. The resulting value is 42.88 Mexican pesos (MXN) (Table 2). However, we added some 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:

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

With these additional expenses, we computed the final cost of the food basket to be 51.46 MXN per person per day (Table 2).

The number of members in a typical family in the study area (see section below) was then multiplied by the cost per person of the model diet in order to get the family food budget.

If we compare the cost of this model diet with the cost of the CONEVAL food baskets for the month of February 2020, we find that the cost of the model diet falls between the values of the rural and urban CONEVAL food baskets. The cost of the CONEVAL rural food basket is 38.58 MXN, while that of the urban one is 54.11 MXN. Moreover, the living wage basket is closer to the concept of decent feeding, because it entails a more adequate balance of nutrients and allows for a greater variety of meals to be prepared.

Table 2: Composition and cost of the food basket per person (MXN of February 2020)

	Food item	Edible grams	Purchased grams	Cost per kilo	Price
1.A Cereals and grains	Tortilla (maize)	230	230	17.83	4.11
	Rice, white medium	36	36	17.10	0.62
	Bread, dulce	36	36	46.05	1.66
1.B Prepared cereals	Bread, white	33	33	48.30	1.61
	Macaroni, spaghetti, dry, whole wheat	36	36	17.80	0.64
2. Roots and tubers (starchy)	Potato	53	71	14.03	1.00
	Maize (corn) whole grain yellow or white	48	48	14.00	0.68
3. Pulses, legumes, beans	Beans, pinto	56	56	26.39	1.48
4.A Milk	Milk (cow)	180	180	16.55	2.98
4.B Other Dairy	Queso blanco	11	11	82.30	0.94
5. Eggs	Chicken egg	44	50	36.61	1.83
6. Meats & Fish	Chicken broiler or fryer meat & skin raw (no giblets)	49	71	64.23	4.59
	Fish, white	5	8	95.00	0.79
	Chuck blade roast w/bone 1/8" fat	24	30	89.50	2.68
	Pork, loin and shoulder trimmed	24	31	109.50	3.41
	Ground beef 90 % lean	24	24	121.20	2.94
7.A Dark green leafy vegetables	Spinach	42	58	49.00	2.86
7.B Other vegetables	Onion	42	47	12.30	0.57
	Tomato	42	46	23.30	1.08
	Carrots	42	47	11.79	0.56
8. Fruits	Apple	42	47	29.90	1.40
	Orange	42	58	9.50	0.55
	Banana	42	66	15.30	1.00
9. Oils & fats	Oil for cooking	30	30	28.72	0.86
10. Sugar	White sugar	30	30	18.60	0.56
11. Nonalcoholic beverages (e.g. coffee or tea)	Coffee	2	2	360.50	0.65
12. Other	Chili peppers	10	12	24.20	0.28
	Drinking water	327	327	1.73	0.57
Subtotal excluding additional costs					42.88
Total, including additional costs					51.46

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%

2.2. HOUSING COSTS

The estimation of housing costs relies on information on the rental values of homes in the study area where the workers live, which satisfy the standards established in the Anker and Anker methodology (which are based on international standards from who, un, ilo, and un-habitat) and local conditions, norms and standards. Since current housing conditions and the official standard for Mexico is higher than international minimum standards, the one for the Mexican case was preserved. These decent homes have, for example, adequate facilities and living spaces, non-leaking ceilings, a firm floor, adequate ventilation and lighting, as well as electricity, water and sanitary toilets (Table 3).

We obtained rental values during visits to homes in the study area that were available for rent. This allowed us to verify whether these homes complied with our housing standard or not and if they were in acceptable condition. It also allowed us to identify extreme values, both high and low, of some of the decent homes available for rent, which were associated with location, access to transport, security and cleanliness in the surroundings, etc.; these extreme rents were not taken into account in the calculation of a typical rent value.

Researchers visited and collected information on 60 houses available for rent in the locations of this study during the second fortnight of February 2020 (Table 4). This information includes the size of the dwelling, number of rooms, material of the walls, floors, and roofs, access to services, general conditions of the house and in the surroundings areas, and the cost of the rent.

After analyzing this information, we identified 39 houses that met our local housing standards. Based on the rental values of this group of acceptable houses, we estimated that the average rent in the study area is around 2,000 mxn per month, with an average living space of 67.65 m², and an average number of 4 rooms. (The standard of housing that we use in the study does not contemplate a specific number of bedrooms; this average number is the one that arises from the data of houses available for rent in the area.)

Table 3: National and international decent housing standards, local housing conditions, and study's housing standard

Housing characteristics	International minimum requirements	Approximate % of houses (study area)	Housing standard decided for study area
Materials			
Walls	Durable material providing protection from elements.	100%	Durable material providing protection from elements: the non-acceptable standards are waste material, cardboard, metal or asbesto sheet, mud.
Roof	Durable material without leaks.	100%	Durable material without leaks: the non-acceptable standards are waste material or cardboard sheet.
Floor	Durable material.	100%	Durable material: the non-acceptable standard is earth floor.
Amenities			
Toilet	At least pit latrine with slab.	100%	Flush toilet or pit latrine with slab.
Water	Safe water not far from home (maximum 30 minutes total collection time per day).	100%	Safe water not far from home (maximum 30 minutes total collection time per day): the non-acceptable standard is borehole, river, lake; piped from other dwelling, pipe truck or rainwater.
Electricity	Yes generally, but not required if not common in study area.	100%	Household with electricity.
Ventilation & Lighting			
Ventilation quality	Good ventilation. Especially important when cooking indoors.	92%	Good ventilation. Kitchen with good evacuation if cook indoors.
Lighting	Adequate	100%	Electricity
Number of windows	Sufficient for adequate lighting and ventilation.	26%	Sufficient for adequate lighting and ventilation. Generally at least one window per room.
Living Space			
Number of square meters of living space	≥30 sq. m. (increases with economic development).	100%	50 m ² , according to National Housing Commission.
Number of rooms	≤ 2 persons per room excluding kitchen and toilet.	100%	CONEVAL standard, number of persons per room, less than 2.5 persons per room, excluding kitchen, hallways and bathroom.
Kitchen location	If kitchen is inside house, adequate ventilation for cooking needed.	92%	If kitchen is inside house, adequate ventilation for cooking needed.
Condition			
	In good state of repair.	100%	In good state of repair.
Environment			
	Not a slum.	0.00%	Not a slum.
	No site hazards such as: surface water drainage, industrial pollution, danger of landslides, flood zone.	0.00%	No site hazards such as: surface water drainage, industrial pollution, danger of landslides, flood zone.

Source: Authors' estimates with data collected on the characteristics of homes for rent in the study area.

Table 4: Housing costs for houses visited in Michoacán study area

Municipality	Acceptable standard?	Rent (MXN Feb 2020)	Size and number of rooms	Comments
Jacona	No	400	18.22 m ² ; 0DR; 1BR; 0K	Too small; good ventilation; kitchen not in a separate room; shared bathroom.
Los Reyes	No	650	19.23 m ² ; 0DR; 1BR; 0K	Too small; good ventilation; shared bathroom.
Los Reyes	No	750	32.47 m ² ; 0DR; 2BR; 0K	Too small; good ventilation; kitchen separated from rooms.
Los Reyes	No	850	20.42 m ² ; 0DR; 1BR; 1K	Too small; no good ventilation.
Los Reyes	Yes	900	62.30 m ² ; 0DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Zamora	No	900	52.20 m ² ; 0DR; 1BR; 1K	Good size; no good ventilation.
Los Reyes	No	900	48.63 m ² ; 1DR; 1BR; 0K	Small; no good ventilation.
Zamora	Yes	1,200	71.70 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Los Reyes	Yes	1,200	76.28 m ² ; 1DR-LR; 2B; 1K	Good size; no good ventilation; kitchen separated from rooms.
Tingüindin	No	1,200	63.12 m ² ; 0DR; 3BR; 0K	Good size; no good ventilation, but no kitchen.
n/a	No	1,200	50.30 m ² ; 1DR; 2BR; 0K	Good size; good ventilation, no kitchen.
Tangamandapio	Yes	1,300	84.35 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Los Reyes	Yes	1,400	83.52 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	1,400	79.60 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
n/a	No	1,400	16.32 m ² ; 0DR; 1BR; 0K	Too small; good ventilation, no kitchen.
Tangamandapio	No	1,400	48.00 m ² ; 1DR; 3BR; 0K	Small; good ventilation, no kitchen.
n/a	Yes	1,500	83.32 m ² ; 1DR-LR; 4B; 1K	Good size; good ventilation; kitchen separated from rooms.
Los Reyes	Yes	1,500	63.72 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tingüindin	No	1,500	37.27 m ² ; 0DR; 1BR; 1K	Small; no good ventilation.
Tocumbo	No	1,500	78.30 m ² ; 1DR; 3BR; 1K	Good size; good ventilation, bathroom is outside.
Tangamandapio	No	1,500	27.95 m ² ; 1DR; 2BR; 1K	Home is small; no good ventilation.
Tangamandapio	Yes	1,600	56.20 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tangancicuaro	Yes	1,700	61.70 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	1,700	67.40 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	1,800	63.92 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	1,800	72.94 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Los Reyes	Yes	1,800	63.28 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tangancicuaro	Yes	1,800	52.10 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tangamandapio	Yes	1,800	50 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tingüindin	No	1,800	73.70 m ² ; 1DR; 4BR; 0K	Good size; good ventilation, no kitchen.
Zamora	Yes	1,900	87.30 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tangancicuaro	Yes	1,900	63.34 m ² ; 1DR-LR; 2B; 1K	Good size; no good ventilation; kitchen separated from rooms.
Tangancicuaro	Yes	2,000	67.23 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	2,000	56.70 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	2,000	52.30 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tangamandapio	Yes	2,000	68.2 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tingüindin	No	2,000	37.27 m ² ; 0DR; 2BR; 0K	Home is small; no kitchen.
Tangamandapio	No	2,000	62.50 m ² ; 0DR; 4BR; 1K	Inadequate materials in walls and roofs; good ventilation; kitchen separated.
Jacona	No	2,000	97.20 m ² ; 1DR; 2BR; 1K	Good size; no good ventilation.
Jacona	Yes	2,200	61.30 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Zamora	Yes	2,300	56.63 m ² ; 1DR-LR; 1B; 1K	Good size; good ventilation; kitchen separated from rooms.
Zamora	Yes	2,300	55.72 m ² ; 1DR-LR; 2B; 1K	Good size; no good ventilation; kitchen separated from rooms.
Tangancicuaro	Yes	2,300	79.80 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Zamora	Yes	2,300	65.46 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Los Reyes	Yes	2,300	51.22 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	2,300	78.26 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tangancicuaro	Yes	2,400	83.79 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
Zamora	Yes	2,500	50.23 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Zamora	Yes	2,500	75.36 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Los Reyes	Yes	2,500	71.85 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	2,500	78.13 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	Yes	2,500	67.86 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Tocumbo	Yes	2,600	74.20 m ² ; 1DR-LR; 3B; 1K	Good size; good ventilation; kitchen separated from rooms.
n/a	Yes	2,700	63.50 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
n/a	No	2,700	85.79 m ² ; 1DR; 4BR; 1K	Good size; no good ventilation.
Zamora	Yes	2,800	58.73 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
n/a	Yes	2,800	78.96 m ² ; 1DR-LR; 2B; 1K	Good size; good ventilation; kitchen separated from rooms.
Jacona	No	2,800	67.00 m ² ; 1DR; 3BR; 1K	Good size; no good ventilation.
Zamora	No	2,900	57.41 m ² ; 1DR; 2BR; 0K	Good size; no kitchen.
Zamora	No	2,900	52.63 m ² ; 1DR; 1BR; 1K	Good size; no good ventilation.

Note: DR-LR: Dinning room - living room, B: Bedroom, C: Kitchen

2.2.1 Cost of utilities, maintenance and repair

To determine the costs of basic utilities and services, like electricity, water, LP gas, and maintenance and repair, we used the values reported in the National Household Income and Expenditures Survey (ENIGH) of 2018. We computed these expenses by income decile for rural and urban households in the state of Michoacán. Deciles 4 and 5 were considered as reference groups for the urban population and deciles 5 and 6 for the rural population. We thus estimated that monthly household expenditure on electricity, LP gas and other fuels is 352.48 MXN; on services is 5.84 MXN; and 50.75 MXN on maintenance. All of these total 409.07 MXN.

2.3. COSTS OF ALL OTHER NON-FOOD NON-HOUSING (NFNH) GOODS AND SERVICES

For practical reasons, the cost of all other goods and services (besides food and housing) to satisfy essential needs is estimated using an extrapolation method based on data on household expenses from secondary sources; specifically, household income and expenditure surveys. These estimated costs were later further assessed to ensure that sufficient funds are included for medical care and education.

We estimated these costs, which include expenditures such as alcohol and tobacco, clothing and footwear, household equipment, health care, education, transport, telecommunications, recreation and culture, restaurants and hotels, etc., using data from the National Household Income and Expenditures Survey (ENIGH) 2018 for the state of Michoacán. Before using these data, we made several adjustments. First, we excluded expenditures for tobacco (which we do not consider as necessary for decency). Second, we assumed that cost of private transport is twice as expensive as public passenger transport which we consider acceptable for decency. Finally, we assumed that one-half of the cost of meals purchased away from home is for the food in these meals, and so we assigned these values to the total expenditure on food.

We computed all these expenditures for income deciles 5 and 6 of rural households, and for income deciles 4 and 5 of urban households, and then compared them to food expenditures for the same income deciles. This indicated a NFNH/Food ratio of 1.149 for rural areas and 1.155 for urban areas. We took the average of these rural and urban ratios (1.15) to be representative of the situation for the small towns and cities where typical farm workers live (Table 5).

Then, we estimated non-food and non-housing costs (NFNH) as equal to 1.15 x the cost of our model diet.

Table 5: Monthly expenditure shares for households in Michoacán: secondary data

Major expenditure group	Secondary data		Adjustments	
	Sub-major expenditure group	% Exp. in secondary data	Adjustments explanation	% after adjustment
FOOD				
	Food & non-alcoholic beverages	33.0%	2.4% added for the food in meals away from home (Restaurants)	35.3%
HOUSING		20.1%		20.1%
NON-FOOD AND NON-HOUSING (NFNH)				
Alcohol and tobacco	Alcohol	0.3%	No adjustment	0.3%
	Tobacco	Excluded	Excluded as unnecessary	Excluded
Clothing & footwear		5.3%	No adjustment	5.3%
Household contents and appliances		1.5%	No adjustment	1.5%
Healthcare		2.4%	No adjustment	2.4%
Education		6.2%	No adjustment	6.2%
Transport				
Purchase of personal vehicles		0.9%	Adjusted to account for higher cost of private vehicle ownership and operation*	0.5%
Maintenance and operation of personal vehicles		6.0%		3.0%
Passenger transport services		5.4%	No adjustment	5.4%
Communication		2.6%	No adjustment	2.6%
Recreation & culture		0.4%	No adjustment	0.4%
Restaurants		4.7%	Transfer 50% of this to food as around 50% of cost of meals away from home is for the food in them	2.4%
Miscellaneous goods & services		10.7%	No adjustment	10.7%
TOTAL NFNH		46.4%		40.7%
NFNH/Food ratio		1.41		1.15

Source: Own estimates with data from ENIGH 2018 data.

2.4. POST CHECKS OF HEALTH CARE AND EDUCATION COSTS

Because health care and children's education through secondary school are considered to be human rights in the Anker methodology, we investigated whether the amount allocated to these expenses included in our preliminary estimation of NFNH cost is sufficient for decency.

The information collected during the focus group discussions with agricultural workers led us to conclude that the amount for educational expenses already included in our budget for non-food and non-housing expenditures (an average of 7.4% of total household income, according to the ENIGH) is sufficient to satisfy the educational needs of the household.

The situation with health care expenses is different. On the one hand, it is important to consider that, in the municipalities of this study, the percentage of population without access to health care services ranges from 14% to 38% (see Section 1.2.2). Additionally, the percentage of population not affiliated with social security ranges from 55% to 85%. On the other hand, according to the information collected in the focus groups with agricultural workers, even those who have access to social security sometimes must incur out-of-pocket health expenditures. This is mainly due to: (1) long waiting time at health care centers, especially during in an emergency;

(2) services that are not well provided for in social security, such as dental services; and (3) services which are not as expensive or frequently used, such as consultations with the ophthalmologist or pediatrician, are of better quality in the private sector.

In the case of workers affiliated with social security, it would not be necessary to make adjustments for health expenses in the family budget. Our family budget for non-food and non-housing expenses includes 2.2% for health care expenses. Additionally, as we mention in the next section, the family budget also includes an additional 5% for unforeseen expenses (which is enough to pay for a consultation with a specialist in case of emergency, according to the prices of privately provided health services indicated by workers during the fieldwork).

For workers without social security, we must make an upward adjustment in health care expenditures. However, the specific health care needs of the families of these workers are not known, nor the frequency of use of private medical services (as all workers had social security in the focus groups of this project). Moreover, the composition of agricultural workers according to whether they are informal wage earners or informally self-employed can vary across the municipalities of the study and across Mexico. Thus, it is not possible to determine that additional amount. A valid alternative, given the lack of information, would be to add to the monthly family budget an amount equivalent to the cost of a household's voluntary affiliation to social security, which we estimate at 1,750 MXN per month. (This is the affiliation fee for a household with two adults, 30-39 years-old, and with two children.)

2.5. PROVISION FOR UNEXPECTED EVENTS AND SUSTAINABILITY

A marginal amount is also added to the family budget for unexpected events and emergencies, such as illnesses and accidents, in order to ensure the sustainability of family income and prevent the household 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 health expenditures can jeopardize the economic stability of the household. Instability and unsustainability are not attributes of a decent family life. In Mexico, households' access to savings and credit through the financial system is very limited. In general, they only have access to credit informally through family networks. We considered this, and added 5% to the household budget (i.e. the amount that results from adding the cost of food, rent and nonfood and non-household expenses).

SECTION III. THE LIVING WAGE

3.1. FAMILY SIZE

To determine our reference family size, i.e. a typical family size for the study area, we first computed the total fertility rate in the state of Michoacán, adjusted for the mortality rate of children under 5 years of age (with data from the 2015 Intercensal Survey). This is 2.55 for Michoacán compared with 2.85 and 2.43 for rural and urban Mexico.

In a second calculation, we estimated the average household size from the distribution of households by the number of members, both at the national and the state level and for both urban and rural populations, using data from the 2015 Intercensal Survey and the National Household Income and Expenses Survey of 2018 (ENIGH). The average household size was calculated for households with at least 2 members (that is we excluded single person households that did not include any children) and with at most 8 members (that is, we excluded very large households that are likely to be households with more than two workers). The result of this computation is 4.0 for Michoacán, with 4.02 and 3.95 for rural and urban Mexico.

Finally, from these analyses we determined that a reasonable number of members in the reference family is 4 (2 adults and 2 children) which is consistent with the adjusted average household size we estimated indicated in the previous paragraph.

3.2. NUMBER OF FULL-TIME WORKERS IN THE REFERENCE FAMILY

We found that, on average, the number of full-time workers in the reference family is 1.63. This result is derived from data in the National Employment and Occupation Survey (ENOE, third quarter 2019) for rural and urban Michoacán for men and women ages 25-59 years of age, on labor force participation rates, unemployment rates, and part-time employment rates (fewer than 35 hours per week), see Table 6. It was then assumed that one member in the reference family is a full-time worker. Therefore, adding the 0.63 calculated percentage of full-time work of spouse to the full-time worker gives 1.63 full-time equivalent workers per reference family.

Table 6: Number of full-time equivalent workers per family

	Males	Females
Labor force participation rate	0.909	0.587
Unemployment rate	0.023	0.026
Part-time employment rate	0.214	0.343
Number of full-time workers in family equals: $1 + [\text{LFPR} \times (1.0 - \text{unemployment rate}/100)]$ $\times (1.0 - \text{part-time employment rate}/100/2]$	1.63	

Notes: One member of the reference family is assumed to be employed full-time. Part-time employment is assumed to be half time on average.

Source: Own estimated with ENOE 2019 data.

3.3. NET AND GROSS LIVING WAGE, PAYROLL DEDUCTIONS AND INCOME TAX

We calculated the net living wage using the household budget components discussed in section 2, and the number of household members and full-time equivalent workers in the household discussed in sections 3.1 and 3.2 (Table 6).⁵

The budget for a decent life, according to the definition used in this study, of a family of four members (two adults and two children) in the locations of this study amounts to 16,664 MXN per month. Since the number of full-time equivalent workers per family is 1.63; then, what each full-time worker should receive is a net monthly payment of 10,223 MXN.

Formal workers in Mexico have to pay an income tax as well as a social security contribution. For this reason, it is necessary to add these taxes to our net living wage estimate (i.e. in order to ensure that workers have sufficient take home pay for decency). In Mexico, workers who received a net wage equivalent to the estimated living wage (10,223.10 MXN) have 2.7% of their gross wage deducted for social security contribution, and 10.5% for income tax. This means that workers earning a living wage in the Michoacán study area would need to pay 1,242 MXN in income tax and 316 MXN in social security. Adding these to our net living wage (i.e. take-home pay) yields a gross living wage of 11,782 MXN (Table 7).

⁵ This budget does not contemplate health expenses additional to those already included in the total amount of expenses other than food and housing, as discussed extensively in section 2. So, it is a budget that considers the needs to achieve a decent life for workers with access to social security.

Table 7: Family budget, net and gross living wage (MXN and USD of February 2020)

PART I. FAMILY EXPENSES		
	MXN	USD
Food cost per month for reference family (1)	6,261	332
Food cost per person per day	51.5	2.7
Housing costs per month (2)	2,409	128
Rent per month for acceptable healthy housing	2,000	106
Utility costs and minor repairs and maintenance per month	409	22
Non-food non-housing (NFNH) costs per month taking into consideration possible post check adjustments (3)	7,200	382
Preliminary estimate of NFNH costs per month	7,200	382
Healthcare post check adjustment	0	0
Education post check adjustment	0	0
Additional amount (5%) for sustainability and emergencies (4A)	794	42
Additional possible amount (usually 5%) for extended family support (4B)	0	0
TOTAL LIVING COSTS PER MONTH FOR BASIC BUT DECENT LIVING STANDARD FOR REFERENCE FAMILY SIZE (5) [5=1+2+3+4A+4B]	16,664	884
PART II. LIVING WAGE PER MONTH		
NET LIVING WAGE PER MONTH (6) [6=5/#full time workers]	10,223	543
Statutory deductions from pay (7) ^b	1,559	83
Social security tax (7A)	316	17
Income tax (7B)	1,243	66
GROSS LIVING WAGE PER MONTH (8) [8=6+7]	11,782	625

Table 8: Key values and assumptions

Location	Northwestern Michoacán, Mexico
Exchange rate of local currency to USD*	18.84*
Number of full-time workers per couple	1.63
Reference family size	4
Number of children in reference family	2
Ratio of non-food non-housing costs to food costs	1.15

*The Mexican peso depreciated against the US dollar during the economic crisis associated with the COVID-19 pandemic. The peso/dollar exchange rate increased to 21.9 pesos/dollar in June 2020 from 18.84 pesos/dollar in February 2020. We consider that the value of the exchange rate chosen for this study (that of February) is more representative of the medium and long-run relative value of the currencies. The June value of the exchange rate probably reflects the “flight-to-quality” behavior of currency traders that is customary during economic crises.

3.4. WAGE LADDER AND THE LIVING WAGE IN CONTEXT

From January 1st, 2020, the minimum wage in study area is 123.22 MXN per day (DOF 2020); which is equivalent to a gross monthly payment of 3,863 MXN (equivalent to 205 USD). The estimated living wage in this study is 3.0 times the current minimum wage (Figure 2). It is clear that despite the recent increase in the minimum wage, it is still far too low.

The minimum wage in Mexico exhibits a historical lag, after having lost $\frac{3}{4}$ of its purchasing power in the three decades prior to 2015. Since that year, an effort has been made to raise it but, as demonstrated in this analysis, it still does not comply with the requirements of the Federal Labor Law and the Mexican Constitution, which establishes (Article 123.VI, Title Six. Labor and Social Security):

“The minimum wage shall be established in a general way or according to the occupation. General minimum wage shall govern over the different economic zones. Professional wages shall apply on specific industries, professions, trades or special works.

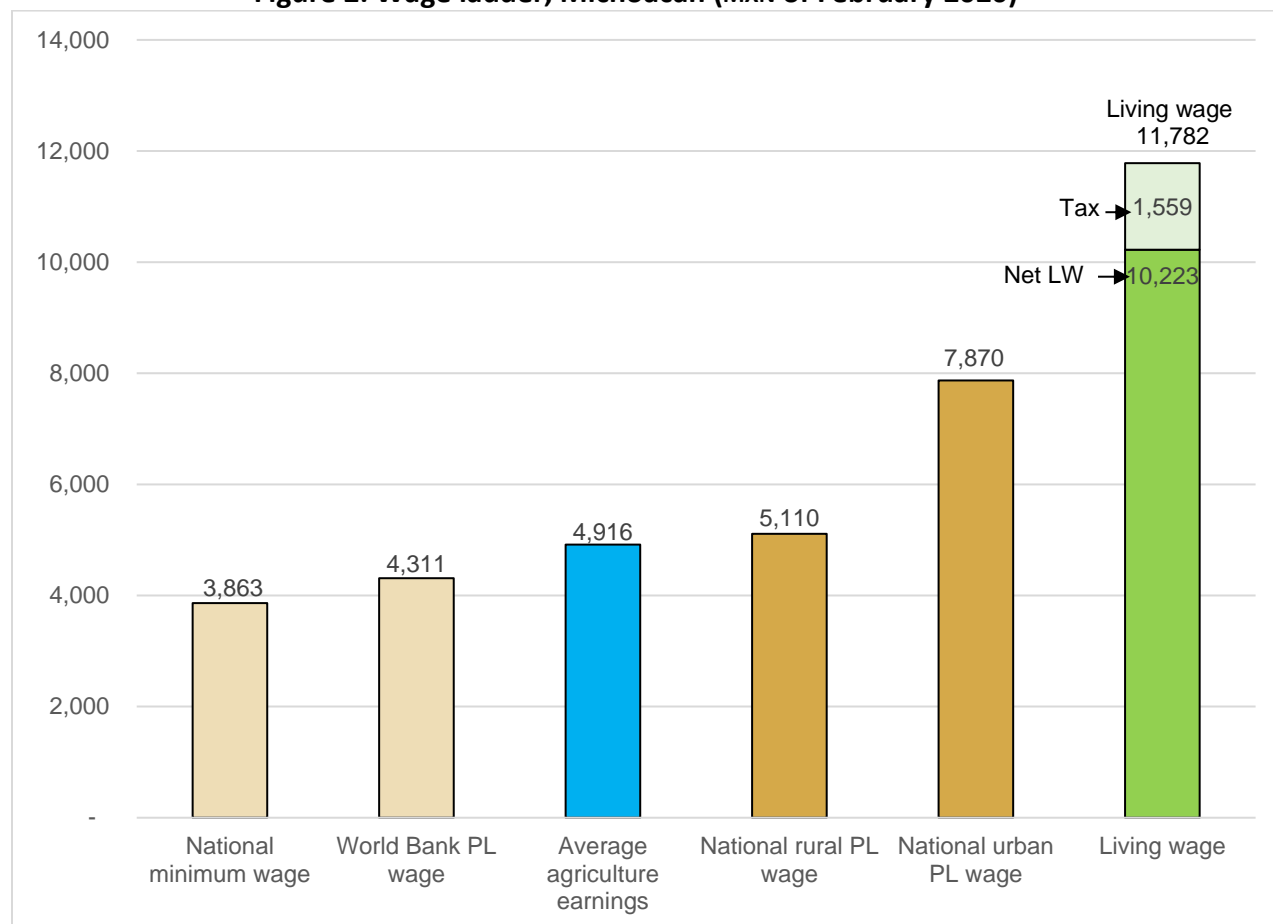
The general minimum wage must be sufficient to satisfy the normal material, social, and cultural needs of a family, and to provide the compulsory education of children. The professional minimum wage shall be fixed by taking into account the conditions of the different industrial and commercial activities.

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 World Bank and the national — urban and rural — poverty line wages are all well below the living wage for Michoacán (Figure 2). This is consistent with the definition of the living wage,

which should allow for a decent living standard; i.e. should be above poverty. The average monthly earnings of agricultural employees (according to ILOSTAT based on micro data processing of the 2019 labor force survey, and adjusted for inflation to reflect its value in February 2020) is also well below the estimated living wage. This is not surprising, given, on the one hand, the extent of income poverty in Mexico and, on the other, the still relatively high share of low-income agricultural workers; as in the case of self-employed agricultural workers who live in subsistence conditions; informal employed workers; and unskilled seasonal agricultural workers.

Figure 2: Wage ladder, Michoacán (MXN of February 2020)



SECTION IV. CONCLUSION

This report has applied the Anker methodology (Anker and Anker 2017) to estimate the living wage for the urban non-metropolitan and rural areas of northwestern Michoacán, Mexico. This area is typical for non-industrialized non-metropolitan Mexico. The Anker methodology was already used before in more than forty living wage studies around the world, and thus it yields internationally comparable estimates for the case of this semi-urban area of Mexico.⁶ As part of this study, we did extensive field research on local eating and food-purchasing habits, local food prices, housing rental prices, health care costs, and educational and transport costs for a reference family of 4 persons (2 adults and 2 children). We also relied on secondary sources of information; mainly, on national and state household income, employment and expenditure surveys, official poverty estimates, and the population census.

The main result is that a family of four members requires, as of February 2020, a monthly net income of 16,664 MXN (884 USD) to afford a basic but decent life in this area of the country. Food costs amount to 37.6% of this family budget, and housing costs, including rent, utility costs and minor repair and maintenance amount for another 14.5%. The share of the budget for all non-food non-housing (NFNH) goods and services is 42.9%. The remaining 5% is an additional amount separated for sustainability and emergencies.

This translates into a living wage of 10,223 MXN (543 USD) per month, net of social security and income taxes, for a full-time worker in the study area. We then estimate that the gross living wage that workers need to receive is 11,782 MXN (625 USD) per month, by taking into consideration the social security contribution and income tax which workers earning the living wage would need to pay. Preliminary analysis, included in the Annex of this study, indicates that this living wage is also applicable to 71 municipalities of the states of Michoacán, Guanajuato, Jalisco and Colima, which, together with those in the study area, constitute a well-defined region of Mexico.

The living wage estimated here is 82% greater than the average of the rural and urban poverty line wages for Mexico; 2.4 times the average agricultural wage; 2.7 times the World Bank poverty line wage for an upper-middle income country such as Mexico; and 3.0 times greater than the national minimum wage. According to official statistics, the percentage of the population with income below the poverty line in the study area averages 61%, which means that an even higher percentage leads lives below a minimum level of decency.

These results highlight the scope for improving the minimum wage in Mexico, so that it can fulfill its constitutionally determined objective of allowing workers and their families to achieve a dignified standard of living. In particular, it is important to note that in Mexico there is still no official minimum wage for agricultural workers ("jornaleros"). Thus, this work constitutes an important reference in the calculation of said minimum agricultural wage.

⁶ <https://www.globallivingwage.org/>

There is also ample space to reduce the cost of living for many families by increasing the coverage of social security. We estimate that for workers in the informal sector — those without access to social security and thus without health insurance — the living expenses for the family per month increase by 1,750 MXN (93 USD) although their gross living wage is similar to that for workers with a formal contract, because informal workers usually do not pay income tax or social security tax.

The results of this study are also timely as they are published contemporaneously with the signing of the new trade agreement between Canada, the United States and Mexico (the USCMA). This agreement, unlike its previous version (NAFTA), contains stronger commitments in relation to rights and obligations in the workplace.

ANNEX. REPRESENTATIVENESS OF THE STUDY LIVING WAGE FOR SURROUNDING AREAS

How applicable is the living wage estimated for the seven municipalities of this study to other regions of Michoacán or Mexico? Although fully answering this question exceeds the objectives of this report, it is possible to reach a preliminary conclusion by comparing some indicators that determinate the cost of living in the municipalities of this study and in groups of municipalities in nearby or similar regions.

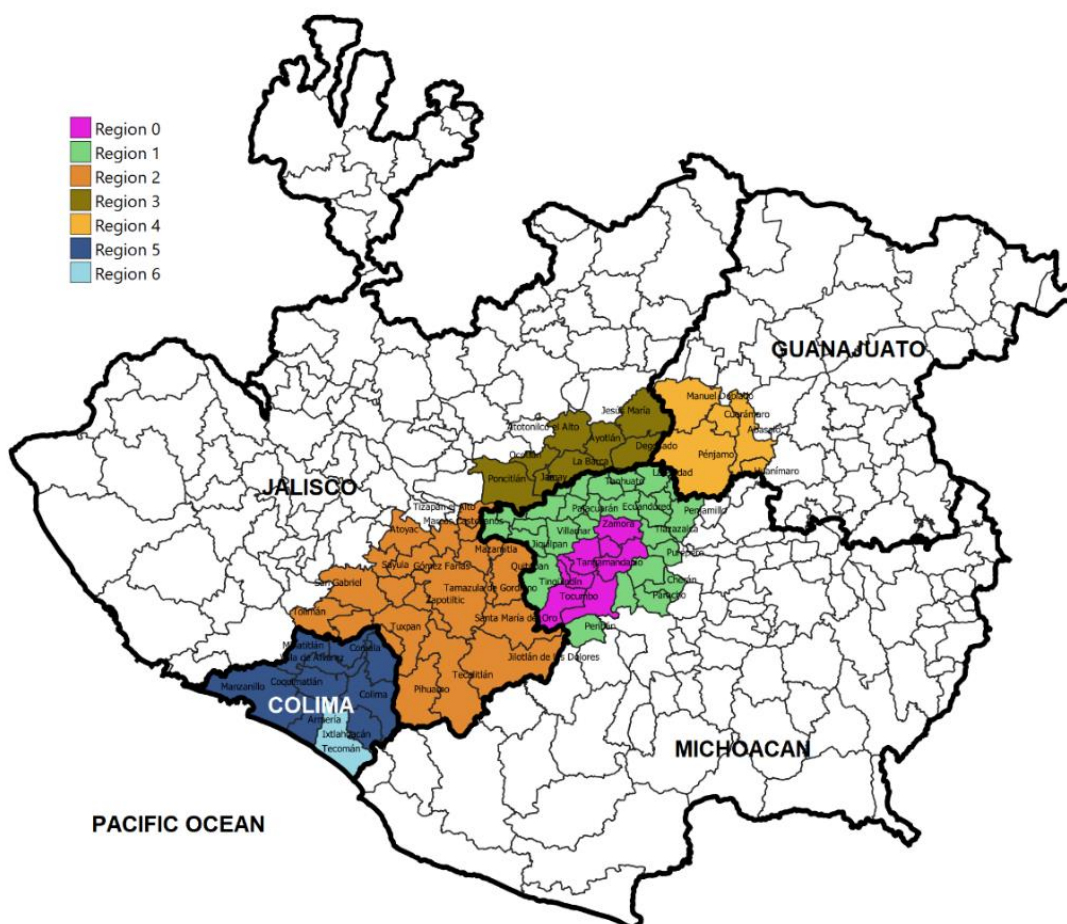
In order to carry out this comparison exercise, 71 municipalities proximate to the seven ones studied here were grouped into six regions located in the states of Michoacán, Guanajuato, Jalisco and Colima (Map A1). **Our conclusion is that the living wage estimated in this report is applicable to those 71 municipalities.**

Region 0 corresponds to the study area for which the living wage was estimated. Region 1 encompass the municipalities of Michoacán that are located around Region 0. A natural question is how applicable the living wage is to the closest municipalities in the same state. Regions 2, 3 and 4 were included because they have close geographical, economic and cultural proximity to Region 0. Regions 5 and 6 correspond to municipalities in the state of Colima. The inclusion of Colima is important because the port of Lázaro Cárdenas is located in that state, and agricultural exports of all the considered municipalities are shipped from that port.

Together, the areas analyzed constitute a well-defined region of the country. It limits to the north with the more industrialized region of Bajío and the Guadalajara metropolitan area; to the east, with the tourist areas of eastern Michoacán that are linked to the state of Mexico and Mexico City; to the south, with areas where tropical products are produced, such as mango. All of them are specialized in agricultural production and make up a productive basin whose natural export port is Lázaro Cárdenas (Map A1).

The rest of this Annex explores differences between these regions in terms of population density, poverty, and inflationary dynamics. Population density is one of the determinants of housing costs: in general, the higher the population density, the higher rents are [see, for example, Südekum (2009)]. Poverty tends to affect the composition of consumption baskets and, therefore, the cost of living, especially food costs (Sherwood, 1975). Finally, the behavior of headline inflation captures the dynamics of price formation in the area, and makes it possible to identify in which areas there is a relatively greater tendency to increase prices.

Map A1: Regions considered in the study of the applicability of the living wage
(78 municipalities in the states of Michoacán, Guanajuato, Jalisco and Colima)



Region 0 – Municipalities of reference (study area) in Michoacán: Jacona, Los Reyes, Tangamandapio, Tangancícuaro, Tingüindín, Tocombo, Zamora.

Region 1 – Adjacent municipalities of Michoacán: Briseñas, Charapan, Chavinda, Cherán, Chilchota, Churintzio, Cojumatlán de Regules, Cotija, Ecuandureo, Ixtlán, Jiquilpan, La Piedad, Marcos Castellanos, Numarán, Pajacuarán, Paracho, Penjamillo, Peribán, Purépero, Sahuayo, Tanhuato, Tlazazalca, Venustiano Carranza, Villamar, Vista Hermosa, Yurécuaro, Zináparo.

Region 2 – Municipalities of Jalisco (1): Atoyac, Concepción de Buenos Aires, Gómez Farías, Jilotlán de los Dolores, Manzanilla de la Paz, Mazamitla, Pihuamo, Quitupan, San Gabriel, Santa María del Oro, Sayula, Tamazula de Gordiano, Tecalitlán, Tizapán el Alto, Tolimán, Tonila, Tuxpan, Valle de Juárez, Zapotiltic, Zapotitlán de Vadillo, Zapotlán El Grande.

Region 3 – Municipalities of Jalisco (2): Atotonilco el Alto, Ayotlán, Degollado, Jamay, Jesús María, La Barca, Ocotlán, Poncitlán.

Region 4 – Municipalities of Guanajuato: Abasolo, Cuerámara, Huanímaro, Manuel Doblado, Pénjamo.

Region 5 – Municipalities of Colima (1): Armería, Colima, Comala, Coquimatlán, Cuauhtémoc, Ixtlahuacán, Manzanillo, Minatitlán, Villa de Álvarez.

Region 6 – Municipalities of Colima (2): Colima: Tecomán.

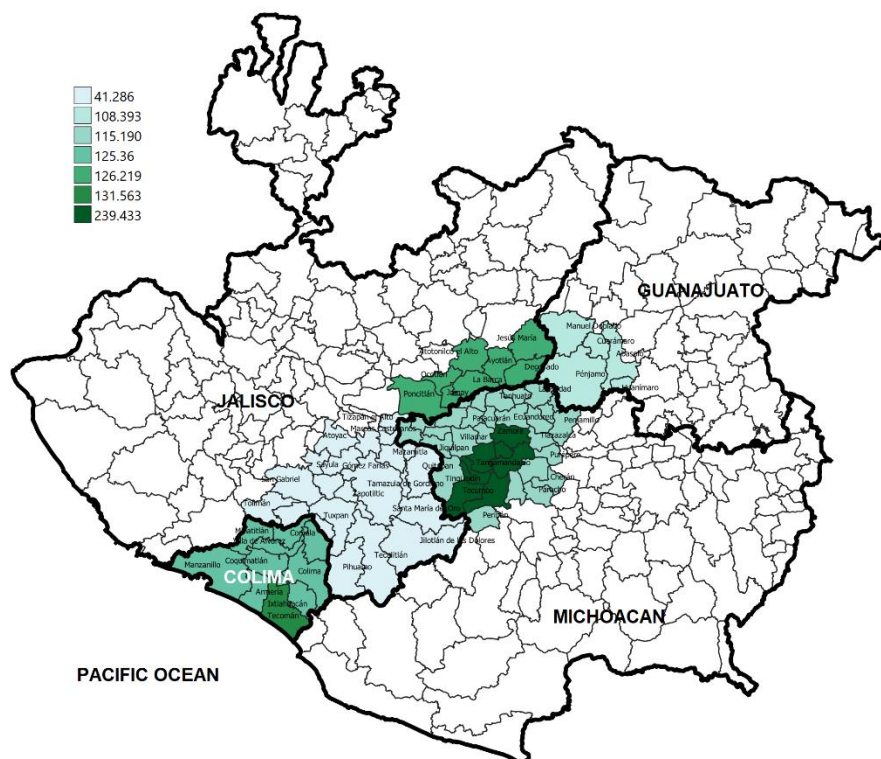
The results of this analysis seem to indicate that our estimated living wage for Region 0 could be, in general, sufficient to achieve a decent life in the other six regions.

Population density is considerably greater in Region 0 than in the other six regions (Map A2). This has an impact on house rental prices, so Region 0 would be the most expensive region in terms of housing costs. Given that the living wage allows the reference family to afford a decent home in this area, it is probably also sufficient to cover housing costs in the rest of the regions. This is particularly true in relation to regions 1, 2 and 4, which are considerably less densely populated than Region 0; and less clear so in the case of regions 3, 5 and 6, where population density is high, albeit still below the level observed in Region 0.

Region 1 is significantly poorer than Region 0; Regions 2 and 4 have a poverty level similar to that of the study region; and Region 6, in Colima, has a poverty rate which is fairly similar to the rate in Region 0 (Map A3). Thus, in these regions, food costs are likely to be on average similar to food costs in Region 0. The poverty rate is lower in Regions 3 and 5 than in Region 0, however, which might be associated with a different-composition slightly more expensive food basket.

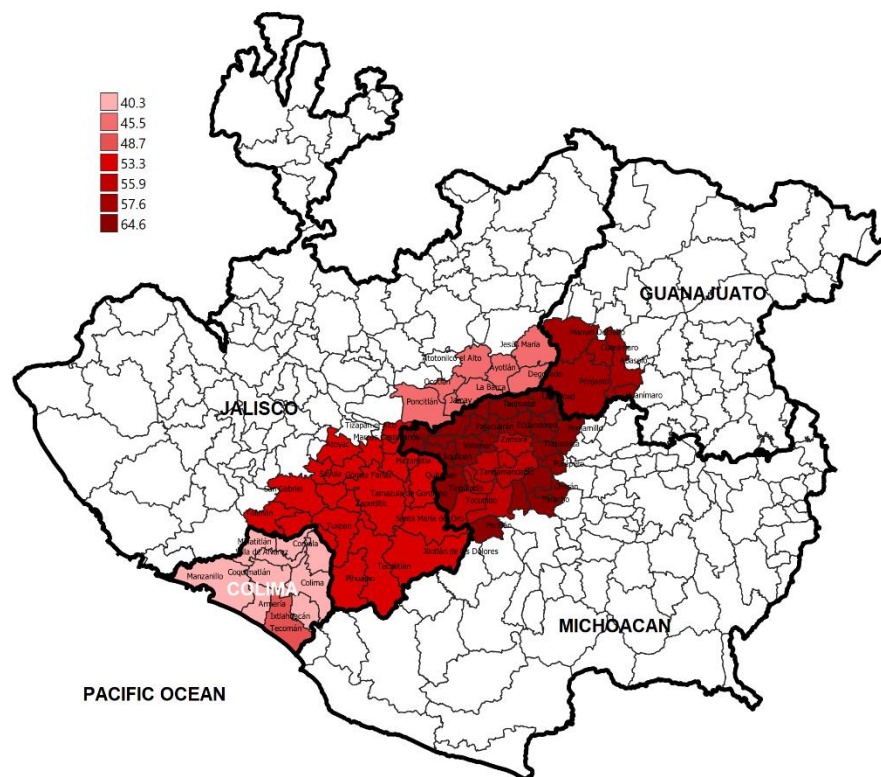
Data on the rate of headline inflation are available for the cities of Jacona (Region 0), Tepatitlán (a city in Jalisco, near Region 3), Cortázar (a city in Guanajuato, near Region 4) and Colima (Region 5), from January 2010 to April 2020. The relationship between the inflation rate in each of these cities (vertical axis) and the inflation rate in Jacona (horizontal axis) is shown in Chart A1. This relationship is positive but less than 1 to 1; that is, increases in inflation in Jacona were accompanied by less than proportional increases in inflation in the other cities. This result indicates that: i) CPI dynamics are similar throughout the region; ii) increases in inflation tend to be greater in Region 0 than in the other regions; and iii) the current level of prices might be greater in Region 0 than in the other regions.

Map A2: Population density in the study area and nearby regions



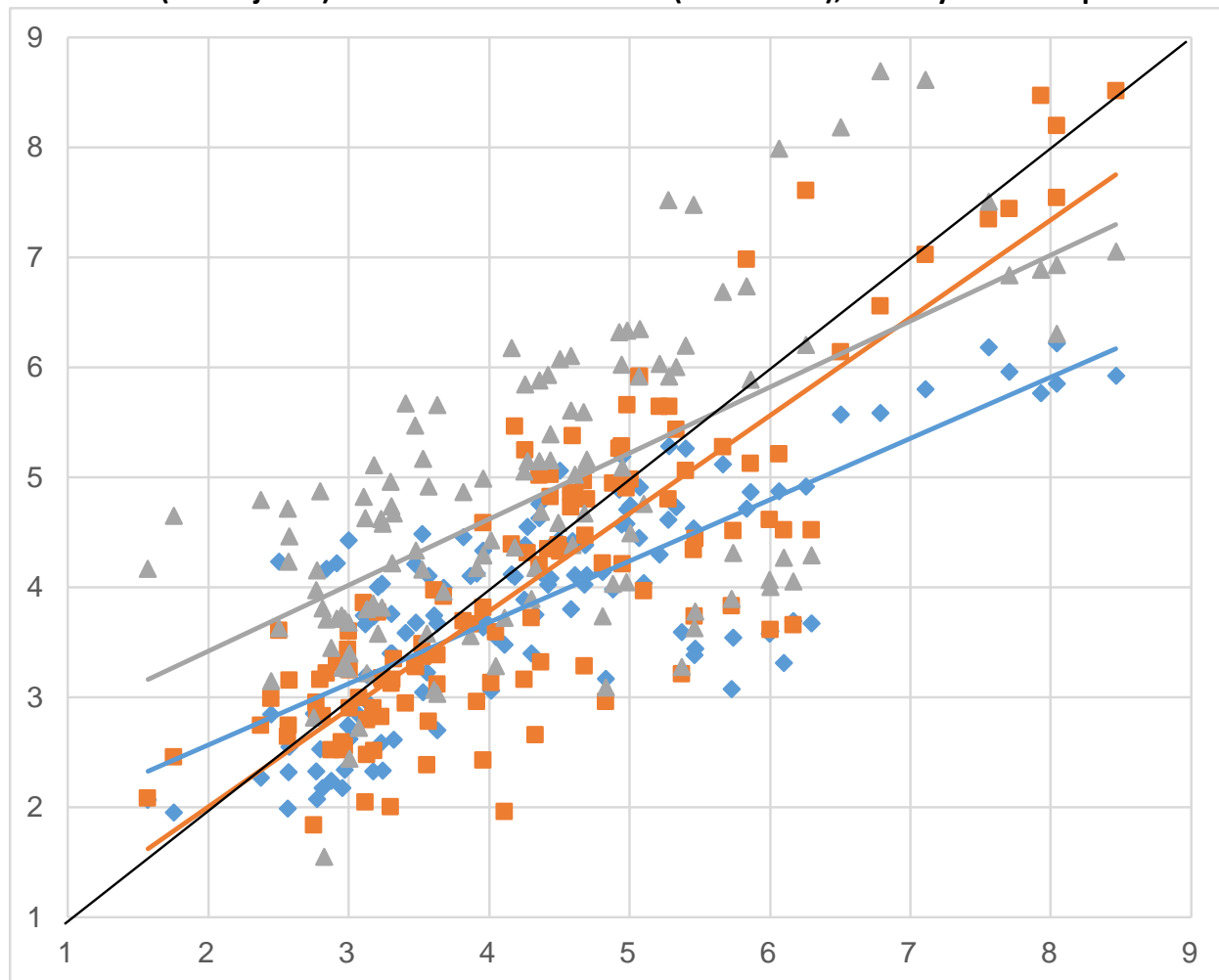
Source: Own elaboration with CONAPO information

Map A3: Poverty in the study area and nearby regions (% of population)



Source: Own elaboration with CONEVAL information

Chart A1: Annual headline inflation rate in the cities of Colima, Tepatitlán (Jalisco), and Cortázar (Guanajuato) versus inflation in Jacona (Michoacán), January 2010 to April 2020



Note: Colima vs Jacona, blue diamonds; Cortázar vs Jacona, orange squares; and Tepatitlán vs Jacona, gray triangles.

Source: The authors with data from INEGI.

REFERENCES

- Aban Tamayo, D., M. Becerra Pérez, M. Delajara y L. León Robles (2020) *The minimum income standard in Mexico*, Mexico City: Espinosa Yglesias Research Center.
- Anker, Richard y M. Anker (2017) *Living wages around the world*, Cheltenham and Northampton Massachusetts: Edward Elgar Publishing Limited.
- CONEVAL (2019a) *Medición de la pobreza en México*, recuperado de <https://www.coneval.org.mx/Medicion/MP/Paginas/Pobreza-2018.aspx>
- CONEVAL (2019b) *Evolución de las líneas de pobreza por ingresos*, retrieved from <https://www.coneval.org.mx/Medicion/MP/Paginas/Lineas-de-bienestar-y-canasta-basica.aspx>
- CONEVAL (2019c) *Metodología para la medición multidimensional de la pobreza en México*, 3ª edición, Ciudad de México: CONEVAL.
- DOF (2020) Resolución del H. Consejo de Representantes de la Comisión Nacional de los Salarios Mínimos que fija los salarios mínimos general y profesionales que habrán de regir a partir del 1 de enero de 2020, recuperado de https://www.dof.gob.mx/nota_detalle.php?codigo=5582641&fecha=23/12/2019
- GLWC (2020) Global Living Wage Coalition, retrieved from <https://www.globallivingwage.org/>
- INEGI (2020a) *Población total por entidad federativa y grupo quinquenal de edad según sexo, 1990 a 2010*, retrieved from https://www.inegi.org.mx/app/tabulados/interactivos/?px=Poblacion_01&bd=Poblacion
- INEGI (2020b) Encuesta Nacional de Ocupación y Empleo, 2019 – Tercer trimestre, retrieved from <https://www.inegi.org.mx/programas/enoe/15ymas/>
- OEIDRUS (2020) Estadísticas de siembra y producción agrícola, retrieved from <http://www.oeidrus.michoacan.gob.mx/index.php>
- SAGARPA (2017a) Planeación agrícola nacional 2017 – 2030. Fresa, SAGARPA, México.
- SAGARPA (2017b) Planeación agrícola nacional 2017 – 2030. Frutas del bosque, SAGARPA, México.
- SAGARPA (2017c) Planeación agrícola nacional 2017 – 2030. Aguacate mexicano, SAGARPA, México.
- SAGARPA (2017d) Planeación agrícola nacional 2017 – 2030. Caña de azúcar mexicana, SAGARPA, México.
- SAGARPA (2017e) Planeación agrícola nacional 2017 – 2030. Maíz grano blanco y amarillo mexicano, SAGARPA, México.
- STPS-SNE (2020) Diagnóstico del mercado laboral del Estado de Michoacán, 2019: Ciudad de México, Unidad del Servicio Nacional de Empleo.
- Sherwood, M.K. (1975) “Family budgets and geographical differences in price levels”, *Monthly Labor Review*, 98: 8-16.
- Südekum, J. (2009) “Regional cost-of-living with congestion and amenity differences: an economic geography perspective” *Annals of Regional Science*, 43:49-69.