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in metropolitan areas of Mexico

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# “The other economy” in metropolitan areas of Mexico

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## Abstract

A metropolitan area in Mexico is a group of municipalities, according to the National Population Council (CONAPO), the National Institute of Statistics and Geography (INEGI), and the Ministry for Agrarian, Land and Urban Development (SEDATU). There are major cities around the world, such as New York City, Tokyo, and Mexico City. In Mexico, there are 74 metropolitan areas that concentrate population and employment, particularly in Mexico City. Here, a three-dimensional economy is assumed: traditional non-modern, modern, and informal. Additionally, total employment is equal to the sum of the first and second economies. This paper estimates employment in the modern sector of the economy, the traditional non-modern sector, and the informal sector. The North American Industry Classification System (NAICS) is used to categorize productive units (enterprises) for this estimation. The essay concludes that these metropolitan areas have a dual economy characterized by significant employment in both the traditional non-modern economy and the

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informal economy.

## Introduction

The other economy is defined as the set of productive units or companies that do not belong to the so-called modern economy. In many cases it is assumed that the economy is homogeneous, and the productive units are characterized by maximizing profits, minimizing costs and operating in a system of competitive market prices, both in the sale of products and the provision of services and in the acquisition of the productive factors and inputs they require. This may be the case of modern companies, which normally use state-of-the-art technology, innovate, and are integrated into broad production chains, including global ones (Arroyo et al., 2022).

On the other hand, the Gross Domestic Product (GDP) mainly accounts for the annual or quarterly production of these types of companies. However, the reality in Mexico and many other developing countries is that there is a large number of traditional non-modern economy (TNME) productive units whose production can hardly be estimated to be accurately incorporated into the GDP<sup>3</sup>. Such enterprises — usually micro, small and medium-sized — do not maximize profits in the sense in which traditional neoclassical theory considers them but are productive units that produce goods and provide popular services in a context of “shelter economy” activity, since they are created out of the need for self-employment of the individual or the family, and try to minimize the risk of bankruptcy and unemployment. Evidently, a large part of them belong to the informal sector, if we follow the conventional definition of informality of production.

Arroyo et al. (2022) estimate “the other economy” for Mexican municipalities in 2015 and 2020 using the North American Industrial Classification System (NAICS). They made an ad hoc selection of modern economic activities, took employment in each sector, branch and sub-branch and subtracted municipal employment to obtain employment in the traditional non-modern economy —what we consider the “other

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3 For a brief discussion of the measurement of GDP see Dagum and Bee de Dagum (1971).



economy”— in each municipality in those years. Although, this method has its limitations, the broad and more precise definitions of the NAICS were used to select modern economic activities when there was doubt as to whether they really were, thus somewhat amending this important limitation of ad hoc selection. It is worth mentioning that these definitions have been considered in Mexico, the United States and Canada as the most precise and detailed. This work analyzes the other economy in all municipalities of the country, whether urban, rural or metropolitan.

This paper emphasizes the importance of employment in the other economy or TNME in the context of Mexico’s metropolitan areas, that is, only in metropolitan municipalities. It also focuses on an important aspect of the metropolization process: the generation and concentration of jobs. This phenomenon can be considered to have two characteristics; on the one hand, it stimulates employment in general and, on the other, also non-modern, informal and traditional employment. The latter is estimated here for each Mexican metropolis.

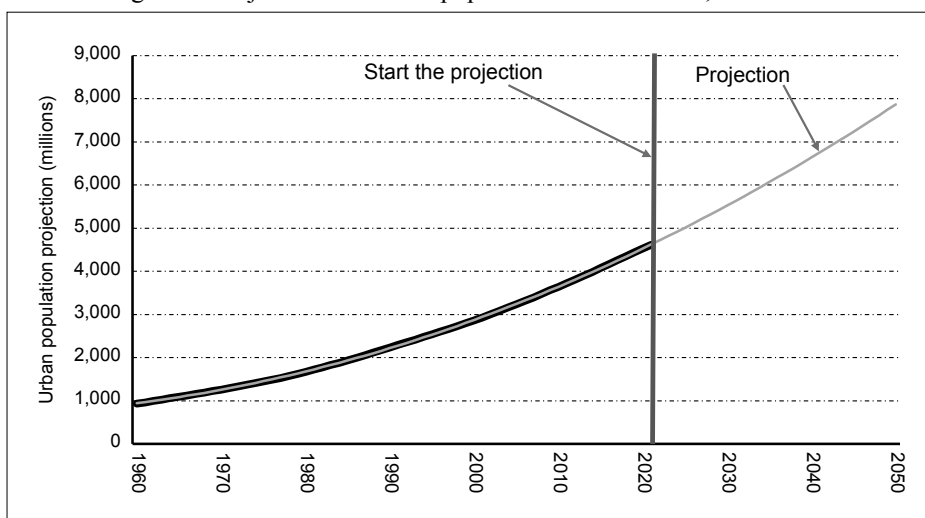
It was found that metropolitan cities concentrate most of the employment in the other economy and, therefore, of informal employment. This is probably due to their large domestic market for popular products and services, and the fact that demand for them can be dynamic because of the number of modern sector employees who depend on national and international markets, which generate an important income for metropolitan inhabitants.

It was also found that the amount of employment opportunities in the TNME is greater if the metropolises are larger. In addition, this type of economy offers employment opportunities, so it also encourages population concentration. We assume that an increase in economic activities with international backward and forward linkages allows metropolises to offer more employment opportunities in both modern and non-modern / informal activities, which we call here the other economy or TNME. We refer mainly to self-employment and those engaged in the production of popular goods and services aimed especially at the metropolitan domestic market.

## Background

According to a summary on cities and urbanization by the University of Singapore, more than half of the world's population lives in cities, and one in eight urban dwellers lives in one of the 33 megacities — larger than ten million inhabitants — according to WEF (2022). If the trend continues, this population will soon reach 70 percent of the world's total population. Figure 1 shows the exponential growth of the urban population. In 2021 it was 4,614 million people; and if its increase is projected, by 2040 it will be approximately 6,407 million, which will represent a little less than 70 percent of the world's urban population projected by the United Nations (UN).

Figure 1. Projected total urban population\* of the world, 1960-2100



\* The urban population was considered according to each country's definition of urban population. Many countries define it as that which resides in settlements with more than 2,500 inhabitants.

Source: The World Bank (2020).

### *Metropolitan population*

Unfortunately, there is no information on the world metropolitan population because countries have different definitions of what a metropolitan area is. For example, the United States has a definition that classifies cities according to their territorial socioeconomic functionality and considers to a lesser degree the counties that integrate metropolitan areas. In general, it can be said that each country defines metropolitan areas according to its own criteria, and also assigns socioeconomic functionality to the administrative units that comprise them. However, it is indisputable that the population is concentrated in large cities by immigration or annexation of settlements relatively close to the central city, thus forming large conglomerates, which are currently referred to as megalopolises, megacities, metropolis, conurbations or concentrations, all of them with intense socioeconomic interaction and adjoining population settlements.

According to WEF (2020), the growing urbanization or metropolization of the population will lead to the emergence of more megacities, which will bring with it an increasingly larger population with unacceptable quality of life in what are known as “urban pathologies”: poverty, inequality, areas with deficient services, costly mobility in social terms, etc. In the case of Mexico, this trend also implies the concentration of employment in both the modern sector and non-modern / informal sector, since large cities offer opportunities for self-employment or other economic activities that allow the individual and his or her family to support themselves and their families. If this type of employment is successful, over time it can become formal, even in modern companies. We assume that the larger the modern internationalized economy in a city, the larger the TNME may also be.

Garza (2010) says in this regard that:

The spatial dimension of the globalization of the economy has been the dominance of megacities since the last decades of the twentieth century. First, the dominance of metropolitan areas as characteristic types of concentration of population and economic activities is generalized and, second, new complexes of territorial

organization emerge: polynuclear regions, city-states, metroplexes, as well as nodal regions and megalopolises (p. 44).

In the case of Mexico, the definition of metropolitan area was considered, which was developed jointly by the National Population Council (CONAPO), the National Institute of Statistics and Geography (INEGI) and the Ministry for Agrarian, Land and Urban Development (SEDATU) in 2015. It is defined as:

The set of two or more municipalities where a city of 50 thousand or more inhabitants is located, whose functions and activities exceed the limit of the municipality that originally contained it, incorporating as part of itself or of its direct area of influence neighboring predominantly urban municipalities, with which it maintains a high degree of socioeconomic integration.

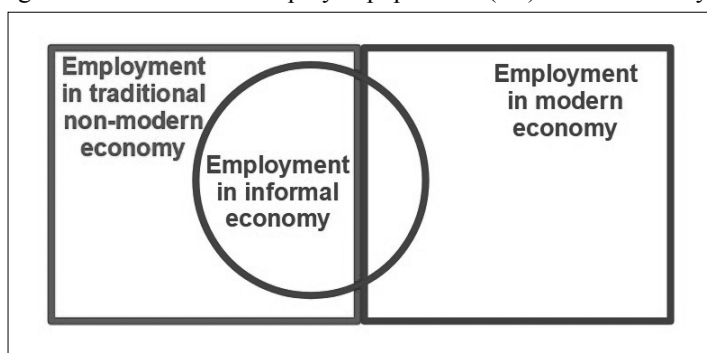
In this definition, the criterion of the political-administrative division of municipalities predominates in order to integrate metropolitan areas. It seems that the consensus of these institutions to define them as such had to do with the possibility of political-administrative collaboration that the municipalities that comprise them may have; however, one or more municipalities may be eminently rural and have a part of their own within the urban area of a larger city and therefore be considered metropolitan. Another shortcoming of the definition is that some metropolitan areas made up of two municipalities are actually small cities far removed from what would be a metropolitan economy and culture. On the other hand, sometimes the functionality of the urban area of a city with that of another non-contiguous municipality is not taken into account even when it is socioeconomically intense, and even then it is not considered part of a metropolis. However, this definition has been considered official and is used both in public policy and by academia. For a conceptual review of the definition of metropolis see Arroyo (2001) and Feria (2008).

## Methodology

This section is a summary of the methodology described by Arroyo et al. (2022) to estimate the TNME or “other economy”, using the NAICS classification and the four-digit economic activities, thus obtaining a sufficiently detailed level of specification to analyze and select those activities that may or may not be modern with a high probability. In this way, 304 activities or branches of economic activity that were considered modern were selected. Once employment in such activities was identified, it was subtracted from total employment to obtain traditional non-modern employment for each municipality in the country. The municipalities that make up the metropolises were then added to estimate employment in the modern economy and the traditional non-modern economy (TNME) for each Mexican metropolis.

Arroyo et al. (2022) assume, with some degree of plausibility, that employment is divided into three large sets, as shown in Figure 2:

Figure 2. Subsets of the employed population (EP) of the economy\*.



\* The rectangle represents the total employed population and the three groups into which it can be divided.

Source: Arroyo et al. (2022).

Figure 2 shows that employment is mainly divided between the modern economy and the traditional non-modern economy. Between the two is the subset of the informal economy, which is mainly comprised of TNME activities, but some informal activities may also be part of the modern economy (see the circle within the rectangle). This

assumption was the basis for estimating the three types of employment in Mexico's metropolitan areas.

The definition of informality used is largely in line with that of INEGI: “informal activities are defined as those carried out by employed persons who do not contribute to a retirement savings system (SAR) or a retirement fund administrator (AFORE) and lack housing credit, medical services, Christmas bonuses and vacations. In addition, self-employed or unpaid workers are included, except those who provide professional services in the modern sector” (Arroyo et al., 2022, p. 14). It is worth noting that people employed in informal productive units are an important part of the employed population in the TNME, and to a lesser extent in the modern economy.

The National Survey of Occupation and Employment (ENOE) measures the employed population 15 years of age and older in most of the municipalities of the metropolitan areas. In addition, it is presented as an alternative for approximating the national population on a continuous basis. Methodologically, the ENOE only counts the population 15 years of age and older; however, it is known that there is a population 12 years of age and older that works continuously and has been registered by the census, the intercensal survey and the population and housing counts. In this paper we tried to include all employed persons in all municipalities, taking into account that the ENOE does not provide representative information for many of them, so we did not use this source, and although we used a definition of informal employment similar to that of INEGI, the estimate of this employment for this paper differs from that published by INEGI. It is worth noting, however, that the ENOE provides information for metropolitan areas, but not for all officially recognized metropolitan areas. In addition, the 2015 Intercensal Survey and the 2020 Population and Housing Census were used, which is another factor that influences the differences. It is recognized, of course, that the ENOE allows the inclusion of more variables to improve the estimation of the other economy.

## Results: Metropolitan employment in Mexico

At the national level, the high percentage of the population employed in the non-modern economy stands out, and both this and the informally employed population grew during the period of analysis. These percentages support the notion that Mexico has a dual economy, with both a modern and a traditional non-modern sector.

It is important to highlight that in 2015, 61.71 percent of the national population and 67.24 percent of the employed population were concentrated in the metropolises, and that in 2020 the figures were 62.62 and 66.53 percent, respectively. The population growth of the metropolitan areas was close to five million inhabitants, and the number of employed persons was 4,313,008. This is explained by the fact that the growth of the metropolitan areas is mainly due to the immigration of workers and that the entire employed population was considered, regardless of age; therefore, it can be said that the growth of the employed population can be faster than that of the country's population. These data clearly highlight the importance of Mexico's metropolitan economy in terms of employment, and also the percentage of people employed in the modern economy; although during this period it decreased by 6.42 percent in favor of the percentage of those employed in the TNME and in the informal economy. In general terms, it can be hypothesized that the metropolises are experiencing a popular economy perhaps more oriented towards services and survivalist self-employment; but it should be recognized that it produces added value that is often poorly estimated by official statistics.

The data in Table 1 highlights the importance of the percentages of the TNME for both years, its growth over the period and informal employment. It should be recalled that this is an important subset of the TNME, and to a lesser extent of the modern economy. Thus, the estimate of employment in the three types of economies implicitly supports the initial assumption, expressed in Figure 2.

Table 1. Employed population in the modern economy, the TNME and the informal economy in Mexico's metropolitan areas, 2015 and 2020.

Employed population (EP)	2015		2020	
	Total	Percent.	Total	Percent.
Modern economy	22,559,965	71.34	23,330,723	64.92
TNME	9,063,355	28.66	12,605,847	35.08
<i>Sum</i>	31,623,320	100	35,936,570	100
Informal economy	12,376,865	39.14	14,757,531	41.07
Total employed population	31,623,320		35,936,328	
Total population	73,765,481		78,729,910	

Notes:

1. The metropolitan municipalities are those proposed by CONAPO, INEGI and SEDATU.
2. The sum of the EP in the modern economy plus the EP in the TNME gives the total EP.
3. The EP in the informal economy is a subset that can be located in both the modern economy and the TNME. It is assumed that most of the informality is in the TNME.

With the metropolitan areas defined as metropolitan, Table 1A in the appendix was constructed, which highlights the large concentration of the metropolitan population in the Valle de México, which includes Mexico City and 76 municipalities (27.83 percent in 2015 and 27.2 percent in 2020); the next metropolitan areas are Guadalajara with 10 municipalities (6.25 and 6.66 percent in 2015 and 2020) and Monterrey with 18 municipalities (6.51 and 6.57 percent for 2015 and 2020). The three together concentrate 40.43 percent of the metropolitan employed population in 2020. Although the metropolitan areas of Guadalajara, Monterrey and the others have had growth, their population is comparatively far below that living in the metropolitan area of the Valle de México. It is evident, therefore, the concentration that has prevailed in the previous five-year.

This behavior of the metropolitan population does not support the hypothesis of Elizondo and Krugman (1992) that with economic liberalization there would be a deconcentration of population and economic activities toward other cities, since they argue that the great concentration occurred during the period of import substitution, when both the supply chains of industries and commercialization required population concentration; but with liberalization, they say, the economy deconcentrates because its backward and forward linkages are international in nature within the framework of the process of trade liberalization. Tables 1A and 2A in the appendix show the



opposite: a greater concentration of population in general, and of the employed population in particular.

The five largest metropolises in the country, those of the Valle de México, Guadalajara, Monterrey, Puebla-Tlaxcala and Tijuana, have almost half of the employed population in the modern economy, as does the rest of the country (see Tables 2 and 3); in contrast, the five smallest metropolises (Teziutlán, Río Verde, Hidalgo del Parral, Acayucan and Moroleón-Uriangato) represent low percentages of the total and employed population. In addition, the percentages of jobs in the modern economy and TNME are similar in the two sets of cities. The high percentages of informal economy in both groups stand out, but to a greater extent in the small metropolises, as would be expected, probably because it is easier to avoid institutional labor formality and because there are fewer formal moderate jobs.

Table 2. Mexico’s five largest metropolitan areas by total employed population in modern, traditional non-modern and informal economies, 2015 and 2020

Employed population (EP)	2015		2020	
	Total	Percent.	Total	Percent.
Modern economy	10,884,428	70.73	11,384,420	65.05
TNME	4,504,251	29.27	6,117,919	34.95
Sum	15,388,679	100	17,502,339	100
Informal economy	6,163,971	40.06	7,278,710	41.59
Total employed population	15,388,679		17,502,339	
Total population	35,252,406		37,771,717	

Notes:

1. The metropolitan municipalities are those proposed by CONAPO, INEGI and SEDATU.
2. The sum of the EP in the modern economy plus the EP in the TNME gives the total EP.
3. The EP in the informal economy is a subset that can be located in both the modern economy and the TNME. It is assumed that most of the informality is in the TNME.
4. The metropolitan areas taken are, in order of size of the employed population for 2015: Valle de México, Guadalajara, Monterrey, Puebla-Tlaxcala and Tijuana.

At first glance, employment in the modern economy is concentrated in metropolitan areas; especially in absolute terms, as can be seen in the tables. On the other hand, employment in the informal economy, which is a subset of both the modern economy and the TNME, is around 40 percent; assuming that most of this economy is informal, we can assume that about 10 percent of informal employment would be in the modern

economy. This percentage may indicate the reason for the 5 percent decrease in employment in the modern economy in 2020 from what it was in 2015.

For the three classes of metropolitan areas: the largest, the smallest and the rest of them, different population growth is observed, of 7.15, 1.66 and 6.51 percent, respectively.

The smallest metropolitan areas in Mexico, which are Teziutlán, Río Verde, Hidalgo del Parral, Acayucan and Moroleón-Uriangato, have a higher proportion of population in the informal sector and in the TNME. In the other metropolitan areas, which are neither the five largest nor the five smallest, employment in the modern economy, the TNME and the informal have similar percentages to those of the metropolitan areas as a whole. The latter have just over 50 percent of the total population. The employed population in the TNME is proportionally smaller than that employed in the modern economy; however, it has grown substantially, from 27.89 to 34.84 percent in the period. This growth may indicate that the labor force, probably due to the behavior of labor markets, may tend to be increasingly incorporated into the traditional non-modern formal and informal economy in metropolitan areas.

Table 3. Total employed population of Mexico's five smallest metropolitan areas by total employed population, and in the modern, traditional non-modern and informal economies, 2015 and 2020

Employed population (EP)	2015		2020	
	Total	Percent.	Total	Percent.
Modern economy	151,197	63.16	130,774	49.18
TNME	88,208	36.84	135,138	50.82
<i>Sum</i>	239,405	100	265,912	100
Informal economy	123,317	51.51	147,492	55.47
Total employed population	239,405		265,912	
Total population	619,436		629,692	

Notes:

1. The metropolitan municipalities are those proposed by CONAPO, INEGI and SEDATU.
2. The sum of the EP in the modern economy plus the EP in the TNME gives the total EP.
3. The EP in the informal economy is a subset that can be located in both the modern economy and the TNME. It is assumed that most of the informality is in the TNME.
4. The metropolitan areas taken are, in order of employed population size for 2015: Teziutlán, Río Verde, Hidalgo del Parral, Acayucan and Moroleón-Uriangato.

Table 4. Rest of Mexico’s metropolitan areas not included in Tables 2 and 3, by total employed population, and in modern, traditional non-modern and informal economies, 2015 and 2020.

Employed population (EP)	2015		2020	
	Total	Percent.	Total	Percent.
Modern economy	11,949,314	72.11	12,280,832	65.16
TNME	4,621,494	27.89	6,567,124	34.84
<i>Sum</i>	16,570,808	100	18,847,956	100
Informal economy	6,304,593	38.05	7,576,084	40.2
Total employed population	16,570,808		18,847,956	
Total population	39,210,616		41,763,099	

Notes:

1. The metropolitan municipalities are those proposed by CONAPO, INEGI and SEDATU.
2. The sum of the EP in the modern economy plus the EP in the TNME gives the total EP.
3. The EP in the informal economy is a subset that can be located in both the modern economy and the TNME. It is assumed that most of the informality is in the TNME.
4. The metropolitan areas that were taken are the remaining ones from the two previous tables, named in the annexed tables.

With respect to average annual employment growth in Mexican metropolises, Pachuca, Tijuana, Querétaro, La Piedad-Pénjamo, Tula and Cancún stand out, with between 5.37 and 4.15 percent. Although the economic growth base of each has its own particular characteristics, in general it can be said that Cancún stands out for tourism, Querétaro and Pachuca for manufacturing and Tijuana for the growth of the maquila industry and the influence of the U.S. labor market. As for the large metropolitan areas, those of the Valle de México, Guadalajara and Monterrey have had an average annual growth in total employed population of 1.95, 2.97 and 3.61 percent, respectively. This should be considered high growth in absolute terms due to the size of their employed populations. On the other hand, the metropolitan areas with the lowest annual growth are Guaymas, Ensenada, Morelón-Uriangato, Minatitlán and Acapulco, ranging from -0.75 to 0.36 percent. This illustrates the diversity of annual employment growth rates in the metropolitan areas considered in appendix Tables 1A and 3A. In general, it can be said that there is a pattern of continued growth in the large metropolitan areas, including those emerging due to favorable changes in their economic base to offer jobs, such as the tourist areas —with the exception of Acapulco—, those that have had significant manufacturing growth during the five-year

period; in short, there are various factors specific to the economic base of each metropolis.

Regarding employment in the metropolitan areas, Table 1A (first of the appendix) shows an important concentration in the four main metropolitan areas: Valle de México, Guadalajara, Monterrey and Puebla-Tlaxcala, all of them with growth, but it is noticeable that the last three in relation to the Valle de México. In addition, Ensenada, Guaymas and Minatitlán have decreased in employed population. It should be noted that some cities considered metropolitan are actually small in terms of population and employment capacity. It is also important to highlight, from the same table, that 16 metropolises are of a single municipality, among which five stand out for being integrated with twin U.S. border cities: El Paso-Juárez, Brownsville-Matamoros, Calexico-Mexicali, Nogales (U.S.)-Nogales (Mexico), Laredo-Nuevo Laredo, McAllen-Reynosa and San Diego-Tijuana. The last two are comprised of two or three Mexican municipalities, not counting the U.S. portion. It is interesting to note that these border metropolises have economies that can be considered symbiotic. Some of them have a large number of people employed in the neighboring country to the north, but who reside in Mexico. Thus, the income of this population that is spent on the Mexican side stimulates the economy of the border city, presumably mainly in traditional non-modern activities, although modern activities also have a positive impact. Their problem is that, depending on the supply of jobs in the United States, they can experience either an economic boom or a recession. In addition, if they are in economic growth, they receive migrants from the interior of the country who have the objective of obtaining employment in the United States; but, when they fail to do so, many remain in the Mexican border city, usually with precarious jobs in the formal and informal sectors.

It should be noted that the list of metropolitan areas includes 16 of only one municipality, so they do not fully comply with the definition. However, as mentioned, seven can be considered binational and, therefore, as metropolitan areas (see Table 1A in the appendix). In contrast, there are nine metropolitan areas made up of numerous municipalities, ranging from ten in Guadalajara to 76 in the Valle de México. This highlights the shortcomings of the definition and the difficulties of urban governance,

since municipalities have had autonomous governments since Article 115 of the Constitution was reformed in 1999, for the sake of a supposed participatory democracy. Thus, a city with 76 municipalities can be governed by three, four or five different parties, which makes collaboration between them and, of course, governance difficult. In fact, the association of two or more municipalities to solve common problems is very difficult. Even Mexico City, the only entity made up of mayors’ offices, can be considered to have a metropolitan government, but also with internal difficulties when the governments of the mayors’ offices are of different parties, and even more so if they do not coincide with that of the head of government.

Difficult governance can be reflected in problems in implementing urban economic policies. Even when the municipality has a restricted field of action in economic matters, it is important in the provision of services and infrastructure for the growth and development of economic activities. In this case, for example, there cannot be unified policies for an entire metropolis to stimulate and control the informal economy, which is extensive and forms an essential part of the traditional non-modern economy.

At the country-wide level, Table 3A in appendix shows the great importance of both traditional non-modern employment and its informal employment component. It is worth emphasizing that the latter is a subset present mainly in the TNME, but that a small part of it is found in the modern economy. The TNME has seen significant growth between 2015 and 2020, while the informal economy has grown less, but significantly in absolute terms. It is clear that as TNME increases the modern economy experiences a reduction, in accordance with the methodology used. The population with labor activity is mainly in the modern economy in both 2015 and 2020, although in 2020 it decreased its relative weight, which could be due to several factors. One of them, of a statistical nature, was the COVID-19 pandemic, which could have influenced the capture of information by INEGI during the 2020 census survey; another is the onset of the economic recession that caused the confinement, which caused unemployment in the modern sector, so perhaps many people were employed in the informal TNME. Even this stimulated the non-modern economy in many activities important for people’s survival during the time of confinement.

Based on the above, this paper assumes that TNME tends to be a kind of shock

absorber for crises, since it has increased the number of people who are in TNME to mitigate the crisis or recession. There was evidence in the data that this was the behavior, especially in the metropolitan context.

The modern economy is concentrated, in terms of employment, in higher percentages in the metropolises (71.34 percent in 2015 and 64.92 percent in 2020), while at the national level the proportions are 67.83 and 61.21 percent of employed, respectively, for those years. The decline of the modern economy in metropolitan areas caused an increase from 28.66 to 35.08 percent in the TNME for the period; but the modern economy continued to grow in absolute terms. The proportional increase in the employed population in the TNME for these areas could be due to the growth of activities in the depressed areas of the metropolises, although they can be found throughout their urban area.

Table 5. Employed population in TNME in metropolitan, rural and non-metropolitan urban areas of Mexico, 2015 and 2020.

	2015	Percent.	2020	Percent.
Metropolitan TNME	9,063,355	59.90	12,605,847	60.32
Non-metropolitan urban TNME	3,125,873	20.66	4,207,152	20.13
Non-metropolitan rural TNME	2,940,833	19.44	4,084,290	19.54
Total	15,130,061	100	20,897,289	100

Source: Own elaboration with data from INEGI.

The TNME had an insignificant variation in the 2015-2020 period, of little more than 1 percent (Table 5). That is, as a way to cushion the crisis, in metropolitan areas TNME has remained more or less stable throughout this period; and in non-metropolitan, but also urban areas, it did not reach a percentage point of variation. Comparing TNME with the modern economy, the variation seems smaller in percentage terms. However, in absolute terms, employment growth in the metropolitan TNME is considerable.

Despite the above, as can be seen in Table 3A in the appendix, the six metropolitan areas with the highest proportion of modern economy in 2015 are those of Ciudad Victoria, La Paz, Chetumal, Nogales and San Francisco del Rincón, which varied between 80 and 86 percent of their population employed in this economy, and in 2020 those of Ciudad Victoria, La Paz, Chetumal, Nogales, Saltillo and Guanajuato ranged

between 74.5 and 78.5 percent. In addition, this table shows that the first four metropolitan areas continue to be the main places in terms of employment concentration in this economy.

In Ciudad Victoria, Nogales and Juárez, which are examples of international metropolitan areas between Mexico and the United States and where employment in the modern economy is concentrated, this changed little, while the metropolises that do not have this characteristic show more variability in the modern employed population during the period considered. The latter, despite their location, do not have the proportion of people employed in the modern economy that would be expected, since it would be assumed that many migrants who cannot “cross over” to the United States to work are incorporated into this economy. The same is true for Tijuana, although in these binational metropolises the TNME has considerable growth rates during the period. Even though the period is short, there is probably a tendency towards a concentration of the TNME, while the entry to work in the United States becomes more and more difficult.

The metropolises with the highest growth rate of employment in the modern economy during the period are Tijuana, Querétaro, Pachuca, Río Verde and Cancún; the latter has an important tourist activity, which may be one of many factors in the concentration of this type of employment. Tourism activity, with employment in the modern economy, has grown in these cities, respectively, 21.49, 19.94, 16.18, 15.89 and 15.79 percent. However, of these five metropolitan areas, the one that grew the most in employment in the TNME was Pachuca with 70.52 percent, and the one that grew the least was Río Verde with 29.61 percent; these growth rates indicate that the modern economy is not its center of economic activity, even if it is a strong anchor. In other words, there is no direct relationship between the growth rate of the employed population and the fact of having been among the first places in employment in the modern economy. It is worth noting that Cancún and Tijuana do not have growth rates in it as high as Pachuca, as they were 38.59 and 49.29 percent, respectively, during the 2015-2020 period. While they are out of the average, they are above the expected as far as their employment in the modern economy is concerned.

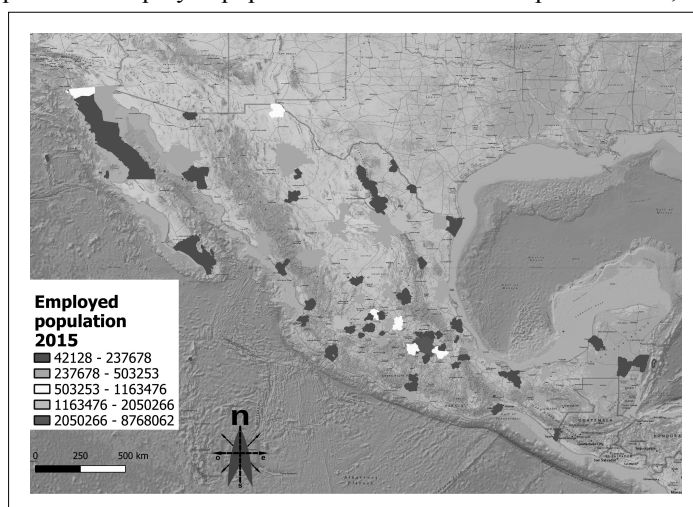
Binational metropolitan areas, such as Tijuana, have growth in their employment in

both the modern and TNME economy; this would be expected in these types of cities because their economic base is somewhat dependent on their U.S. twin cities. It could also be due to the impact of remittances, which provide a growth spurt that generates jobs in both the modern sector and in the TNME.

The top five places in terms of percentages of TNME employment in the composition of their economy are San Francisco del Rincón, Moroleón-Uriangato, Teziutlán, Tehuacán and Tianguistenco, but in 2015 the share of their employment in TNME on average was much lower. This significant change between 2015 and 2020 could be due to migration and remittances as determinants of employment composition. In terms of employment in the TNME, the metropolitan areas with the lowest percentage concentration of it with respect to their total population are Ciudad Victoria, La Paz, Chetumal, Nogales and Saltillo, which also occupied the first five places in terms of employment concentration in the modern economy.

The economies of the metropolitan areas of Juárez, La Piedad-Pénjamo, Piedras Negras, Nuevo Laredo and Río Verde have growth rates of their population employed in the informal economy of 40.40, 39.85, 34.92, 34.69 and 34.10 percent, respectively, indicating that the growth of the population employed in the informal economy is congruent with the growth of employment in the TNME.

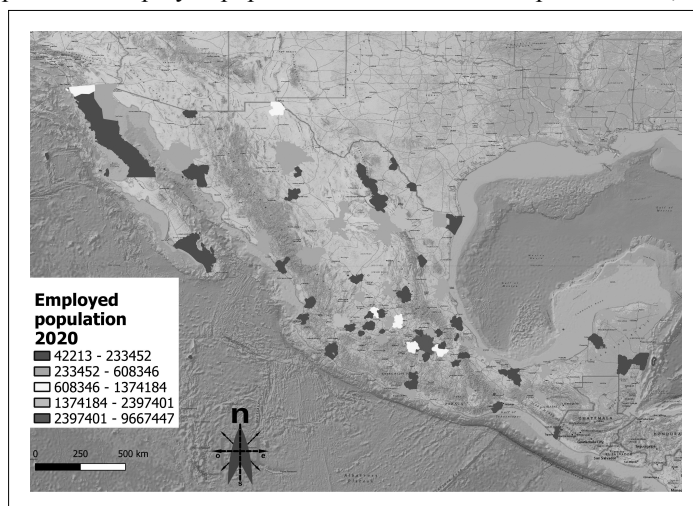
Map 1. Total employed population in Mexico's metropolitan areas, 2015.



Source: Data from the 2020 Population and Housing Census.



Map 2. Total employed population of Mexico's metropolitan areas, 2020.

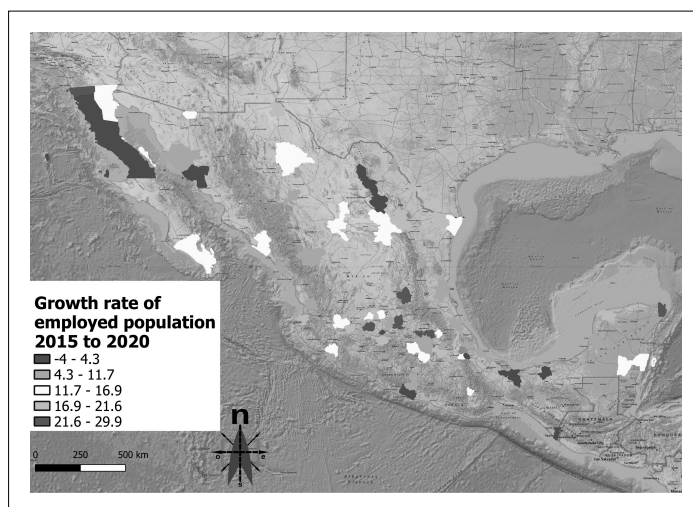


Source: Data from the 2020 Population and Housing Census.

Maps 1 and 2 show that the metropolitan area of the Valle de México has the largest employed population, which is mainly due to the historical concentration of population, economic, political, etc., in the center of the country. As a result, it also concentrates employment in both the modern economy and in the traditional non-modern economy, as well as informal employment. The latter, as already mentioned, is a subset of employment present in both modern and traditional non-modern economy.

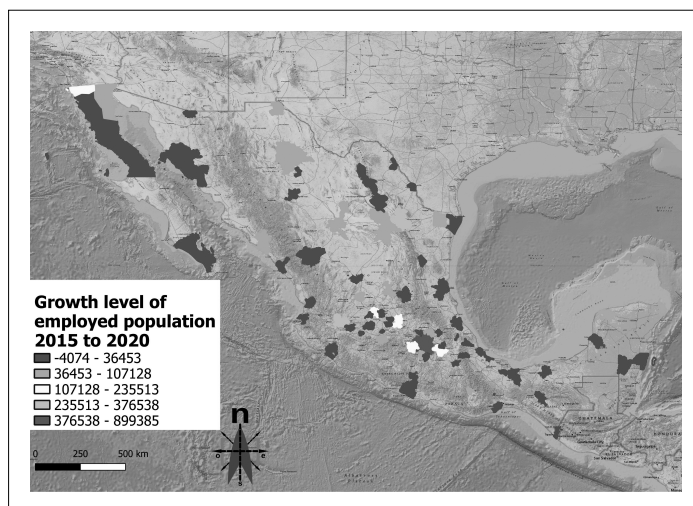
To make a comparison between employment at the beginning and the end of the 2015-2020 period in the employed population and its concentration, growth rates of it in Mexico during the same period were elaborated (Map 3). In these five years, the metropolitan areas of Tijuana and Benito Juárez (municipality where Cancún is located), which are in the Bajío and the Yucatán Peninsula, respectively, are the ones that presented the greatest increases. On the other hand, in the north and south of the country there is a greater number of metropolitan areas with lower growth rates of their employed population. The increase is greater in the metropolitan area of the Valle de México in terms of quantity, but not in terms of growth rate. It is emphasized that the metropolitan areas concentrate the largest amount of population in the TNME in absolute terms.

Map 3. Growth rate of the employed population in Mexico's metropolitan areas, 2015 and 2020.



Source: Data from the 2020 Population and Housing Census.

Map 4. Growth of the employed population in Mexico's metropolitan areas, 2015 and 2020.



Source: Data from the 2020 Population and Housing Census.

The metropolitan area of the Valle de México has a higher absolute population growth than other metropolitan areas due to the concentration of services typical of large cities. It can be assumed that policy in this area should focus on regulating the

informal economy, not to reduce or eliminate it, but to promote its formalization. This is due to its great importance as a generator of employment and, of course, of added value.

Some of the main characteristics that can be analyzed in the TNME is that it has a higher growth rate in those municipalities that are not part of metropolitan areas with a great tourist attraction or that are prominent manufacturing centers.

Mexico has a high percentage of urban population, which also occurs in other regions of the world and could be due to the fact that it has a great increase in its total productivity. In terms of employment generation, in the country, the TNME gives rise to a dynamic increase mainly in informal employment in family productive units and, self-employment. On the other hand, both modern and non-modern productive units — including informal ones — are concentrated in metropolitan areas, especially in megacities or urban regional corridors.

A constant concentration of the employed population in a region can result in the long-term devaluation of wages in certain modern economic sectors, and this could lead people to prefer TNME as an alternative to the modern economy, since in the former they could have higher incomes and a certain degree of labor flexibility. In other words, in the metropolises there are incentives for TNME to employ a significant part of the economically active population over time.

## Conclusions

In this work, a hypothesis was proposed, based on the main argument presented by Lewis (1954). Observing the great rural-urban migration — also called rural exodus of those times — Lewis proposed that cities grew on the basis of a dual economy. On the one hand, there was the modern sector, composed of technologically advanced, profit-maximizing productive units that produced for large markets, with productive units that were close to the concept of enterprise of the predominant economic theory, etc.; on the other, the subsistence sector, characterized by individual or family productive units that produced popular goods and services and allowed the subsistence of a large number of new urban dwellers, many of which over time were incorporated into the modern sector. The hypothesis was widely accepted because it was evident that such

urban economic duality existed; but there were no attempts to quantify it, possibly due to the limited availability of urban data at the time.

The hypothesis being tested here is that there is a set of modern productive units in the sense of the predominant economic theory, another set of productive units of the traditional non-modern economy (TNME) and a subset of the two previous ones with the informal economy. This assumption is based on the consideration that the concepts of the informal sector found in the literature are not entirely satisfactory. Some focus on the sociological aspect, others on the economic aspect, and those based on the institutional aspect predominate; according to these, if a productive unit does not have records and does not comply with the obligations established by governmental institutions, it and its employees would fall within the so-called informal sector of the economy. Taking the above into consideration, it is assumed here that informal productive units could be modern or traditional non-modern, depending on the technological aspects and the type of product or service they offer. Thus, employees of a technologically modern enterprise that offers a product or service that requires considerable training and a lot of technology, but has not been registered with the institutions, would be classified as informal and would be part of the subset of informal enterprises in the modern economy. In contrast, a large subset of informal enterprises is inserted in the traditional non-modern economy.

Employment in the modern economy, the traditional modern economy and the subset of informal employment were estimated. For this purpose, employment in modern activities, defined ad hoc, was selected; but after analyzing the more detailed North American Industrial Classification System (NAICS), employment in modern economy activities was estimated then it was subtracted from total employment to obtain employment in traditional non-modern economy. The limitation is evident, but the classifications were analyzed in more detail, by sectors, branches and sub-branches of the NAICS, until it was verified that the activity considered modern was indeed modern. This was an exhaustive task that had not been carried out in any work for the case of Mexico, as far as the literature was reviewed. Employment in the informal economy was defined in a similar way to how INEGI defines it. However, the latter estimates it using information from the ENOE, while this paper used information

obtained from the 2015 Intercensal Survey and the 2020 Population and Housing Census, so there are substantial differences between the two estimates. The ENOE estimate was not used because it does not include all officially recognized metropolitan areas, and another limitation is that the definition of them was not strictly respected and the list includes small cities of a single municipality.

Even with all the limitations that this estimation may have, it can be affirmed that the data obtained are consistent and the hypothesis that there is a metropolitan economy with employees in modern activities, others in activities that are part of the traditional non-modern economy, as well as in informal activities of a subset in which the traditional non-modern economy predominates but in which there are also much smaller subsets belonging to the modern economy.

It is worth noting here the large percentage of jobs created in the traditional non-modern economy, the important subset of jobs in the informal economy and the concentration of the country's employment in the metropolitan areas, especially those of the Valle de México, Guadalajara and Monterrey. Thus, we can speak of a dual Mexican economy with a high level of informality concentrated in the metropolitan areas. The composition of employment in each metropolitan area depends on its economic base; however, in general, it can be assumed that the modern economy creates employment opportunities along with the traditional non-modern economy, especially the informal one.

Considering the above, economic policy, which traditionally takes into account large aggregates based on the conceptualization of prevailing economic theory, such as gross domestic product, reinvestment, employment, exports and imports, etc., which are quantified by institutions, may omit much information from the traditional non-modern economy, which includes the informal economy. In other words, economic policy does not have a broad spectrum of analysis and impact, as it does not explicitly and quantitatively take into account the metropolitan dual economy and its functioning even though, in general terms, it provides about half of the total employment in Mexico's metropolitan areas.

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Table 1A

Employed population 2015 to 2020 in Mexico's metropolitan areas and number of municipalities that integrated them.

Metropolitan area	Employed population		Percentage share of total		Metropolitan growth rate	Absolute growth	Number of municipalities
	2015	2020	2015	2020			
Juárez	572,327	679,455	1.86	1.94	18.72	107,128	1
Mexicali	408,671	470,612	1.33	1.34	15.16	61,941	1
Culiacán	363,888	421,447	1.18	1.2	15.82	57,559	1
Hermosillo	383,493	413,496	1.25	1.18	7.82	30,003	1
Durango	255,857	282,034	0.83	0.8	10.23	26,177	1
Matamoros	197,438	228,984	0.64	0.65	15.98	31,546	1
Mazatlán	208,305	222,348	0.68	0.63	6.74	14,043	1
Ensenada	202,232	198,158	0.66	0.57	-2.01	-4,074	1
Nuevo Laredo	147,245	176,950	0.48	0.5	20.17	29,705	1
Ciudad Victoria	142,424	153,147	0.46	0.44	7.53	10,723	1
La Paz	120,554	135,870	0.39	0.39	12.7	15,316	1
Tapachula	131,004	135,612	0.43	0.39	3.52	4,608	1
Campeche	121,099	135,201	0.39	0.39	11.65	14,102	1
Nogales	96,237	111,849	0.31	0.32	16.22	15,612	1
Chetumal	92,037	105,820	0.3	0.3	14.98	13,783	1
Guanajuato	69,644	81,027	0.23	0.23	16.34	11,383	1
Hidalgo del Parral	43,239	47,742	0.14	0.14	10.41	4,503	2
Moroleón-Uriangato	42,128	42,213	0.14	0.12	0.2	85	2
Río Verde	46,978	58,918	0.15	0.17	25.42	11,940	2
Teziutlán	51,800	61,171	0.17	0.17	18.09	9,371	2
Tecomán	60,926	65,893	0.2	0.19	8.15	4,967	2
Piedras Negras	73,292	80,971	0.24	0.23	10.48	7,679	2
Delicias	75,516	83,691	0.25	0.24	10.83	8,175	2
Guaymas	83,348	79,970	0.27	0.23	-4.05	-3,378	2
La Piedad-Pénjamo	81,542	103,643	0.27	0.3	27.1	22,101	2
San Francisco del Rincón	85,634	96,072	0.28	0.27	12.19	10,438	2
Zamora	109,486	116,392	0.36	0.33	6.31	6,906	2
Chilpancingo	125,260	134,552	0.41	0.38	7.42	9,292	2
Tehuacán	145,067	158,201	0.47	0.45	9.05	13,134	2
Puerto Vallarta	187,375	223,828	0.61	0.64	19.45	36,453	2
Tepic	199,867	220,233	0.65	0.63	10.19	20,366	2
Reynosa	301,741	363,401	0.98	1.04	20.43	61,660	2
Villahermosa	329,208	343,269	1.07	0.98	4.27	14,061	2
Acapulco	339,728	346,944	1.1	0.99	2.12	7,216	2
Cancún	357,509	441,446	1.16	1.26	23.48	83,937	2
León	745,902	879,385	2.42	2.51	17.9	133,483	2

Metropolitan area	Employed population		Percentage share of total		Metropolitan growth rate	Absolute growth	Number of municipalities
	2015	2020	2015	2020			
Acayucan	43,774	45,088	0.14	0.13	3	1,314	3
Ocotlán	62,978	76,123	0.2	0.22	20.87	13,145	3
Tulancingo	98,008	113,882	0.32	0.32	16.2	15,874	3
Coatzacoalcos	144,087	146,096	0.47	0.42	1.39	2,009	3
Morelia	363,961	442,605	1.18	1.26	21.61	78,644	3
Saltillo	372,244	424,357	1.21	1.21	14	52,113	3
Chihuahua	390,043	451,434	1.27	1.29	15.74	61,391	3
Aguascalientes	430,902	520,510	1.4	1.48	20.8	89,608	3
San Luis Potosí	490,614	584,433	1.59	1.67	19.12	93,819	3
Tijuana	789,352	1,024,865	2.57	2.92	29.84	235,513	3
Monclova-Frontera	136,606	137,701	0.44	0.39	0.8	1,095	4
Córdoba	136,446	139,968	0.44	0.4	2.58	3,522	4
Celaya	280,935	310,597	0.91	0.89	10.56	29,662	4
Tehuantepec	65,753	72,030	0.21	0.21	9.55	6,277	5
Tula	84,048	104,061	0.27	0.3	23.81	20,013	5
Zacatecas-Guadalupe	144,029	171,156	0.47	0.49	18.83	27,127	5
Colima-Villa de Álvarez	160,096	182,980	0.52	0.52	14.29	22,884	5
Poza Rica	189,421	199,966	0.62	0.57	5.57	10,545	5
Tuxtla Gutiérrez	329,666	349,841	1.07	1	6.12	20,175	5
Tampico	348,432	379,635	1.13	1.08	8.96	31,203	5
La Laguna	494,583	572,040	1.61	1.63	15.66	77,457	5
Querétaro	570,000	721,467	1.85	2.06	26.57	151,467	5
Tianguistenco	66,290	76,501	0.22	0.22	15.4	10,211	6
Minatitlán	134,730	133,706	0.44	0.38	-0.76	-1,024	6
Cuautla	189,317	214,647	0.62	0.61	13.38	25,330	6
Veracruz	374,501	402,527	1.22	1.15	7.48	28,026	6
Pachuca	237,678	308,660	0.77	0.88	29.86	70,982	7
Cuernavaca	414,279	475,217	1.35	1.35	14.71	60,938	8
Xalapa	317,344	351,267	1.03	1	10.69	33,923	9
Guadalajara	2,050,266	2,397,401	6.66	6.83	16.93	347,135	10
Mérida	503,253	608,346	1.64	1.73	20.88	105,093	11
Orizaba	158,157	182,618	0.51	0.52	15.47	24,461	13
Toluca	833,753	962,597	2.71	2.74	15.45	128,844	16
Monterrey	1,931,698	2,308,236	6.28	6.58	19.49	376,538	18
Tlaxcala-Apizaco	211,326	233,452	0.69	0.67	10.47	22,126	19
Oaxaca	284,360	331,572	0.92	0.95	16.6	47,212	24
Puebla-Tlaxcala	1,163,476	1,374,184	3.78	3.92	18.11	210,708	39
Valle de México	8,768,062	9,667,447	28.5	27.54	10.26	899,385	76
<b>Total</b>	<b>30,762,469</b>	<b>35,099,158</b>	<b>100</b>	<b>100</b>	<b>14.1</b>	<b>4,336,689</b>	<b>417</b>



Table 2A  
Metropolitan population of Mexico, 2015 and 2020

Metropolitan area	Population		Percentage share of population		Annual growth rate	Absolute growth
	2015	2020	2015	2020		
Valle de México	20,892,724	21,804,515	27.83	27.2	0.86	911,791
Monterrey	4,689,601	5,341,177	6.25	6.66	2.64	651,576
Guadalajara	4,887,383	5,268,642	6.51	6.57	1.51	381,259
Puebla-Tlaxcala	2,941,988	3,199,530	3.92	3.99	1.69	257,542
Toluca	2,202,886	2,353,924	2.93	2.94	1.34	151,038
Tijuana	1,840,710	2,157,853	2.45	2.69	3.23	317,143
León	1,768,193	1,924,771	2.36	2.4	1.71	156,578
Querétaro	1,323,640	1,594,212	1.76	1.99	3.79	270,572
Juárez	1,391,180	1,512,450	1.85	1.89	1.69	121,270
La Laguna	1,342,195	1,434,283	1.79	1.79	1.34	92,088
Mérida	1,143,041	1,316,088	1.52	1.64	2.86	173,047
San Luis Potosí	1,159,807	1,271,366	1.54	1.59	1.85	111,559
Aguascalientes	1,044,049	1,140,916	1.39	1.42	1.79	96,867
Mexicali	988,417	1,049,792	1.32	1.31	1.21	61,375
Saltillo	923,636	1,031,779	1.23	1.29	2.24	108,143
Cuernavaca	983,365	1,028,589	1.31	1.28	0.9	45,224
Culiacán	905,265	1,003,530	1.21	1.25	2.08	98,265
Chihuahua	918,339	988,065	1.22	1.23	1.47	69,726
Morelia	911,960	988,704	1.21	1.23	1.63	76,744
Cancún	763,121	934,189	1.02	1.17	4.13	171,068
Hermosillo	884,273	936,263	1.18	1.17	1.15	51,990
Veracruz	915,213	939,046	1.22	1.17	0.52	23,833
Tampico	916,854	927,379	1.22	1.16	0.23	10,525
Tuxtla Gutiérrez	814,436	848,274	1.08	1.06	0.82	33,838
Acapulco	886,975	852,622	1.18	1.06	-0.79	-34,353
Villahermosa	823,213	833,907	1.1	1.04	0.26	10,694
Reynosa	773,089	837,251	1.03	1.04	1.61	64,162
Xalapa	768,271	789,157	1.02	0.98	0.54	20,886
Celaya	731,667	767,104	0.97	0.96	0.95	35,437
Oaxaca	671,447	713,925	0.89	0.89	1.23	42,478
Durango	654,876	688,697	0.87	0.86	1.01	33,821
Pachuca	557,093	665,929	0.74	0.83	3.63	108,836
Tlaxcala-Apizaco	540,273	570,308	0.72	0.71	1.09	30,035
Matamoros	520,367	541,979	0.69	0.68	0.82	21,612
Poza Rica	538,206	521,530	0.72	0.65	-0.63	-16,676
Mazatlán	502,547	501,441	0.67	0.63	-0.04	-1,106
Tepic	471,026	491,153	0.63	0.61	0.84	20,127

Metropolitan area	Population		Percentage share of population		Annual growth rate	Absolute growth
	2015	2020	2015	2020		
Puerto Vallarta	425,890	479,471	0.57	0.6	2.4	53,581
Cuautla	475,441	483,455	0.63	0.6	0.33	8,014
Orizaba	457,159	465,175	0.61	0.58	0.35	8,016
Ensenada	486,639	443,807	0.65	0.55	-1.83	-42,832
Nuevo Laredo	399,431	425,058	0.53	0.53	1.25	25,627
Zacatecas-Guadalupe	375,628	405,285	0.5	0.51	1.53	29,657
Monclova-Frontera	363,753	374,247	0.48	0.47	0.57	10,494
Colima-Villa de Álvarez	359,392	380,575	0.48	0.47	1.15	21,183
Tehuacán	344,603	357,621	0.46	0.45	0.74	13,018
Minatitlán	372,381	359,228	0.5	0.45	-0.72	-13,153
Ciudad Victoria	346,029	349,688	0.46	0.44	0.21	3,659
Tapachula	348,156	353,706	0.46	0.44	0.32	5,550
Coatzacoalcos	365,026	355,738	0.49	0.44	-0.51	-9,288
Córdoba	347,647	335,950	0.46	0.42	-0.68	-11,697
Chilpancingo	324,422	336,480	0.43	0.42	0.73	12,058
Campeche	283,025	294,077	0.38	0.37	0.77	11,052
La Paz	272,711	292,241	0.36	0.36	1.39	19,530
Zamora	265,952	273,641	0.35	0.34	0.57	7,689
La Piedad-Pénjamo	254,272	261,450	0.34	0.33	0.56	7,178
Nogales	233,952	264,782	0.31	0.33	2.51	30,830
Tulancingo	256,662	268,351	0.34	0.33	0.89	11,689
Tula	225,219	256,795	0.3	0.32	2.66	31,576
Chetumal	224,080	233,648	0.3	0.29	0.84	9,568
San Francisco del Rincón	199,308	214,713	0.27	0.27	1.5	15,405
Guaymas	214,223	208,294	0.29	0.26	-0.56	-5,929
Piedras Negras	194,293	209,456	0.26	0.26	1.51	15,163
Guanajuato	184,239	194,500	0.25	0.24	1.09	10,261
Delicias	192,797	195,359	0.26	0.24	0.26	2,562
Tianguistenco	170,461	183,281	0.23	0.23	1.46	12,820
Ocotlán	176,158	184,603	0.23	0.23	0.94	8,445
Tehuantepec	179,957	179,870	0.24	0.22	-0.01	-87
Tecomán	152,790	143,931	0.2	0.18	-1.19	-8,859
Río Verde	139,576	146,049	0.19	0.18	0.91	6,473
Teziutlán	131,786	138,806	0.18	0.17	1.04	7,020
Hidalgo del Parral	114,596	121,666	0.15	0.15	1.2	7,070
Moroleón-Uriangato	113,138	108,755	0.15	0.14	-0.79	-4,383
Acayucan	120,340	114,416	0.16	0.14	-1	-5,924
<b>Total</b>	<b>75,082,458</b>	<b>80,164,508</b>	<b>100</b>	<b>100</b>	<b>1.318</b>	<b>5,082,050</b>

Table 3A  
Employed population of Mexico, 2015 and 2020.

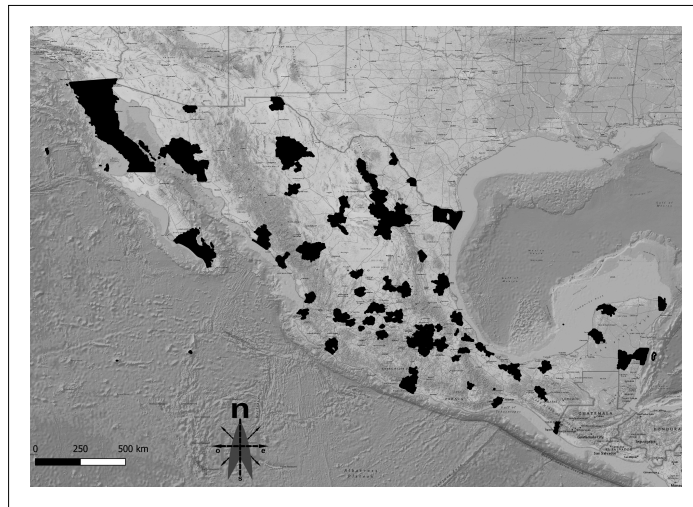
Metropolitan area	Modern economy			Traditional non-modern economy				Employed population		Informal economy			
	2015	%	2020	%	2020	%	Growth rate	2015	2020	2015	%	2020	Growth rate
San Francisco del Rincón	69,990	80.16	35,880	36.21	17,325	19.84	-48.74	87,315	99,077	33,115	37.93	35,621	35.95
Moroleón-Uriangato	27,635	60.62	16,413	36.40	17,956	39.38	-40.61	45,591	45,066	25,922	56.86	26,893	59.67
Teztlutlán	38,102	72.02	25,249	40.42	14,803	27.98	-33.73	52,905	62,464	28,884	54.6	35,688	57.13
Tehuacán	103,054	69.17	71,709	43.83	45,933	30.83	-30.42	148,987	163,615	76,243	51.17	90,986	55.61
León	559,022	72.23	472,755	51.83	214,970	27.77	-15.43	773,992	912,189	288,403	37.26	334,044	36.62
Tlanguistenco	41,003	60.32	36,209	45.8	26,976	39.68	-11.69	67,979	79,062	45,612	67.1	53,567	67.75
Guaymas	63,024	72.03	56,000	66.45	24,470	27.97	-11.14	87,494	84,269	29,534	33.76	28,497	33.82
Zamora	70,080	62.11	62,581	52.15	42,747	37.89	-10.7	112,827	120,008	60,130	53.29	63,882	53.23
Ensenada	149,061	70.77	133,160	64.9	61,579	29.23	-10.67	210,640	204,958	77,953	37.01	79,648	38.86
Minatitlán	89,984	63.67	80,807	56.51	51,344	36.33	-10.2	141,328	142,987	70,642	49.98	78,227	54.71
Córdoba	86,995	60.87	78,540	53.66	55,931	39.13	-9.72	142,926	146,359	74,341	52.01	78,980	53.96
Monclova-Frontera	110,094	77.8	99,814	68.08	31,409	22.2	-9.34	141,503	146,605	31,176	22.03	41,293	28.17
Tapachula	88,567	64.35	81,128	57.06	49,061	35.65	-8.4	137,628	142,183	72,342	52.56	84,326	59.31
Acajucan	25,616	56.04	23,553	49.33	20,093	43.96	-8.05	45,709	47,743	26,658	58.32	30,743	64.39
Tulancingo	63,513	62.3	58,659	49.92	38,426	37.7	-7.64	101,939	117,498	62,650	61.46	76,265	64.91
Tehuantepec	46,003	66.49	43,303	57.27	23,188	33.51	-5.87	69,191	75,612	36,435	52.66	46,993	62.15
Poza Rica	126,440	62.71	119,983	57.46	75,200	37.29	-5.11	201,640	208,826	109,518	54.31	133,337	63.85
Tuxtla Gutiérrez	254,027	73.79	243,241	66.07	90,229	26.21	-4.25	344,256	368,171	161,259	46.84	190,764	51.81
Coatzacoalcos	105,723	69.8	101,701	65.37	45,753	30.2	-3.8	151,476	155,583	52,104	34.4	68,632	44.11
Acapulco	220,168	61.47	213,728	58.62	137,999	38.53	-2.93	358,167	364,579	198,892	55.53	194,734	53.41
Villahermosa	260,686	75.08	254,352	69.06	86,521	24.92	-2.43	347,207	368,298	125,654	36.19	152,671	41.45
Tlaxcala-Apizaco	158,482	71.09	155,111	62.87	64,434	28.91	-2.13	222,916	246,723	115,544	51.83	128,588	52.12
Ciudad Victoria	128,278	86.03	125,756	78.5	20,829	13.97	-1.97	149,107	160,208	39,706	26.63	51,195	31.96
Mazatlán	149,791	69.13	147,452	64.24	66,891	30.87	-1.56	216,682	229,532	75,515	34.85	77,609	33.81

Metropolitan area	Modern economy				Traditional non-modern economy				Employed population				Informal economy			
	2015	%	2020	Growth rate	2015	%	2020	Growth rate	2015	%	2020	Growth rate	2015	%	2020	Growth rate
Chilpancingo	99,979	76.36	98,487	-1.49	30,944	23.64	43,005	30.39	130,923		141,492		69,770	53.29	80,562	56.94
Hermosillo	312,693	71.73	308,212	-1.43	89,596	22.27	122,514	28.44	402,289		430,726		108,969	27.09	133,939	31.11
Cuatla	119,858	60.46	118,698	-0.97	78,384	39.54	103,373	46.55	198,242		222,071		118,172	59.61	146,047	65.77
Xalapa	233,233	70.28	231,257	-0.85	98,652	29.72	135,054	36.87	331,885		366,311		151,763	45.73	175,255	47.84
La Laguna	353,302	67.13	351,081	-0.63	173,014	32.87	252,105	41.83	526,316		603,186		153,647	29.19	192,907	31.98
Tampico	254,984	69.14	253,490	-0.59	113,785	30.86	145,820	36.52	368,769		399,310		134,614	36.5	151,290	37.89
Durango	198,742	73.95	197,601	-0.57	70,001	26.05	97,809	33.11	268,743		295,410		88,837	33.06	110,369	37.36
Veracruz	267,258	67.89	265,978	-0.48	126,392	32.11	155,350	36.87	393,650		421,328		153,574	39.01	185,412	44.01
Celaya	198,043	67.44	197,597	-0.23	95,602	32.56	126,806	39.09	293,645		324,403		124,469	42.39	143,134	44.12
Delicias	56,369	71.53	56,271	-0.17	22,437	28.47	30,490	35.14	78,806		86,761		23,123	29.34	25,946	29.91
Tecmán	39,475	61.57	39,613	0.35	24,643	38.43	28,257	41.63	64,118		67,870		35,917	56.02	36,752	54.15
Tepic	155,287	74.98	157,390	69.14	51,812	25.02	70,263	30.86	207,099		227,653		77,460	37.4	90,813	39.89
Valle de México	6,440,698	70.02	6,530,715	64.48	2,758,043	29.98	3,598,181	35.52	9,198,741		10,128,896		4,001,518	43.5	4,623,496	45.65
Toluca	617,005	70.41	633,353	62.39	259,327	29.59	381,777	37.61	876,332		1,015,130		413,611	47.2	472,267	46.52
Piedras Negras	59,077	77.34	60,651	71.88	17,314	22.66	23,729	28.12	76,391		84,380		15,895	20.81	21,445	25.41
Campeche	99,025	78.84	102,088	72.89	26,584	21.16	37,964	27.11	125,609		140,052		43,825	34.89	54,351	38.81
La Paz	102,859	81.8	106,143	75.48	22,889	18.2	34,479	24.52	125,748		140,622		38,908	30.94	48,105	34.21
Hidalgo del Parral	31,355	68.81	32,543	64.8	14,215	31.19	17,679	35.2	45,570		50,222		13,657	29.97	16,357	32.57
Culiacán	263,018	69.38	273,187	62.75	116,053	30.62	162,153	37.25	379,071		435,340		123,716	32.64	161,090	37
Puebla-Tlaxcala	827,008	68.15	865,393	60.43	386,503	31.85	566,707	39.57	1,213,511		1,432,100		614,486	50.64	749,585	52.34
Orizaba	103,184	61.14	108,550	56.52	65,592	38.86	83,506	43.48	168,776		192,056		87,957	52.11	108,833	56.67
Colima-Villa de Álvarez	121,887	72.8	128,267	67.9	45,547	27.2	60,632	32.1	167,434		188,899		68,873	41.13	77,036	40.78
Guadalajara	1,503,021	70.16	1,584,284	63.88	639,240	29.84	895,683	36.12	2,142,261		2,479,967		783,624	36.58	920,349	37.11
Chetumal	77,644	80.73	81,960	75.24	18,537	19.27	26,975	24.76	96,181		108,935		39,444	41.01	52,514	48.21
Oaxaca	219,147	74.41	232,650	67.44	75,376	25.59	112,326	32.56	294,523		344,976		151,560	51.46	188,715	54.7
Mexicali	330,252	76.88	352,540	72.19	99,342	23.12	135,781	27.81	429,594		488,321		120,743	28.11	155,044	31.75

“The other economy” in metropolitan areas of Mexico

Metropolitan area	Modern economy			Traditional non-modern economy			Employed population			Informal economy			Growth rate
	2015	%	2020	%	2020	Growth rate	2015	%	2020	%	2020	%	
Nogales	81,710	80.72	87,458	75.12	7.03	48.4	19,519	19.28	28,967	24.88	21,758	21.49	30.99
Chihuahua	324,750	79.73	348,039	73.71	7.17	50.35	82,569	20.27	124,141	26.29	93,045	22.84	33.73
La Piedad-Pénjamo	51,433	60.02	55,294	51.83	7.51	50.01	34,263	39.98	51,399	48.17	41,459	48.38	39.85
Cuernavaca	288,354	66.11	310,674	62.35	7.74	26.92	147,797	33.89	187,591	37.65	217,832	49.94	17.07
Ocotlán	42,134	64.03	45,577	58.3	8.17	37.76	23,666	35.97	32,603	41.7	27,790	42.23	25.8
Zacatecas-Guadalupe	121,383	79.92	131,811	73.7	8.59	54.29	30,491	20.08	47,045	26.3	49,674	32.71	19.62
Aguascalientes	341,767	75.69	371,773	68.97	8.78	52.44	109,739	24.31	167,286	31.03	142,289	31.51	25.78
Juárez	477,825	80.02	520,019	74.29	8.83	50.83	119,321	19.98	179,975	25.71	132,647	22.21	40.4
Saltillo	303,553	78.17	331,729	74.65	9.28	32.87	84,794	21.83	112,668	25.35	89,874	23.14	18.54
Mérida	381,419	73.69	417,311	66.65	9.41	53.34	136,185	26.31	208,823	33.35	173,418	33.5	33.1
Morelia	268,612	70.03	294,554	63.88	9.66	44.87	114,956	29.97	166,540	36.12	170,231	44.38	25.9
Matamoros	154,105	73.06	169,884	70.17	10.24	27.11	56,815	26.94	72,220	29.83	72,209	34.24	3.83
Monterrey	1,506,300	74.94	1,666,097	69.43	10.61	45.67	503,636	25.06	733,646	30.57	495,640	24.66	27.39
Nuevo Laredo	116,124	74.83	128,536	70.2	10.69	39.67	39,062	25.17	54,559	29.8	46,562	30	34.69
San Luis Potosí	386,828	75.43	430,099	71.06	11.19	39.01	125,999	24.57	175,147	28.94	170,848	33.31	13.1
Puerto Vallarta	136,634	70.22	152,706	66.19	11.76	34.63	57,935	29.78	77,997	33.81	70,376	36.17	28.7
Tula	61,709	69.81	69,132	63.27	12.03	50.35	26,688	30.19	40,125	36.73	41,244	46.66	24.51
Reynosa	241,367	75.78	278,026	72.71	15.19	35.23	77,155	24.22	104,335	27.29	88,630	27.83	25.99
Guajuato	54,762	74.17	63,276	74.51	15.55	13.54	19,070	25.83	21,652	25.49	25,514	34.56	30.63
Cancún	260,816	70.28	302,000	66.4	15.79	38.59	110,279	29.72	152,833	33.6	123,962	33.4	25.12
Rio Verde	28,489	57.4	33,016	54.65	15.89	29.61	21,141	42.6	27,401	45.35	28,196	56.81	34.1
Pachuca	183,462	74.7	213,137	66.8	16.18	70.52	62,134	25.3	105,948	33.2	115,881	47.18	30.05
Querétaro	444,261	74.76	532,864	70.72	19.94	47.07	150,019	25.24	220,629	29.28	207,735	34.96	31.68
Tijuana	607,401	73.69	737,931	69.51	21.49	49.29	216,829	26.31	323,702	30.49	268,703	32.60	31.70
<b>TOTAL</b>	<b>22,984,939</b>		<b>23,796,026</b>		<b>3.53</b>	<b>39.14</b>	<b>9,213,953</b>		<b>12,820,181</b>		<b>12,591,881</b>		<b>19.14</b>

Map 1A. Metropolitan Areas of Mexico



Source: Own elaboration with data from CONAPO, SEDATU and INEGI (2015).

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