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ACT/EMP



▶ Productivity Enhancement and Sustainable Employment in Mexico

Building forward better from the Pandemic
and creating inclusive growth

▶ **Productivity Enhancement and Sustainable Employment in Mexico**

Building forward better from the Pandemic
and creating inclusive growth

November 2021

Bureau for Employers' Activities (ACT/EMP)

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► Preface

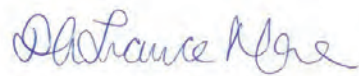
Productivity growth is essential to achieve sustainable enterprise development and create employment and decent jobs. It is a key element of a comprehensive development strategy to raise income per capita and long-term standards of living. Yet emerging-market economies tend to face challenges to enhance and sustain the growth rate of labour and total factor productivity, which is an obstacle to escape from the middle-income trap.

The ILO has long recognised the role productivity plays in sustainable enterprise development and job creation. The conclusions concerning the promotion of sustainable enterprises adopted at the 2007 International Labour Conference (ILC) incorporates the notion that increased productivity is a key driver of business competitiveness, economic growth, and living standards. The ILO Centenary Declaration for the Future of Work, adopted by the ILC in 2019 also brings productivity to the forefront of the policy agenda to promote socio-economic development. Increasing productivity is also one of the strategic priorities of the 2030 Agenda, as part of Sustainable Development Goal 8, focused on enhancing inclusive economic growth and productive employment.

This report was conducted during the COVID-19 pandemic. Devising coherent and holistic strategies to foster **inclusive productivity** and create **sustainable employment hubs** will be of the utmost importance to accelerate the economic and employment recovery in the post-pandemic environment. They are two pillars of the *Building Forward Better* agenda with a human-centred approach.

In this context, this evidence-based study seeks to identify key constraints to productivity growth, enterprise development, and sustainable employment hubs in an emerging-market economy, Mexico, stocked in a middle-income trap, facing regional and sectoral inequality, that has not yet managed to converge to high-income per capita levels despite a number of structural reforms over the last four decades. The main objective is to aid Mexico's Employers and Business Membership Organizations to develop a policy reform agenda to promote a conducive environment for sustainable enterprise development, sustainable employment hubs, and raise living standards.

Deborah France-Massin



Director
Bureau for Employers' Activities
International Labour Office

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1

Introduction

► 1. Introduction

Recovering from the after-effects of the pandemic in Mexico, as in many other countries with different levels of government, involves the creation of sustainable employment hubs, including in lagging regions. In this paper, we focus on the drivers of productivity and the spatial dynamics of sustainable transitions, using information from the latest (2019) Economic Census that has recently been made available, as well as labour force surveys over time. Understanding the determinants of productivity enhancements helps relating the reform options to the public policy framework at different levels of government.

Changing global trade patterns because of competition across major trading partners create opportunities for Mexico. However, there are also challenges as enterprises, particularly in the automotive sector including those which have significant investments in Mexico, adjust to cleaner technologies.

Section 2, building on Ahmad and Viscarra (2021), illustrates how public policies, including trade and tax regimes, infrastructure, and provision of public services influenced the directions of private investment, including FDI, and movement of labour. This reflected the predictions of standard dual economy models, with migrations to major metropolitan areas, and generation of informality together with urban sprawl that also led to very different growth patterns in different parts of the country.

The 2013 fiscal reforms that *inter alia* reformed the value-added tax (VAT), created a unified economic space for FDI, especially in the Central States and cities where the necessary preconditions were met—effectively creating a Special Economic Zone throughout the country with good basic services, skills and connectivity. However, it removed the ability of large firms to avoid taxes and payroll contributions by transacting with enterprises under the small-scale threshold (*Regimen de Pequeños Contribuyentes*, REPECOS).

Together with the after effects of the 2008-10 economic crisis that continued to affect Mexico into 2013, urban reforms in Mexico City pushed informal workers increasingly into increasing sprawl, and many chose to return to States of origin, including Chiapas, where an employment-based transfer was available (replacing conditional cash transfers (*Oportunidades*) in 2014). The increase in poverty in Chiapas, negative growth, and low productivity micro-enterprises reflect in reality a poverty trap, a failed social policy framework, and the lack of a comprehensive regional economic development strategy, all of which has contributed to increasing income differentials with Mexico City (CDMX) and fast-growing States like Querétaro (Ahmad and Viscarra, 2021).

Section 3 focuses on firm level determinants of productivity and growth potential. It presents the empirical investigations into investment decisions and firm size based on the Economic Census of 2019. This provides the basis for examining elements of the building forward better exercise in Mexico. This includes reforming productive structures in advanced states like Querétaro and Mexico State (Edomex) to reflect more sustainable value chains (such as electronic vehicles), and providing better paid employment opportunities outside the capital cities in these states, and in lagging regions such as Chiapas. Improved physical and digital connectivity and enhanced public services are essential to attract private investments to take advantage of lower costs and abundant labour, but this will require national and perhaps international financing. The provision of employment opportunities in the Southern States of Mexico is taking on a geo-political significance.

Section 4 relates the findings on firm and labour decisions and movements to the nature of cross-border and within country connectivity, local infrastructure as well as the provision of basic public services—or the key policy elements in the creation of sustainable jobs and employment hubs, especially in the lagging regions in the South. However, even the more

advanced regions, including Mexico City, have been affected by the pandemic, and will continue to be challenged by the shifts in global value chains, and need to retool existing metropolitan areas. The 2013/14 integration of small-scale enterprises into the VAT net has created opportunities to better integrate with the global value chains, as the experience with Walmart during the Pandemic shows. This policy measure is part of an essential enabling environment to integrate smaller firms into cross-border value chains, and is hugely important and could be extended to other emerging market economies.

Section 5 concludes, reiterating the need to link back to the policy drivers of investment and employment, particularly subnational financing of physical and digital infrastructure and public service provision. National support for regional connectivity and productivity growth will be needed, especially environmentally sustainable transport systems, particularly to connect national and cross-border value-chains to Guerrero, Oaxaca, and Chiapas.



2

**Sustainable
employment
and enabling
policy framework**

▶ 2. Sustainable employment and enabling policy framework¹

In Mexico, as in other major emerging market economies as well as G7, the pandemic has highlighted the existing spatial inequalities and imbalances in the labour market, and has affected micro and small enterprises (SMEs) and workers across economic activities, and particularly those in the informal economy. The recovery thus should focus on **building forward an enabling environment to enhance productivity growth and create of sustainable employment, including in lagging regions**. The recovery should also provide an opportunity to address long-standing imbalances in human, social and natural capital, as well as promoting sustainable development, to ensure improved living standards in cleaner and compact cities that enable and attract private investment and better paying jobs.

We identify three distinct phases that have influenced the structure and efficiency of employment and investment patterns in Mexico. The first was the traditional operation of the dual economy model in the period before the North American Free Trade (NAFTA) agreement, where much of the private investment was in and around Mexico City (CDMX), with a major influx of workers from agriculture and poorer regions in the South. The second phase followed the creation of the maquiladora Special Economic Zones (SEZs) following NAFTA and generated new employment hubs in the Northern States. Public investments in connectivity and energy grids along the Canada-US-Mexico highway trade corridor² facilitated the dispersion of manufacturing outside the CDMX metropolitan area. The third phase following the tax/transfer reforms in 2013 led to further dispersion of manufacturing and employment hubs, especially in the regions with good connectivity and public services.

While the integration of MSMEs into the normal tax system in 2014 using mandatory electronic invoices and a simplified income tax regime is expected to promote further growth and development of such economic units, the reduced ability to engage in elusive practices is expected to reduce informal activities. Moreover, together with a change in transfer mechanism targeted to encouraging micro and small enterprises, there has been a reverse migration of workers to lagging regions, as a safety net, that has exacerbated inequalities and imbalances (Conover et al., 2018).

The pandemic has further exacerbated the negative impact on the informal sector, but also inequality, and the need for better focus on ensuring improved prospects for microenterprises and SMEs in the *building forward better* agenda. This will depend on creating a conducive business environment and fostering productivity growth for the creation of sustainable employment hubs in the lagging regions, which will involve national public investments, especially for regional connectivity, and local financing for infrastructure, skills development, and public service delivery to attract the needed private investments.

2.1. NAFTA and a changing dual labour market

Mexico has long **displayed characteristics of a dual labour market (Maloney, 2009)**. Workers have migrated from rural areas and especially from lagging regions in the South, such as Chiapas, to Mexico City (CDMX) and its surrounding areas where much of the industrial investment of the country was initially located³. The resulting urban sprawl led to increasing

¹ This section draws on (Ahmad and Viscarra 2021).

² Also known as the NAFTA or CANAMEX corridor.

³ Ahmad and Viscarra (2021).

congestion and pollution in one of the most ecologically vulnerable capital cities in the world, generating inefficiencies, increasing production costs, and informality.

Diversification of investments and employment away from CDMX in the 1990s, was driven by public policies and investments as a result of the NAFTA trade accord and the development of the “maquiladora” hubs in the northern states. The policy measures included exemptions from customs, income tax, payroll and VAT within the maquiladora SEZs, and differential rates for goods in the regions “bordering” the SEZs. Additional investments in connectivity and energy infrastructure along the “NAFTA corridor from the US to Mexico City” helped to shift some of the activities to smaller and more compact cities like Queretaro that provided good connectivity together with excellent public services and skilled labour.

The policy agenda with proliferation of tax exemptions, a high VAT threshold, and a small taxpayer regime (REPECOS) administered by the states and largely evaded, led to a “rent seeking” form of “informality” (E. Ahmad 2021). This “informality as rent-seeking” exacerbated tax evasion and reduced productivity, which together with a relatively small tax base given the size of the informal economy led to an abysmally low tax/GDP ratio. Ahmad (2021) generalized the argument by (Levy 2008) that had focused on evading formal payroll taxes resulting in broader implications of “good intentions, bad outcomes” leading to reduced productivity and growth (see also Antón, Hernández and Levy, 2013).

The global economic crisis of 2008-10 had an impact on the trade and employment patterns in Mexico, with a disruption of activities in the major manufacturing centres. Countercyclical measures in the metropolitan areas to generate activities, such as the restoration of the historical centre of CDMX, had the effect of gentrification with informal sector workers pushed even further into the sprawling periphery, with more than half the population of the greater metropolitan area living outside the formal CDMX jurisdiction.

The 2013/14 “package of fiscal reforms” was designed to improve efficiency and generate additional revenues as Mexico’s tax revenue at just over 10% of GDP was well below Latin American levels (15% of GDP and above). The strategy focused on creating a level playing field for private investment and reducing the cost of doing business, but also blocking the incentives and ability to evade. The main innovation in this regard was a better integration of the small taxpayer and regular tax regimes to generate full information on the value chain. Small taxpayers were brought into the tax net by effectively reducing the tax registration threshold and requiring the use of electronic invoices. An important side effect has been increased ability of MSMEs to better integrate with global value chains, including in the retail sector⁴. In this regard, the Mexican measures are an example for other countries in the region and emerging market countries in general.

The expansion of the VAT for all business-to-business transactions ensured full coverage of the value chain, making it possible to provide full refunds of cumulative VAT on exports, whether or not these were from the SEZs. This had the effect of attracting foreign direct investment (FDI), for instance, in automobile and aerospace industries, to major hubs in the centre of the country—generating widespread employment opportunities in capital city hubs in states like Querétaro and Guanajuato.

A major implication of the 2013 reforms is that with the full operation of the VAT, all taxes on inputs are refunded/credited on export, and effectively the whole country becomes a special economic zone, as we see below. Thus, it is not necessary to provide VAT exemptions to attract FDI and the main considerations include a conducive business environment, skills development, connectivity plus local public services and infrastructure.

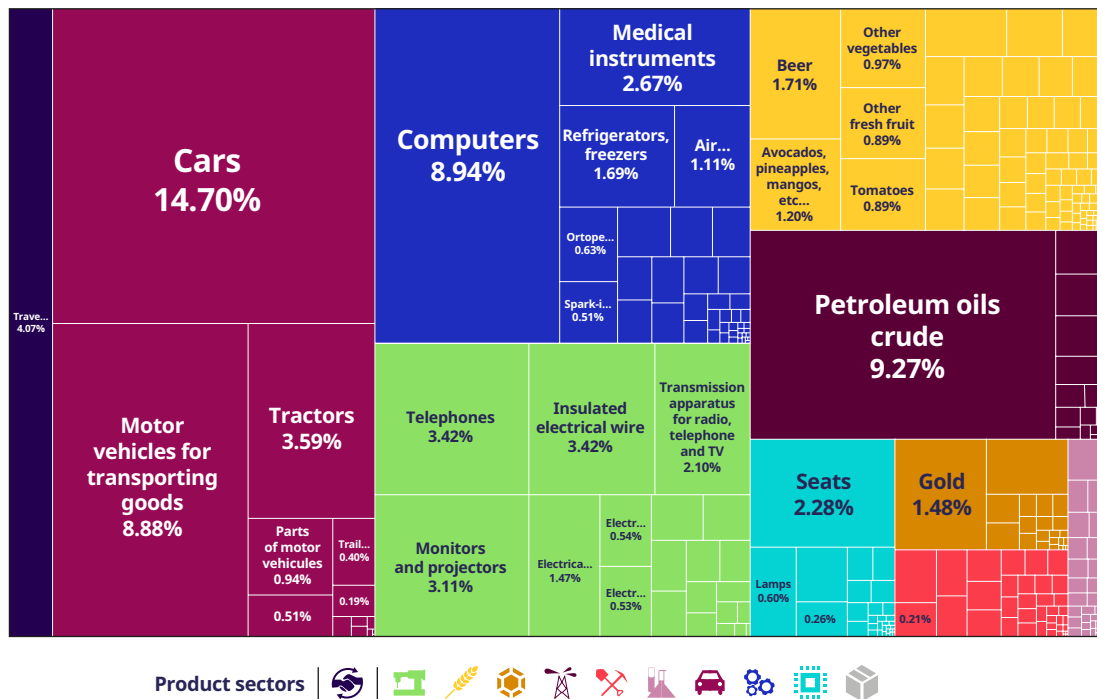
⁴ Christian Gomez, Director of Global Government Affairs, Walmart, at 13th International Economic Forum on Latin America and the Caribbean, May 2021, OECD.

Combined with the counter-cyclical “gentrification” in the metropolitan areas, including a relocation of manufacturing to newer central “hubs” and a new emphasis on services (including the financial sector), there are fewer opportunities for “informal” activities and semi-skilled workers in the Mexico City area. In addition, a conversion in 2014 of the conditional cash transfers, *Oportunidades*, into an employment-linked transfer, *Prospera*, has created the unusual phenomenon on reverse migration of informal and wage labourers from CDMX to Chiapas. This has resulted in the sharp rise of low productivity micro-enterprises in Chiapas. While this could be justified in terms of a safety net during a crisis, it continues to account for negative growth (in the immediate pre-pandemic period) in Chiapas, and the sharply divergent growth paths in different parts of the country—with anaemic growth overall in the last five years of 1.4%—disguising a much healthier performance in the north and the centre (well over 5% per annum).

Mexico’s global market share in manufacturing and electronics has risen in the last decades and export growth in the past five years has been driven by vehicles (see Figure 1). From 2013-2018, exports have grown by 5.7% annually, outpacing Mexico’s average economic growth (Harvard University 2021). As pointed out in Ahmad and Viscarra (2021) much of the FDI in automobiles has been in States like Querétaro, Edomex and Guanajuato in the centre of the country. During 2013-2018, Mexico has added 21 new products or services which signals possible avenues for diversification and economic growth. Given its current exports, knowhow and capabilities, sectors with high potential for new diversification are industrial machinery and apparatuses (optical, medical, among others) (Harvard University 2021).

The absence of convergence and growing spatial inequality is a matter of concern. Given the lack of connectivity and poor services in the Southern States (apart from Quintana Roo and Yucatan, which have benefitted from tourism), there has been insufficiently commensurate private investment in states like Guerrero, Oaxaca and Chiapas. Convergence cannot be

► Figure 1. Trade net flow in 2018



Source: Atlas of Economic Complexity, Harvard University.

ensured by market forces alone with conditional cash transfers in poor areas creating a poverty trap. The “*Oportunidades-Prospera*” conditional cash transfers system was abolished by the administration of President Lopez Obrador, presumably to invest in the provision of public services and connectivity infrastructure in the Southern States.

The issue of productivity gaps and barriers to attract private investment in the lagging states is addressed in the following sections. In addition, reliance on carbon-intensive industries and the traditional internal combustion engine-led automobile industry is likely to be extremely high risk, given the global trends to move to clean energy transportation and low-carbon economy. A significant upgrading of Mexico’s productive structure is likely to be needed in short order even in the advanced states of northern and central Mexico.

2.2. What are the main differences between and within states?

Growth rates are positively correlated with productivity, wages, and profits. Median long-term growth in Mexico from 1980 to 2019 was 2.8% (see Figure 2). However, this disguises very contrasting performance across states. States like Nuevo León, Aguascalientes, Querétaro and Quintana Roo have experienced median growth of over 4%. A second group of states have grown at rates close to the national median. A group of lagging states have grown at rates lower than or equal to 2%, including Oaxaca (2%), Chiapas (1.66%), Guerrero (1.38%) and Campeche (-0.26%).

Using a multinomial regression model with GDP gap as the dependent variable and multiple state level variables using the Mexican Institute for Competitiveness (IMCO) dataset⁵, we observe that education, foreign direct investment, the degree of diversification of the economy, and access to internet are factors positively correlated with growth (Índice de Competitividad Urbana 2020). This result suggests that promoting a conducive business environment, investing in access and quality education and digital connectivity, enabling ICT adoption, developing competitive advantage and upgrading production systems to diversify are key factors to accelerate the catch-up process through which lagging regions with lower income per capita can reach per capita income levels observed in fast-growing states.

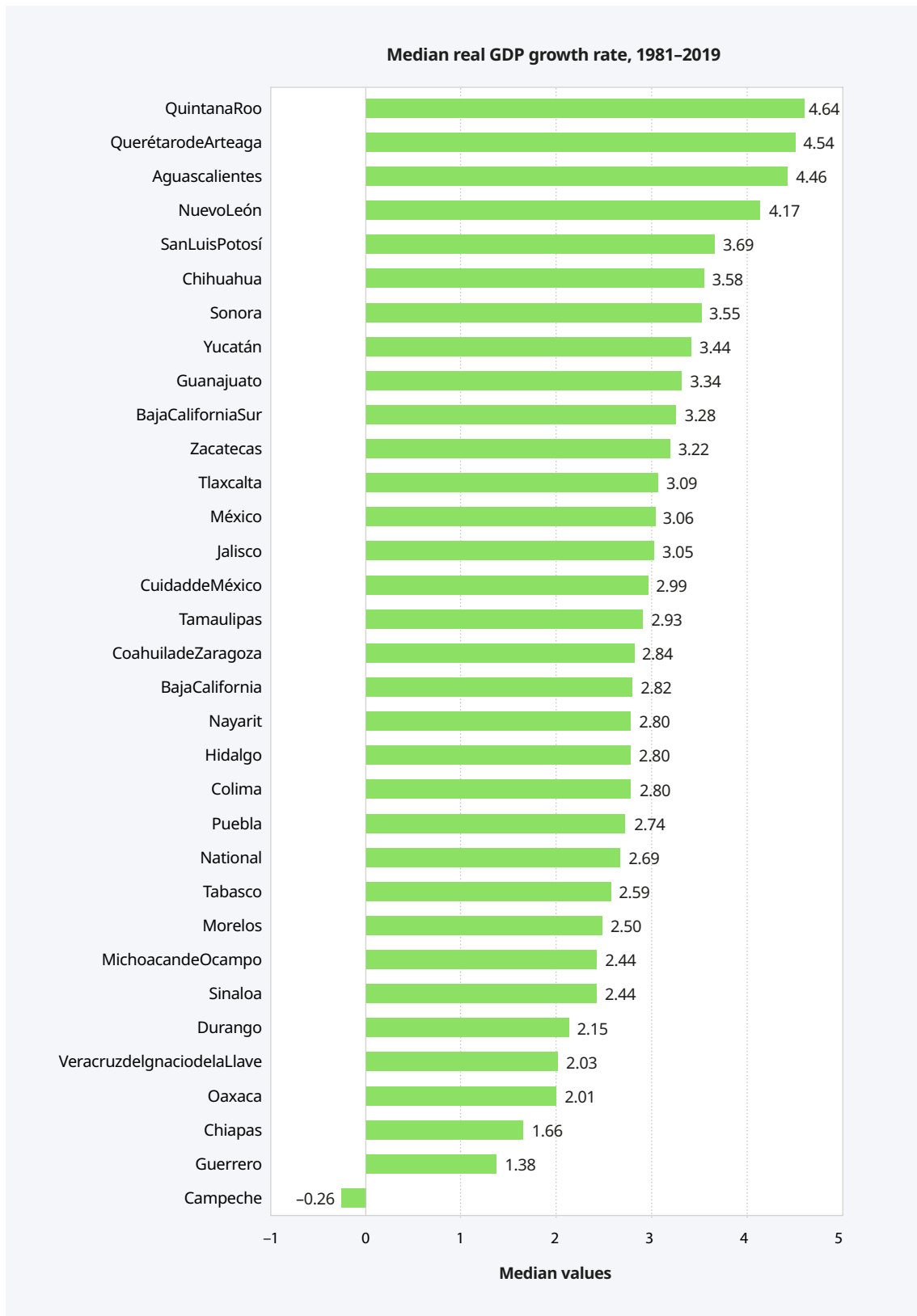
Given the concerned factors, both national and local policies are needed in tandem to influence the business environment, to promote high-quality growth and attract high-productivity enterprises. Examples of the national policy agenda include the use of e-invoicing and ensuring the full coverage of the VAT, as well as price signals from a carbon tax and also public investment, especially in connectivity infrastructure. A complementary state/local agenda is also essential, with ramped up spending on education and skills development, health care, and local infrastructure to attract private investments.

2.2.1 Productivity and wage gaps, the role of enterprises in 2019

Most of the high-productivity enterprises, given the 2019 Economic Census (see Table 1), are located in the centre and north of Mexico (see Figure 3). Productivity is much lower in southern states (such as Guerrero, Oaxaca, and Chiapas) as compared to centre and northern states. There are exceptions, such as Nayarit in the North and Quintana Roo (tourism) and Tabasco (petroleum) in the south. In examining Tabasco’s GDP figures it is important to bear in mind that is a region with oil resources, but with a working-age population with limited

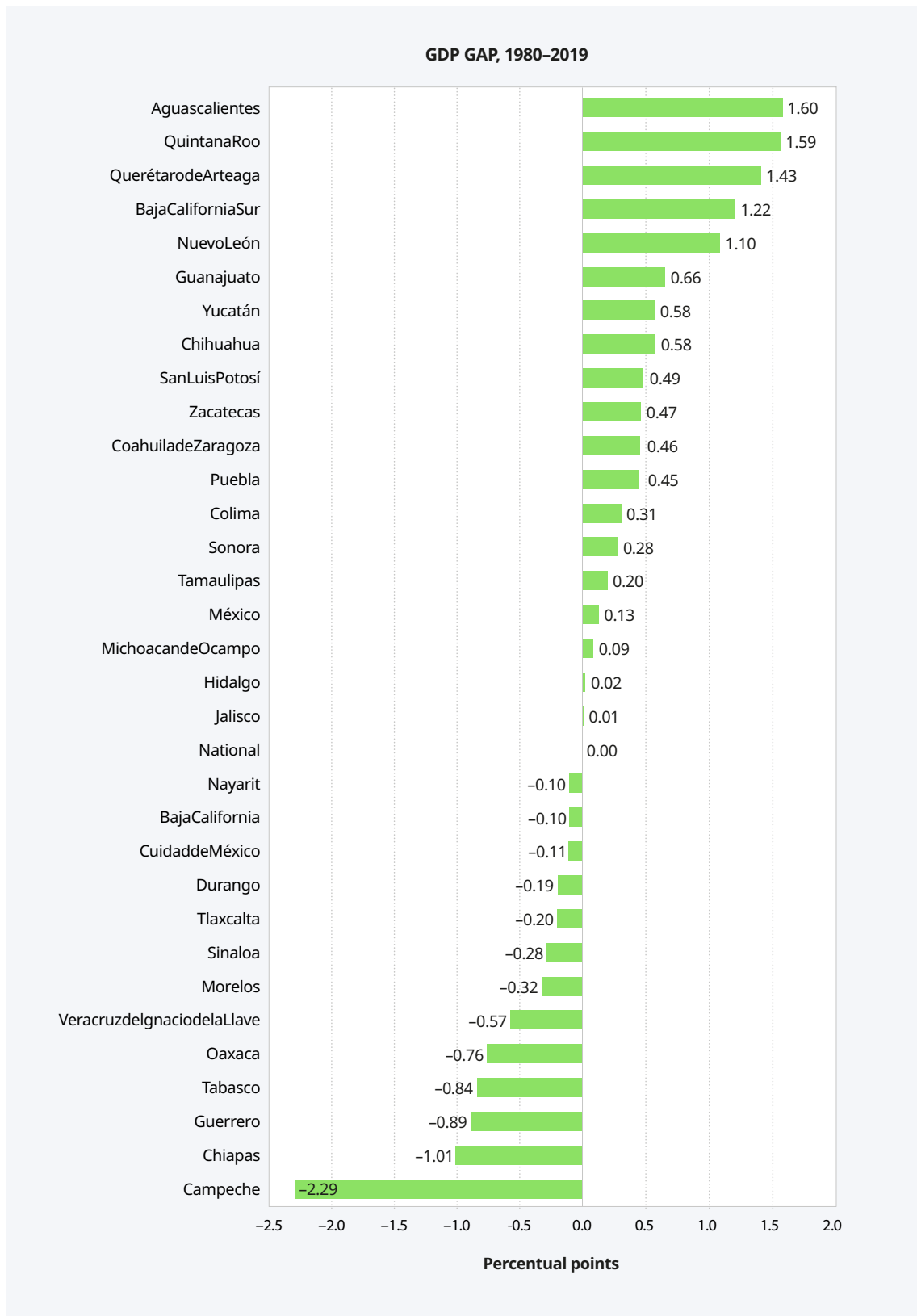
⁵ We ran a multinomial regressions using as the dependent variable the GDP gap with the following controls: perception of security and crime incidence, corruption, number of homicides, kidnappings and stolen vehicles, poverty, wage inequality, years of education, number of high-quality schools, infant mortality, number of hospital beds, number of doctors, access to mobile phone, internet, ease to open a company, regulatory improvements, foreign direct investment, economic complexity, informality, economic diversification, total factor productivity, number of scientific institutions, number of patents and researchers.

► Figure 2. Median real GDP and GDP gap



Source: INEGI.

► (Figure 2. cont.)



Source: INEGI.

employment prospects, or much like the other southern states in terms of per capita income and prospects. By contrast, Mexico City⁶ has by far the highest gross value added due to the presence of financial and corporate services.

High productivity in the central states, such as Aguascalientes and Querétaro, has been associated with the presence of the automobile and trucks manufacturing industry. In Querétaro and Nuevo León, in addition to trucks and tractors, automotive and motor vehicle manufacturing, there is significant investment in electronic equipment and parts, synthetic resins, rubbers, and chemical fibres. Enterprises in these sectors are mainly large scale, employ skilled workers, have higher productivity and pay higher remunerations than other economic sectors.

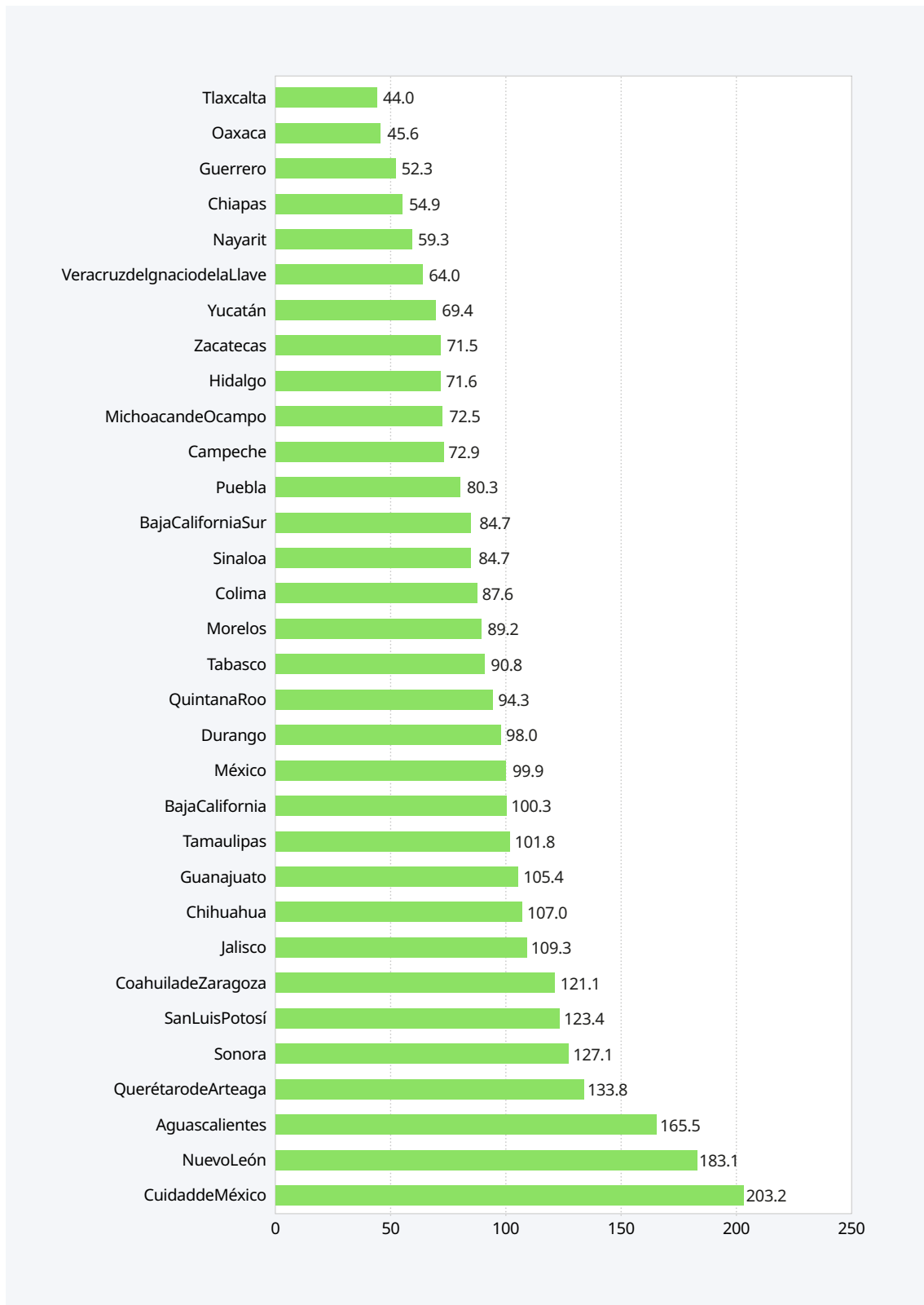
In contrast, most of the low-productivity, lower-skill sectors (see Figure 4), are mainly in retail trade and non-financial private services, and often operate as microenterprises. Incomes are often considerably lower than wages previously earned as wage employees in the formal economy. Most establishments are located in the southern states like Chiapas. Around 42% of total Gross Value Added in Chiapas comes from retail trade. Although both Mexico City and Chiapas rely on services, there are significant differences (see Figure 6). While 43.7% of total Gross Value Added in Mexico City also comes from services, these are high-skilled activities in financial and corporate services.

Within-state productivity, employment and income differentials are significant. In Querétaro or State of Mexico, only a few municipalities clustered around State Capitals and metropolitan areas account for much of the productive investments (see Figures 5-7). The intraregional inequality is also observed in Mexico City, Nuevo León and Querétaro. For example, high productivity in Querétaro is mainly explained by Colón and El Marqués municipalities. The rest of municipalities (around 13 of 18) exhibit labour productivity per working hour similar or lower than that of Chiapas. This pattern is also observed in the lagging states. In Chiapas, for instance, the municipalities of Ostucán, Tapachula and Tuxla Guitierrez, exhibit labour productivity per working hour similar to that of the state of Morelos, or above the national average. Similarly, in Oaxaca, the municipalities of San Lorenzo and Cacaotepec exhibit labour productivity per working hour close to the average observe in Quintana Roo.

To assess location decisions and productivity outcomes by enterprises, we use a multinomial regression model to determine possible correlations between the logarithm of productivity by municipality and business environment variables using the Urban Competitiveness Index Dataset (Índice de Competitividad Urbana 2020). Loayza and Young (2017) suggest that innovation, capital accumulation, physical and institutional infrastructure variables are determinants of productivity. The following variables are used: to measure innovation—the production of high-growth sectors by municipality; for human capital—the percentage of population with higher education; for physical infrastructure—the proportion of investment in mobility, access to public services, cost of electricity, urban density, and access to internet; and for institutional infrastructure—the average monthly salary, informality, number of economic activities in municipality, and foreign direct investment.

⁶ The increasing development of the financial sector in CDMX highlights the high-end services that also characterize London and New York, and account for an increasing per capita income in the capital city. As seen in Ahmad and Viscarra (2021), rising incomes place CDMX in a different category from Group 1 states in the last decade.

► **Figure 3. Productivity: Gross Value Added in thousands of pesos per working hour, Mexico, Economic Census 2019**



Source: Economic Census 2019. Table does not include public establishments.

► (Figure 3. cont.)

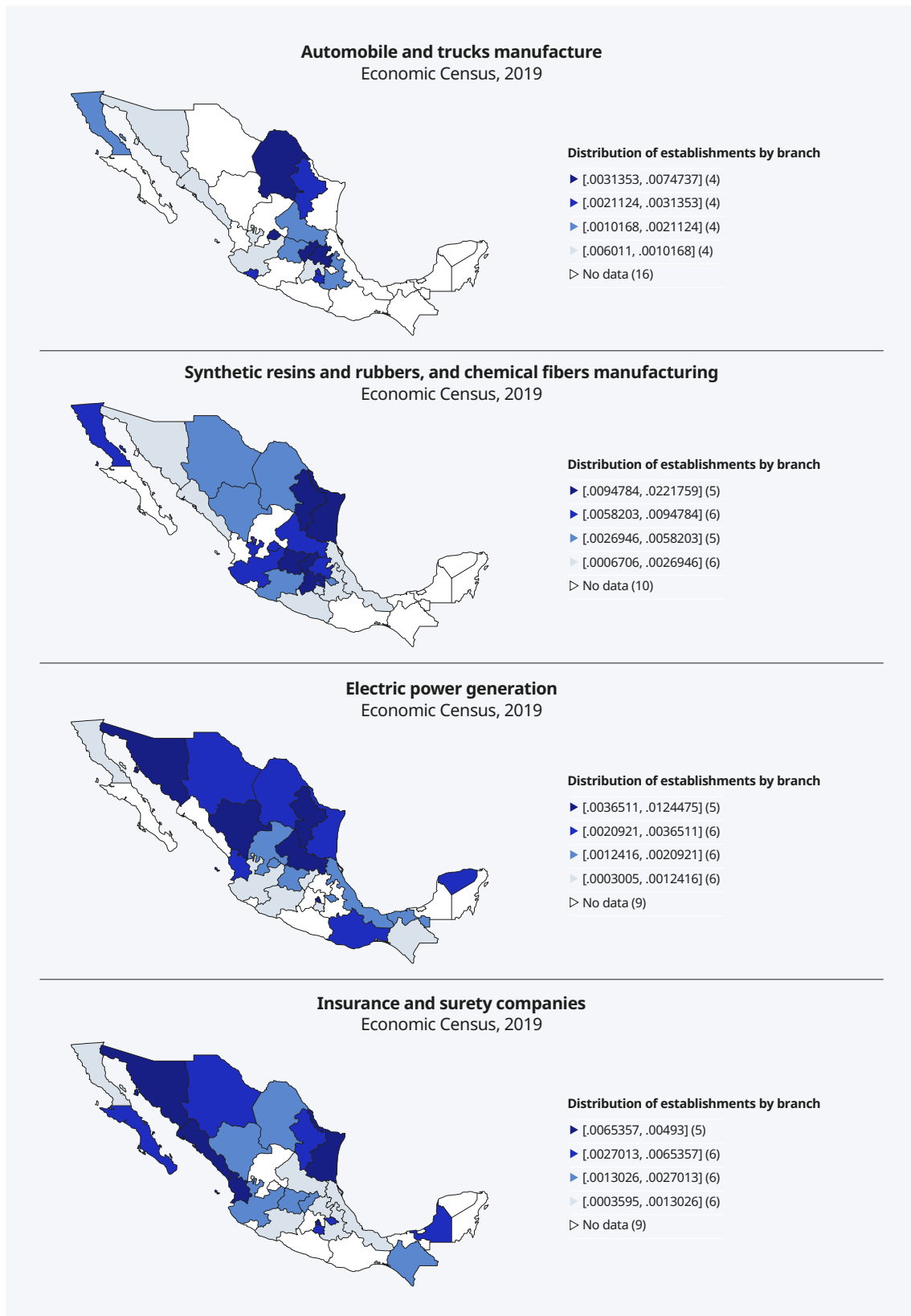


Source: Economic Census 2019. Table does not include public establishments.

► **Table 1. Most productive industries by Sector – Mexico Economic Census 2019**

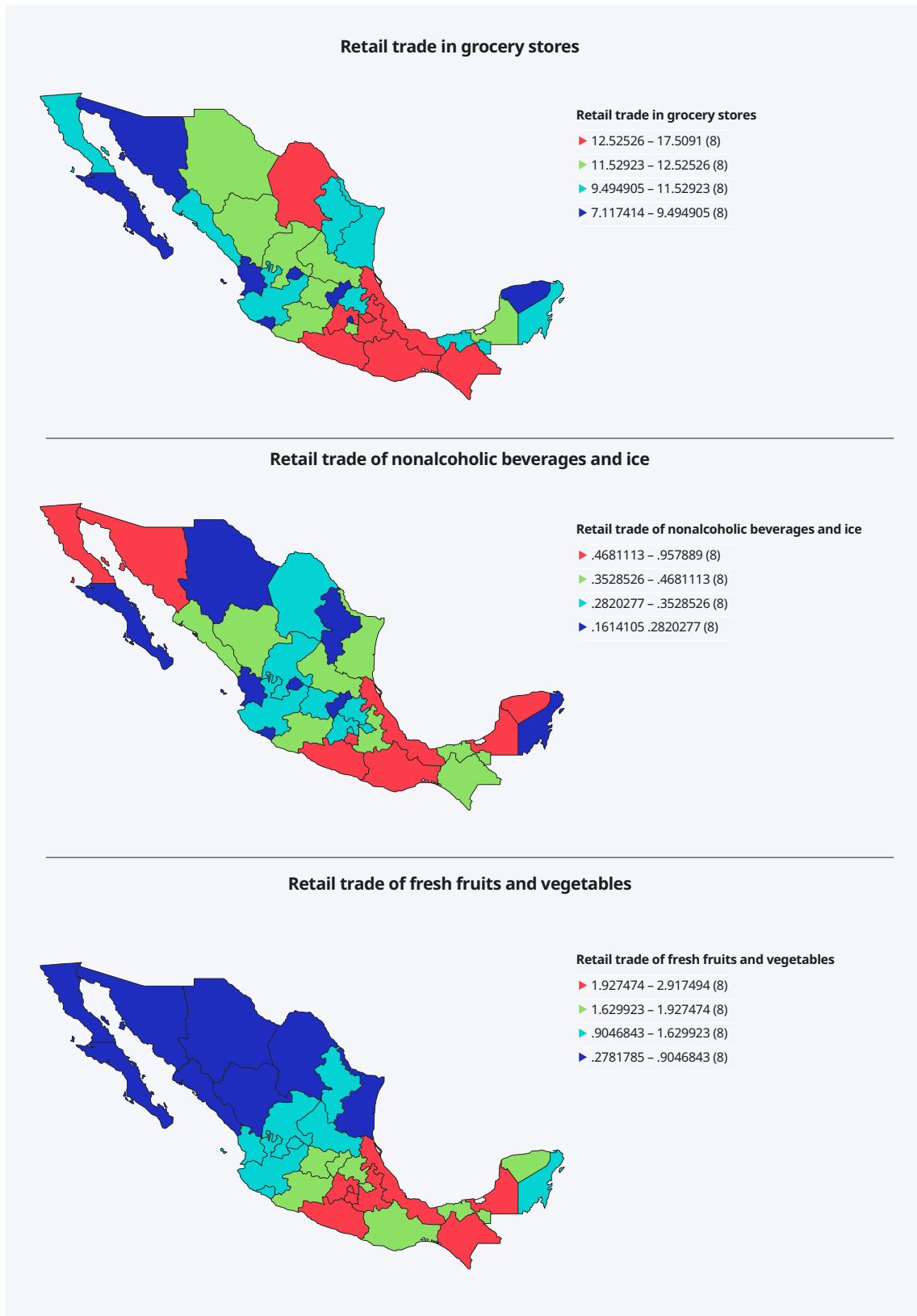
Economic branches	Gross value added in thousands of pesos per working hour
Automobiles and trucks manufacturing	1778.6
Nonferrous metal industry, except aluminium	1733.4
Natural gas supply through mains to final consumers	1493.8
Pipeline transportation of natural gas	1445.4
Financial institutions for economic development	1425.5
Insurance and surety enterprises	1418.5
Head offices	1371.8
Electric power generation, transmission, distribution and commercialization	1345.5
Synthetic resins and rubbers, and chemical fibres manufacturing	961.8
Metallic ore mining	872.8

► (Table 1. cont.)



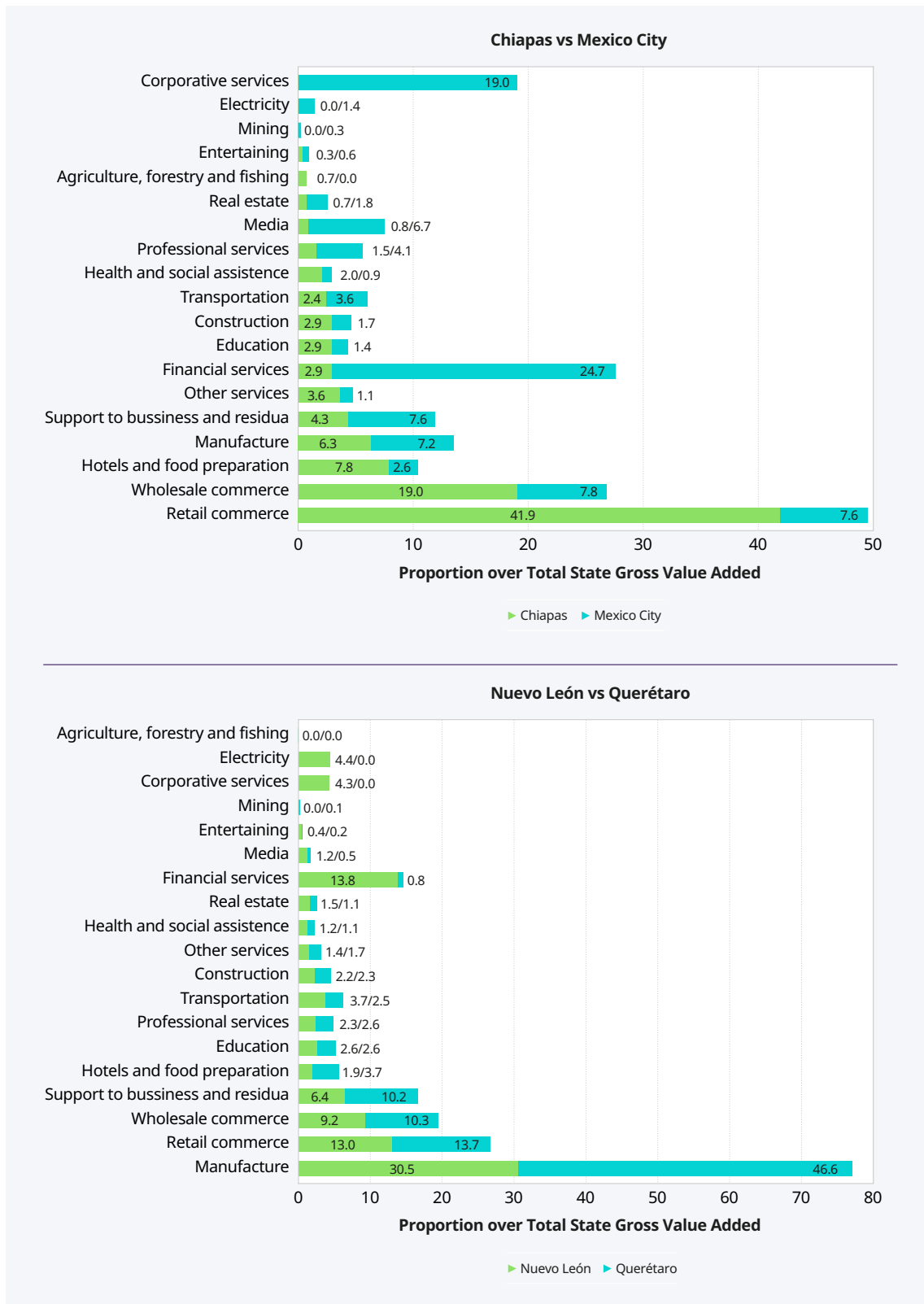
Source: Economic Census 2019. Table does not include public establishments.

► Figure 4. Distribution of low-productivity retail sector, Mexico, Economic Census 2019



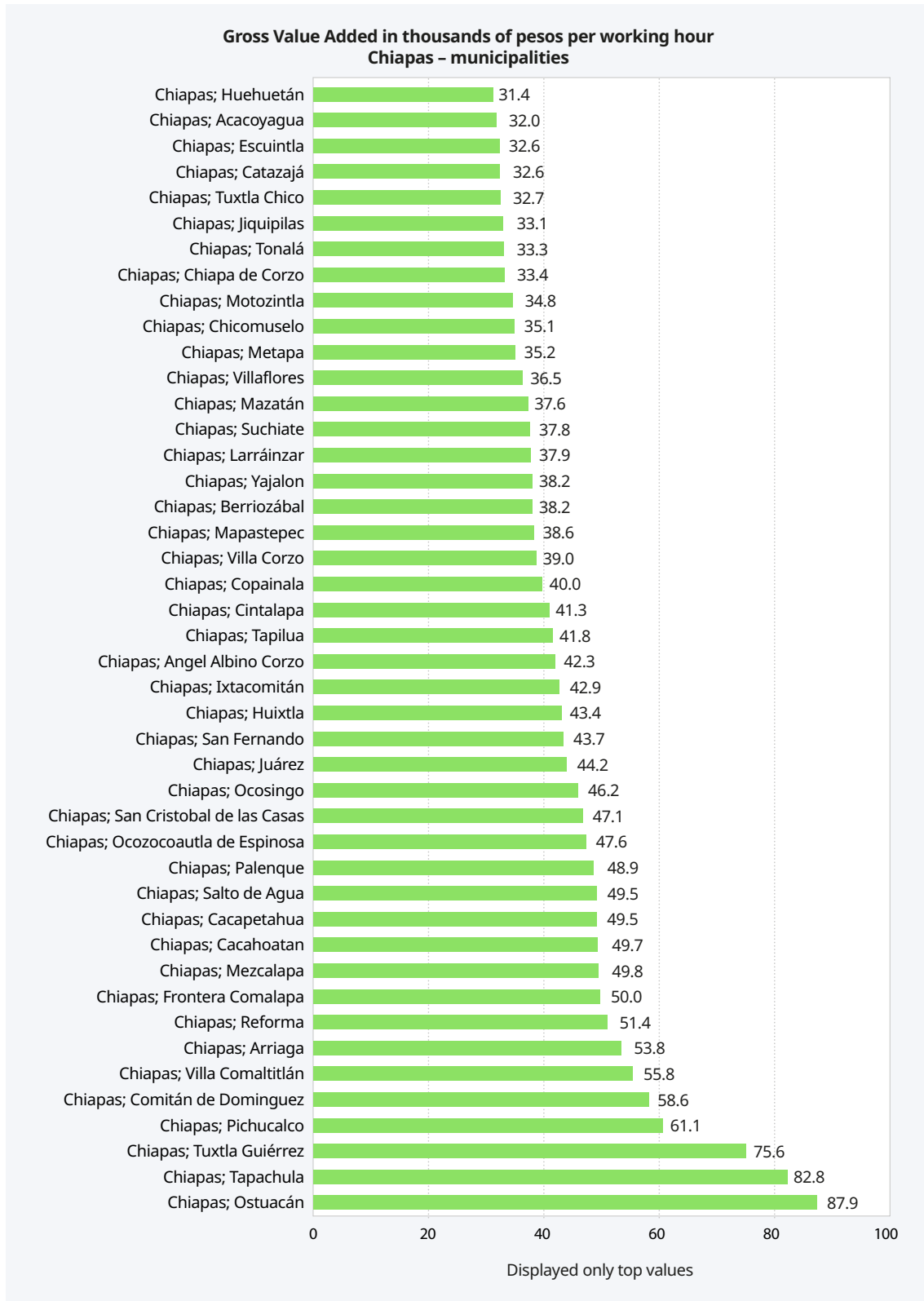
Source: Economic Census 2019.

► **Figure 5. Gross value added in thousands of pesos by sector and state, Mexico Economic Census 2019**



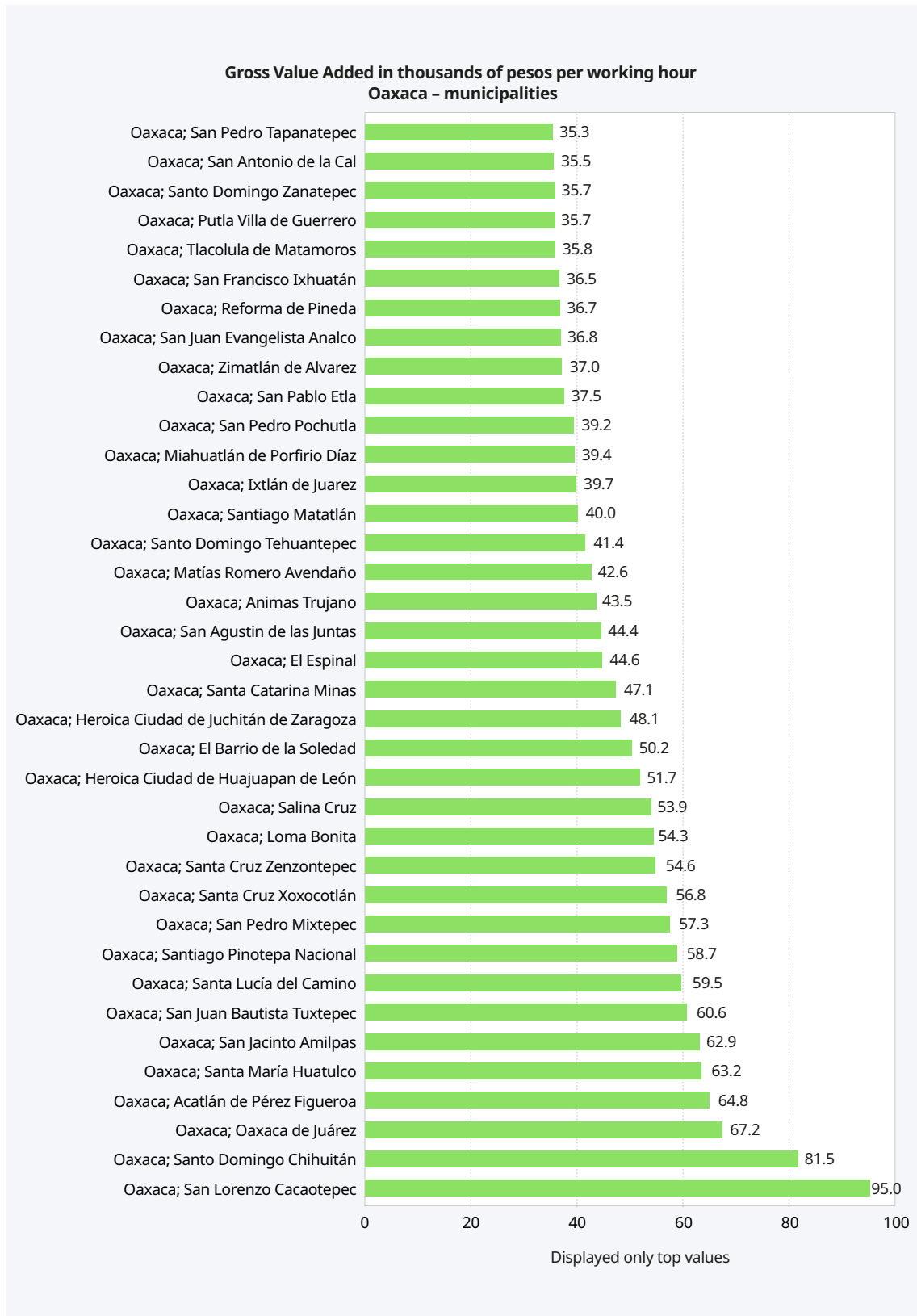
Source: Economic Census 2019.

► **Figure 6. Gross Value Added in thousands of pesos per working hour at the municipality level, Chiapas and Oaxaca**



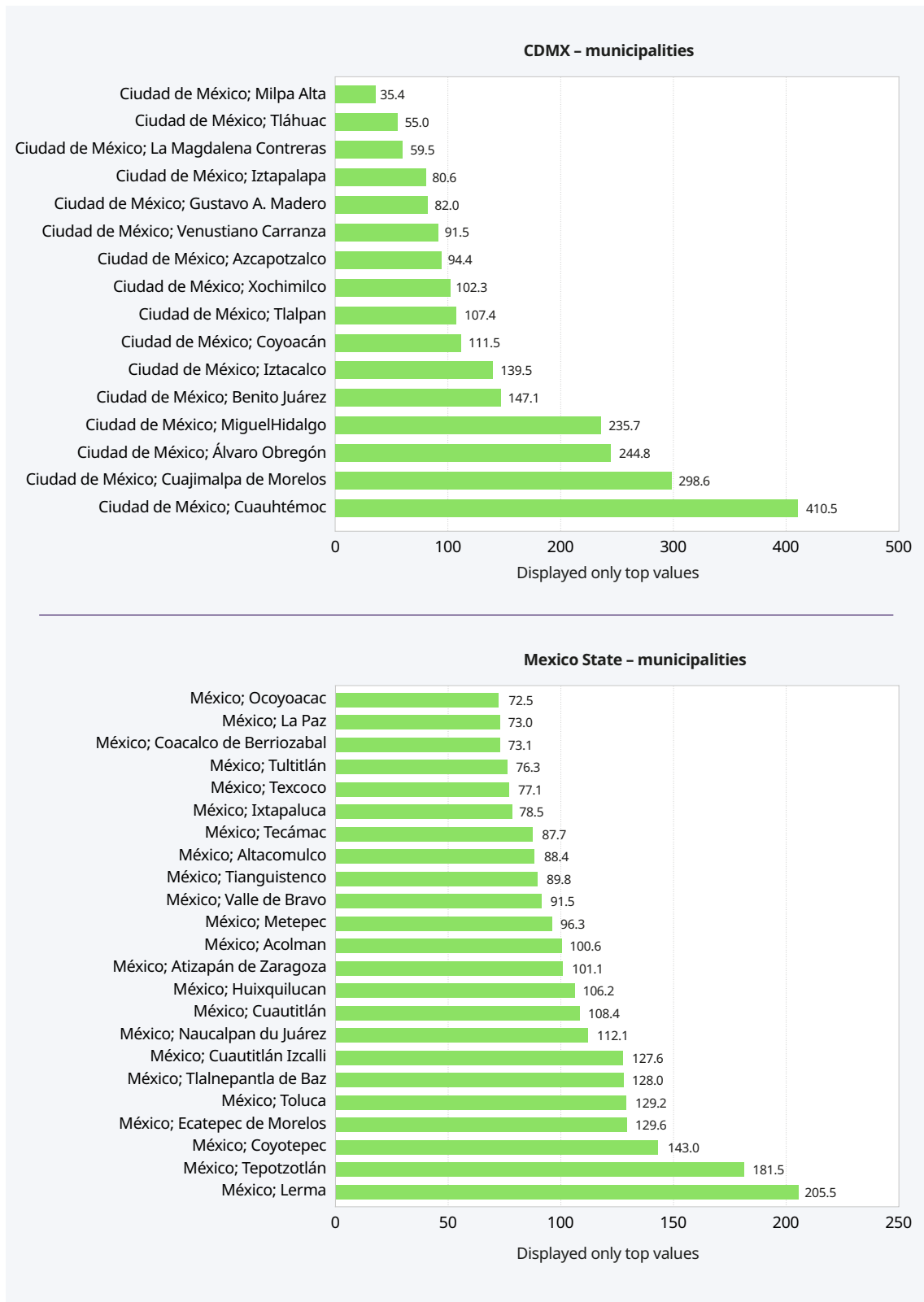
Source: INEGI.

► (Figure 6. cont.)



Source: INEGI.

► **Figure 7. Gross Value Added in thousands of pesos per working hour at the municipality level, Mexico City and State of Mexico**



Source: Economic Census 2019.

The results show that **access to basic services, access to internet, foreign direct investment, and informality** are important factors that explain the productivity gap between municipalities. Therefore, high-productivity enterprises are more likely to be located in municipalities with lower informality, good access to public services and a high coverage of internet services.

2.2.2 Do states converge over time?

The standard prescription for growth and convergence, building on the dual economy model, is to free up the labour market and provide conditional cash transfers for the poorest. Such an approach that has been followed in Mexico since the 1990s, with the implementation of the conditional cash transfer (CCT) programme *Progresar/Oportunidades*. Pro-poor and inclusive growth and regional convergence have not happened, and the CCT programme, while providing a safety net has also become a poverty trap, as economic theory would suggest.⁷ In this section, we examine some of reasons preventing convergence in Mexico.

For the convergence analysis, we used the logarithm of the annual real GDP per capita time series from 1980 to 2019. The time series was filtered using the Hodrick-Prescott method to get the trend component. The logarithm of the real GDP per capita trend was used to run the log-t regressions using Phillips and Sul (2017) methodology.⁸

The results suggest that **the Mexican states do not converge to a unique steady state**, but to three different “clubs” over the whole period (see Figure 8). In the first club, we find states that exhibit high median growth rates such as Mexico City⁹, Querétaro, Nuevo León, and Quintana Roo. The second club converges to an equilibrium lower than the median transition coefficient. A third club, which comprises states like Guerrero, Oaxaca, Tlaxcala, converges to a half the national average. The only divergent state is Chiapas, which remains at a real income per capita level even lower than that of the third club.¹⁰

Club 1 exhibits higher productivity, wages and salaries, higher business investment, and higher average size of enterprises, compared to clubs 2 and 3 (see Table 2). By contrast, Club 3 has the highest rate of informality and the lowest share of the population (25+ years of age) with higher education (see Table 3). Moreover, the number of enterprises per 1000 inhabitants is much higher in club 3, most of them microenterprises working on (retail) trade and non-financial private services. The *high low-productivity microenterprise density* in lagging states might be associated with a number of factors including poor labour market prospects because of skills mismatches, and economic stagnation or anaemic economic growth and lack of formal employment generation (Poschke, 2010 & 2013). These two examples illustrate the so-called *push factors*, which lead individuals to set up a micro-business to make a living. Business ventures that materialize as a survival occupational choice because of a lack of labour market opportunities can become a drag on growth and economic development (Acs, 2006).

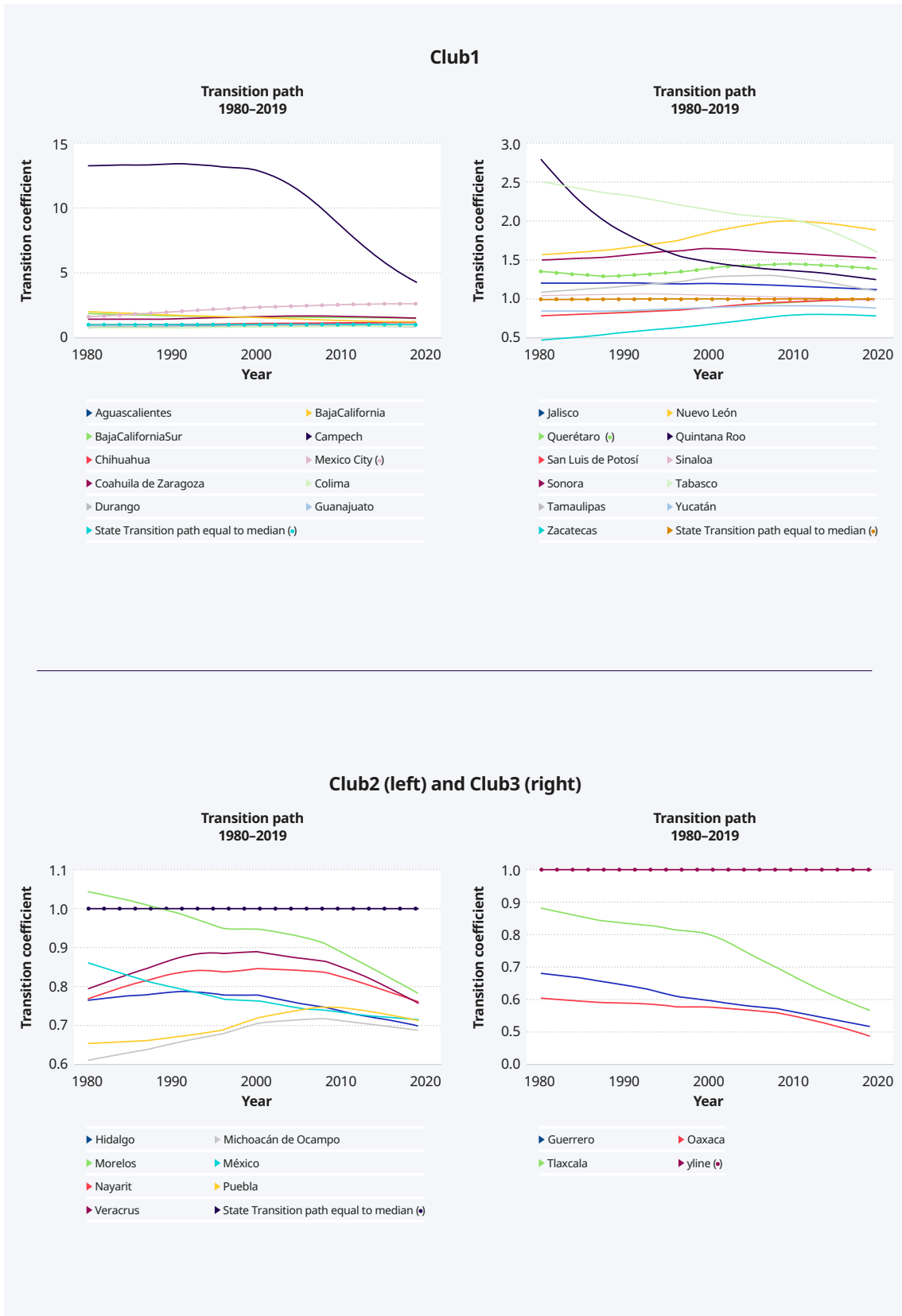
7 See e.g., P. Dasgupta (1995) and J. Sachs (2006).

8 This method consists of a simple time-series regression test for convergence – log-t regression test – for the null hypothesis of convergence. For the t-regression test, we calculated the logarithm of the dependent variable and applied a Hodrick-Prescott filter to extract the trend and cyclical components. The log-t regression was run using the trend component. The estimate of the log-t regression proposed by Phillips and Sul (2007) will let us reject the null or accept the hypothesis of convergence amongst all regions depending on the t-value. However, the rejection of the null hypothesis of convergence for the full group does not mean that each region follows its own independent path, as sub-groups may converge.

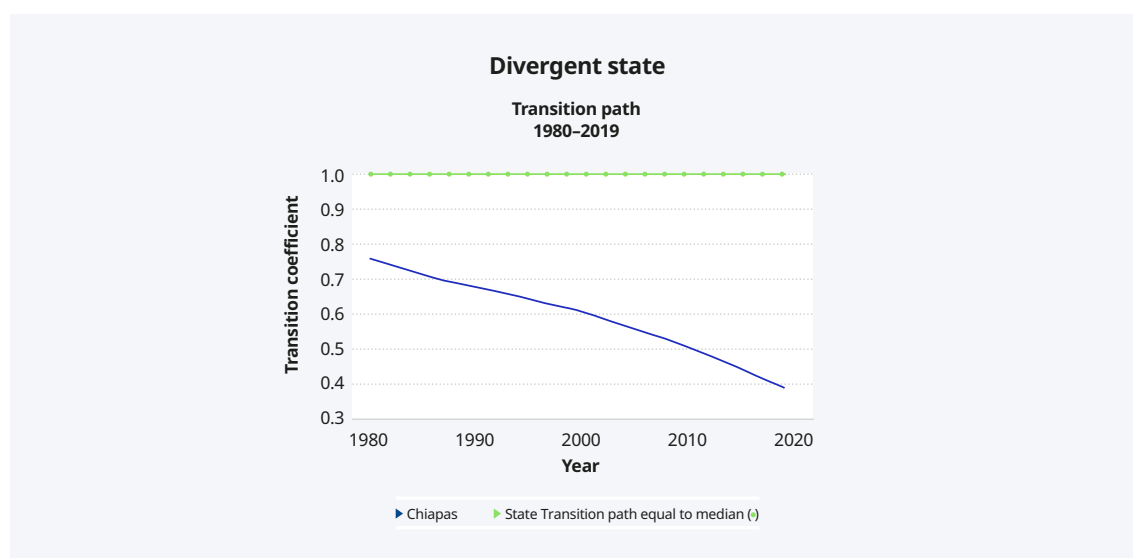
9 Ahmad and Viscarra (2021) used a break in the data series around the 2013 reforms. Mexico City emerges in a separate group, with incomes increasing above the average of group 1.

10 The Phillips and Sul approach allows the transition path of each state to be observed over time. The transition paths show periods of divergence/convergence during the period of study. For analytical purposes, for each group we calculated the transition coefficient dividing the GDP trend for each state by the national median. For example, if the trend of the transition coefficient of a group is converging to one, it means that this state is converging to the national median.

► Figure 8. Three Clubs and Chiapas



► (Figure 8. cont.)



Source: ILO estimates with data from INEGI.

The most productive sectors are mainly located in clubs 1 and 2 which are composed by states with higher gross production and value added compared to club 3. The business conditions are better in club 1. Enterprises in club 1 exhibit a better access to credit and lower rates of informality. Moreover, club 1 exhibits the highest energy intensity (amount of energy used to produce a given level of output), which reflects a high industrial output as a share of GDP.

► Table 2. State-level Statistics by Club (C1, C2 C3)

Clubs	Gross Value Added in thousands of pesos per working hour	Gross Production in thousands of pesos per working hour	Average company size	Economic units per 1000 inhabitants	Average wages and salaries - thousands of pesos per working hour	Average Investment - thousands of pesos per working hour
C1	114.3	238.8	6.5	0.08	25.86	10.19
C2	78.7	171.7	3.2	0.13	15.71	14.32
C3	46.8	80.1	2.3	0.26	9.09	2.16
Chiapas	54.9	93.8	2.6	0.14	10.26	1.74

► Table 3. Other State-level variables by Club

Clubs	Crime incidence for every 100 thousand of people	Homicides (for every 100 thousand of people)	% of population 25+ years of age with higher education	GDP in high-growth sectors (millions of pesos of 2013)	Energy intensity (MW per million of GDP)	Informality (%)
C1	16.5	18.8	23.9	44.3	14.1	49.6
C2	10.2	15.0	18.9	43.8	12.7	67.8
C3	7.9	29.7	16.1	40.6	12.9	77.9
Chiapas	4.17	8.8	12.8	37.3	10.4	79.3

To determine the factors that affect club formation, we ran an order logit model using “club_i” as a dependent variable, which orders the clubs from lowest to highest GDP per capita. We use several state-level independent variables to determine how violence and crime, inclusion, politics, access to basic services, corruption, openness and diversification, informality, and education, affect the probability of being member of a club.

The ordered probit analysis suggests that high levels of homicides, informality, and wage inequality are associated with a higher probability of being part of Club 3. The key variables associated with membership to the richest Club 1 include higher access to internet and mobile telecommunication infrastructure, a business-friendly regulatory framework, the presence of quality academic institutions, and access to hospitals and effective medical care.



▶ 3

**Firm level
assessment
of productivity
and sustainable
employment
generation**

► 3. Firm level assessment of productivity and sustainable employment generation

3.1 Employment and gross value-added by type of enterprise (size and sector)

Productivity and employment vary by sector and enterprise size (Table 4). According to the 2019 Economic Census, the most productive economic sectors are corporate services; generation, transmission, distribution and commercialization of electricity, water and natural gas supply; financial services; and mining (Figure 9). These sectors tend to be made up of medium and large enterprises.¹¹ Worth noting, though, mining and oil and gas are ranked at the bottom of the direct employment generation. In contrast, agriculture, animal husbandry and exploitation, forestry, fishing and hunting (only fishing and aquaculture); other services except government activities; temporary accommodation and food and beverage preparation services; and health and social assistance services exhibit the lowest productivity. These sectors tend to have a high density of microenterprises, in saturated markets, which barely make any gross value added.¹² Paradoxically, microenterprises create more than one third of the employment opportunities.

Microenterprises, which account for 95% of total enterprises, employed 41.8% of total personnel in 2008 and 37.2% in 2018 while large enterprises account for only 0.2% of total enterprises and employed 27% of total personnel in 2008 and 32.1% in 2018.¹³

While the percentage of employed personnel in manufacturing and trade has not changed during 2014-2019, the value-added proportion over total value-added has increased, signalling an improvement in productivity. These results could be associated with the emergence of new high-skilled manufacturing industries, and large enterprises in the wholesale trade sector. Further, the better integration of smaller service-oriented enterprises into the national and cross-border value chains, following the 2014 integration of the small taxpayers (REPECOS) with the VAT chain, could have also played a part.

However, there are important differences between manufacturing and trade sectors that explain their average wages and productivity gaps. Large and medium enterprises employ 72.4% of total personnel in the manufacturing sector, whereas they only employ 28.5% of total personnel in the trade sector.¹⁴ In trade, 59.5% of workers are employed in microenterprises. In fact, 12% of total enterprises are working in retail trade in grocery stores, which exhibit

11 Our assessment shows the prevalence of medium and large companies in those sectors. For financial services, mainly medium-sized companies, without taking into account subsector 523 (Stock market, currency exchange and financial investment activities), which is composed of brokerage houses, foreign exchange houses, investment advice, stock exchange, etc. In the case of generation, transmission, distribution and commercialization of electricity, the sector is dominated by large companies (excluding water collection, treatment and supply (subsector 2213) which is part of the sector 22 "Electric power generation, transmission, distribution and commercialization, water and natural gas supply through pipelines to final consumers"). In the case of mining (composed of subsectors 211, 212 and 213) the prevalence of medium and large companies is much higher in services related to mining (subsector 213) and oil and gas extraction (subsector 211). In subsector 212, "Metallic and non-metallic ore mining, except oil and gas", there is greater variability in the size of enterprises.

12 In 2019, private non-financial services (37.5%), trade (27.6%) and manufacturing (23.9%) sectors employed 90% of total personnel and generated 74% of total gross value added. Mining (9.5%) and financial services and insurance (8.6%) exhibit large value-added proportions, taking into account that all together employ only 3.1% of total personnel.

13 According to the 2019 Economic Census, 95% of total economic units are micro (0-10 employees), 4% are small, 0.9% are medium and only 0.2% are large.

14 According to the Economic Census, large and medium enterprises generate 94.1% of total gross production of the manufacturing sector, whereas they generate only 46.3% in the trade sector.

► **Table 4. Employed personnel and value added by sector (Economic Census 2019)**

Economic activity	Employed personnel				Value Added			
	CE2014		CE2019		CE2014		CE2019	
	%	Position	%	Position	%	Position	%	Position
Manufacture	23.5	3	23.9	3	29.0	1	32.0	1
Trade	29.6	2	27.6	2	15.5	4	21.4	2
Private non-financial services	35.8	1	37.5	1	19.6	2	20.8	3
Mining, oil and gas	0.8	9	0.7	9	16.8	3	9.5	4
Financial services and insurance	2.2	6	2.4	6	9.5	5	8.6	5
Transportation, mails and storage	3.6	4	3.7	4	3.2	7	3.6	6
Electricity, water and gas	1.0	7	0.8	8	4.3	6	2.2	7
Construction	2.6	5	2.5	5	1.8	8	1.9	8
Fishing and aquaculture	0.9	8	0.9	7	0.2	9	0.2	9

Source: INEGI

low productivity and efficiency rates, and pay one of the lowest levels of remuneration across sectors.¹⁵

The distribution of high-productivity enterprises across Mexico has important implications in the ability of states and municipalities to generate growth and sustainable employment. The North and Northeast regions have a concentration of medium (51-250 workers) and large enterprises (>250 workers). **The spatial analysis shows that microenterprises are more likely to be located in low-growth municipalities and states.**¹⁶

Sustainable growth in Mexico depends on the ability to diversify its productive structure toward high-skilled manufacturing and less skilled but productive labour-intensive activities. Capital intensive, high-productivity sectors generating significant gross value-added such as oil, mining and financial services, however, do not tend to contribute as much to employment generation. Promoting fair competition and entrepreneurship, encouraging and easing formal business formation and registration, removing barriers to private investment, and investing in skills development, physical and digital infrastructure, and provision of quality basic services, would enable diversification, reallocation of labour towards higher-productivity economic activities and the creation of sustainable employment hubs.

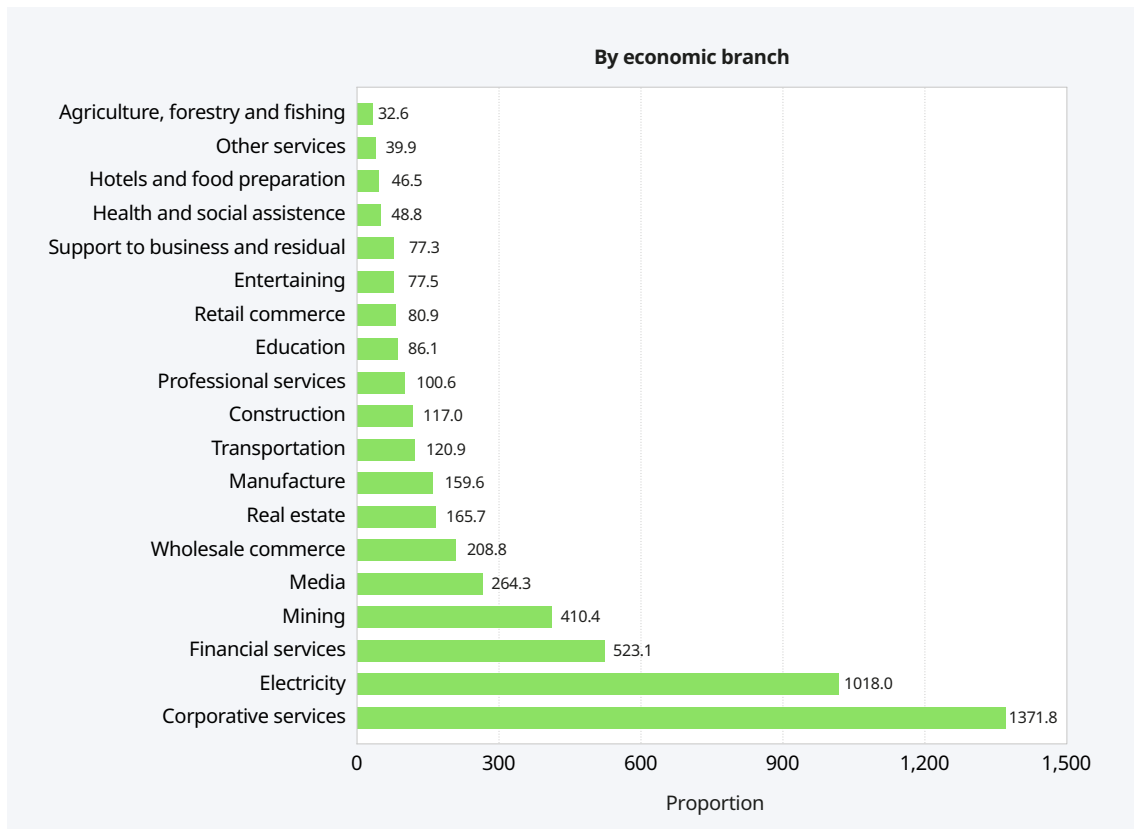
15 We assess output-oriented technical inefficiency as a deviation from the frontier using the stochastic frontier model:

$$\begin{aligned}
 y_i &= \alpha + X_i' \beta + \varepsilon_i, & i = 1, \dots, N \\
 \varepsilon_i &= v_i - v_i \\
 v_i &\sim N(0, \sigma_v^2) \\
 v_i &\sim F
 \end{aligned}$$

y_i is the logarithm of output using value added per observation; X_i is a vector of inputs and β is the vector of technology parameters. The error term is the sum or difference of two independent and identically distributed elements across observations: a normally distributed disturbance and one-sided disturbance representing inefficiency. The post-estimation used in this analysis allowed us to estimate efficiency.

16 For example, the proportion of economic units working in retail trade and grocery stores in Chiapas (17.5%) or Oaxaca (13.6%) is almost double the proportion in Mexico City or Querétaro (approximately 8%).

► **Figure 9. Gross value added in thousands of pesos per working hour by sector, Economic Census 2019**



Source: Economic Census 2019. Table does not include public inst.

3.2 Productivity, wage gap, complexity and economic constraints by type of enterprises (focus on manufacturing and trade)

According to the 2019 Economic Census, the most productive economic units are medium and large enterprises, with the highest average wages and employing more skilled personnel.¹⁷ Similar results were found by an OECD cross-country study using micro firm-level data for 16 countries showing that wage and productivity dispersion is linked to increasing differences between high and low productivity enterprises (Berlingieri, Blanchenay and Chiara 2017).

To determine the correlation between productivity and wages in Mexico we ran a multinomial regression model at the municipal level, using the 2019 Economic Census. The results show that average wages and productivity are positively and strongly correlated, even after controlling by workers' years of education (see Figure 10). **An increase of 1% in productivity has a positive effect of 0.9% increase in average wages and salaries.**¹⁸

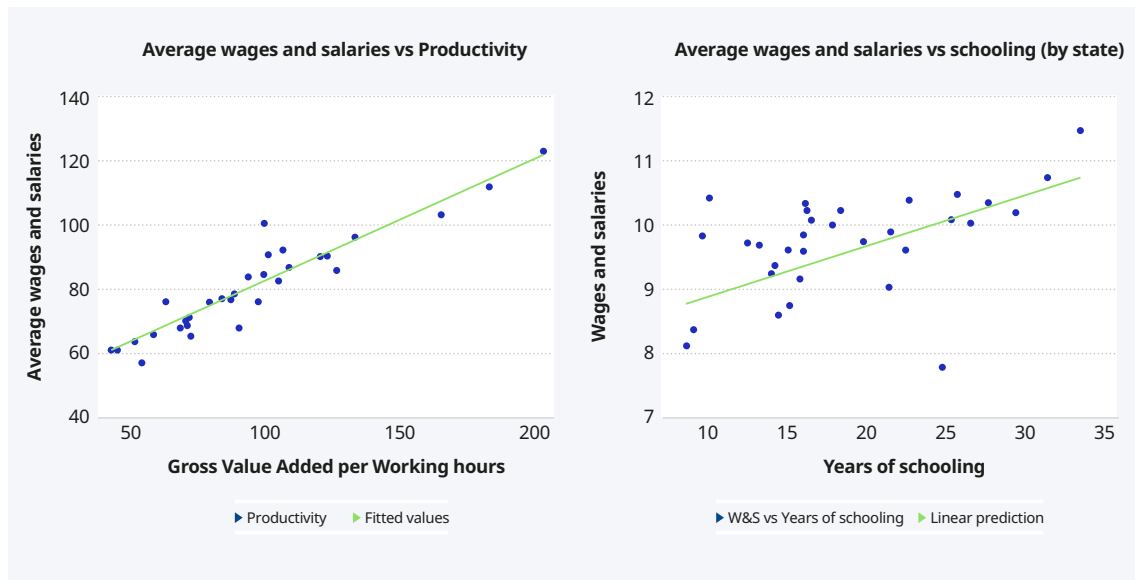
17 The descriptive analysis shows that the economic sectors that pay the highest wages are banking, financial and insurance activities, telecommunications, basic chemical products manufacturing, scheduled air transportation, and railroad equipment. These are also among the most productive sectors.

18 These results are supported by our calculations using the 2019 Labor Force Survey, which shows that more than 70% of the employees working in microenterprises have not graduated from college, compared to 58% in medium and large enterprises (INEGI 2019).

The findings indicate that most of the variance in wages and productivity is mainly driven by within sector-phenomena (for instance, variation in enterprise size) rather than by cross-sectoral differences. Microenterprises exhibit much lower wages and productivity than medium or large enterprises, regardless of the sector in which they operate. For example, in manufacturing, large economic units pay on average 3.2 times more than micro economic units (see Table 5). Similarly, in trade, the ratio is 2:1. Moreover, the ratio between large and medium-sized enterprises in manufacturing and services is around 1:2. In trade, the difference between large and micro enterprises tends to be smaller (see Tables 5-A and 5-B in the Annex).

The spatial analysis confirms that high-growth municipalities have high-productivity medium and large enterprises whereas low-growth municipalities exhibit a large proportion of microenterprises working in (retail) trade and private non-financial services.¹⁹ For example, Chiapas and Oaxaca have a larger proportion of microenterprises than other states and exhibit the lowest productivity and average wages.

► Figure 10. Wages and salaries, productivity, and years of schooling



Source: INEGI. Economic Census 2019 and Population Census 2020.

Variables	(1) Model: Log.Wages and salaries per worker
Log.productivity	0.922*** (0.00055)
Schooling	0.0315*** (0.0195)
Constant	-0.4906*** (0.0020)
Observations	317,692
R-squared	0.8967

Source: INEGI

Note: Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

¹⁹ Similar results were found by an OECD cross-country study using micro-aggregated firm-level data for 16 countries. The findings indicate that most of the growing variance in wages and productivity rates is driven by within sectors differences rather than by cross-sectoral differences.

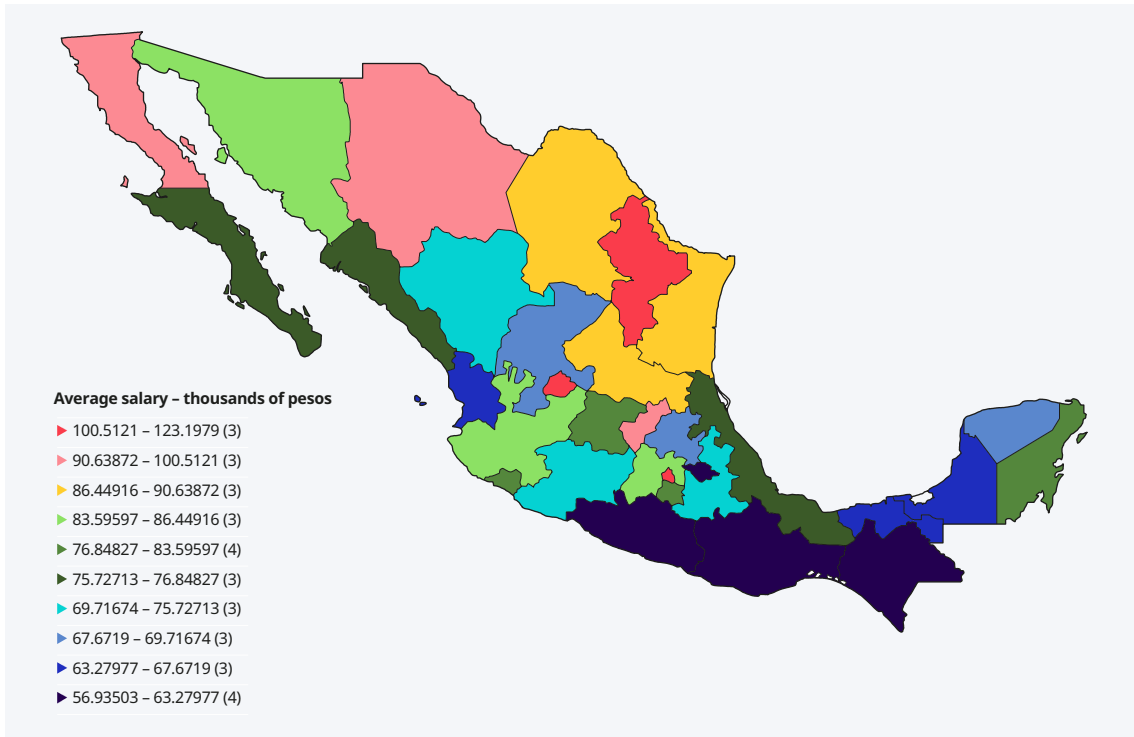
► Table 5. Summary statistics by enterprise size, Manufacturing sector, 2019 Economic Census

Size	Employed personnel by economic unit (average number of workers)	Remuneration per worker (thousands of pesos per worker)	Fixed assets per employed personnel (thousands of pesos per worker)	Fixed assets per economic unit (thousands of pesos per economic unit)	Gross Value Added per employed personnel (thousands of pesos per employed personnel)	Remuneration over Gross Value Added (Percentage)	Remuneration over Gross production (Percentage)
Manufacturing sector	11	161	456.9	5,116.1	491.9	23	29.6
Micro	2	58.8	70.6	164	81.9	28.3	42.1
0-2	1	50.5	57.4	80	55.4	14.5	41.3
3-5	4	55.4	70.2	253.5	82.9	31.5	42.7
6-10	7	67	98.2	721.7	134.6	36.2	42.1
Small	22	88.7	182.0	3,980.9	255.9	30	35.1
11-15	13	76.5	136.7	1,730.5	190.6	33.9	37.4
16-20	18	82.1	149.7	2,688	255.9	27.7	36.2
21-30	25	88.3	182.9	4,569.7	266.9	29.3	35.9
31-50	39	98.5	221.1	8,713.7	287.7	29.8	33.6
Medium	119	154.2	543.6	64,731.8	584.7	20.2	31.6
51-100	73	140.5	456.8	33,220.2	529.7	21.4	30.5
101-250	161	160.2	578.8	92,895.9	607	19.7	31.9
Large	831	191.7	603.5	501,521	639.5	23	28.5
251-500	353	172.6	611.4	215,918	661	18.8	32.0
501-1000	700	188.1	558.3	390,534	586.9	24.5	33.5
1001 and more	2049	199.9	621.5	1,273,512	655.8	23.9	25.9

Source: INEGI

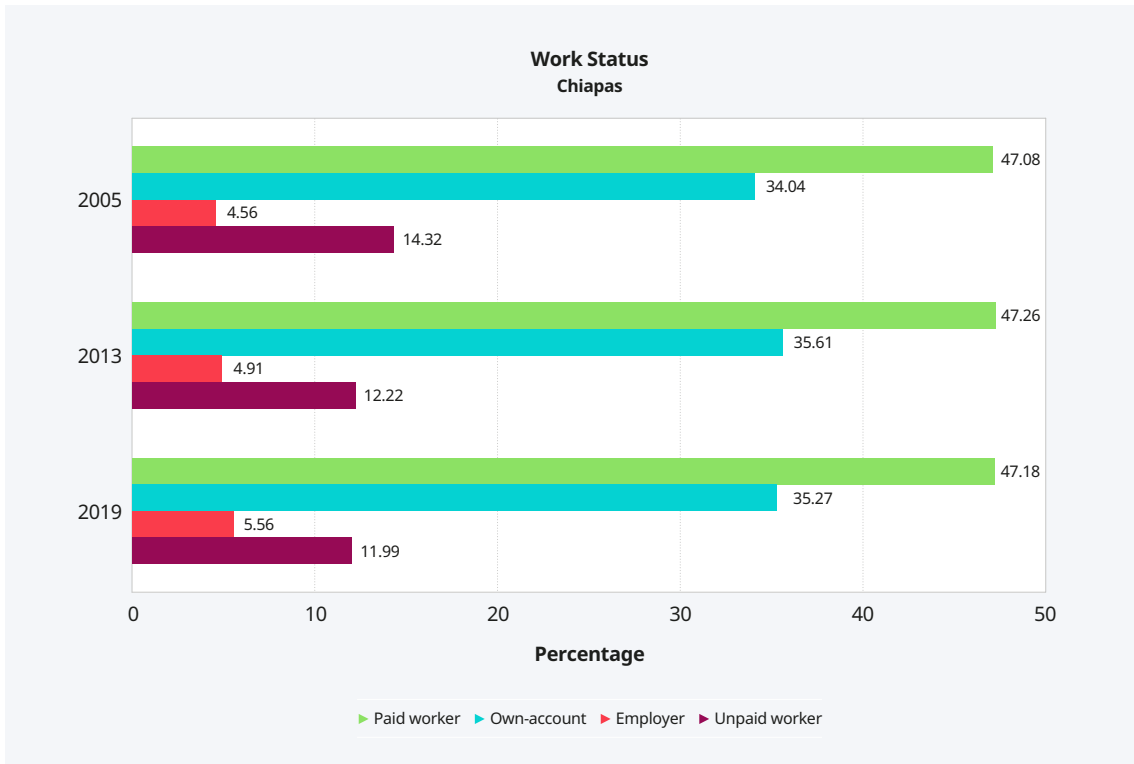
Municipalities with medium and large high-productivity enterprises exhibit high average remuneration. The data from the Labour Force Survey shows a large remuneration gap between large/medium and microenterprises (Figure 11). Formal wage workers in large/medium enterprises exhibit higher remunerations than own-account business owners and employees working in microenterprises (INEGI, Encuesta Nacional de Ocupación y Empleo 2019). For instance, 47% of total workers in Chiapas (a low productivity state) in 2019 were formally employed workers and the remaining were unpaid workers and microenterprises' business owners (82% of total were own-account establishments in Chiapas – see Figure 12). By contrast, 73% of the labour force in Mexico City was made up by formal wage workers. A similar pattern can be found in other low-growth states such as Oaxaca and Guerrero, whereas high-growth states such as Querétaro and Aguascalientes resemble Mexico City.

▶ Figure 11. Average wages and salaries by state, Economic Census 2019

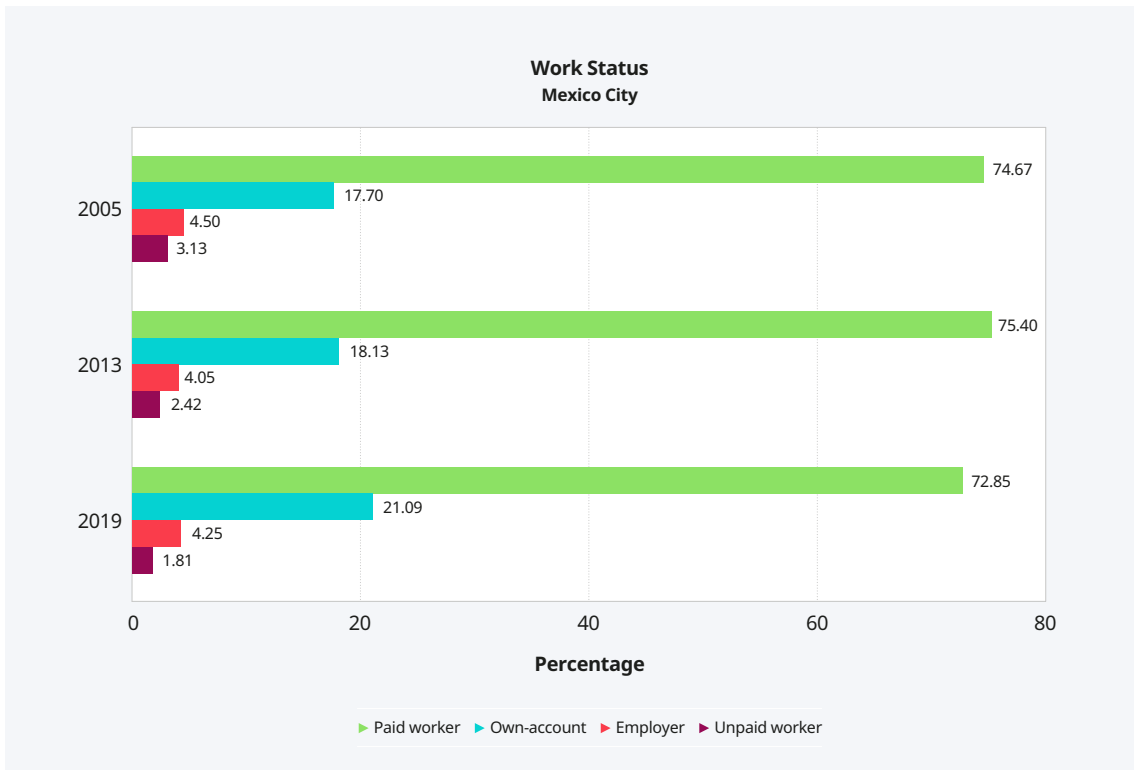


Source: Economic Census 2019.

▶ Figure 12. Work status proportion over time for Chiapas and Mexico City, Labour Force Surveys



► (Figure 12. cont.)



Source: ENOE 2005, 2013 and 2019.

Because of a low-productivity trap, informality is high among microenterprises. **Data reveal that 98.9% and 85.4% of workers in own-account establishments and microenterprises are informally employed, respectively, compared to 14% in medium-sized enterprises** (INEGI, Encuesta Nacional de Ocupación y Empleo 2019). In addition, microenterprises exhibit the worst employment conditions. For example, the access to health insurance coverage in microenterprises is 14.7% compared to 86% in medium-sized enterprises. The high proportion of low-productivity microenterprises in Chiapas is associated with economic stagnation, insufficient formal employment generation, and a lack of skills development that hinders labour market prospects and the relocation of labour to higher-productivity economic activities. The drop in income in the transition from paid worker to microenterprise owner in Chiapas is dramatic (see Figure 13). Public policy to ensure connectivity and provide basic services is essential to attract private enterprises to take advantage of lower labour costs and potential linkages with Central American countries. Moreover, promoting a productivity ecosystem at regional level is necessary to escape from the poverty trap (ILO, 2021a).

► Figure 13. Transition from paid worker to establishment owner and vice versa



Source: ENOE 2005–2019.

3.3 Determinants of enterprise size

The states with the largest number of enterprises (measured as the number of enterprises adjusted by population) have low productivity. The reason is that most of these are microenterprises working in trade, and private non-financial services sectors. States with fewer enterprises but with high-productivity industries have higher incomes and wages as well as growth rates.

We also examine determinants of enterprise size. We estimate an ordered multinomial probit model using a categorical variable (y_i) that take values 1 (microenterprise), 2 (small-sized enterprise), 3 (medium-sized enterprise) or 4 (large-sized enterprise). As in Cameron and Trivedi (2005), we use an index model with a latent variable:

$$y_{ist}^* = x'_{ist}\beta + v_t + u_{ist}$$

Where x_{ist} is a regressor vector that contains entrepreneur, enterprise and municipality level characteristics.

The results suggest that municipalities and states should leverage policy instruments to improve access to ICTs and electricity in order to facilitate the emergence of medium and large enterprises. The Federal Government has a role to play in ensuring more effective national and cross-border connectivity, for example, with investments in physical and digital infrastructure, sustainable transport systems, and renewable energy in the Southern States.



**Enabling
environment
to address
productivity
gaps and spatial
inequalities**

4

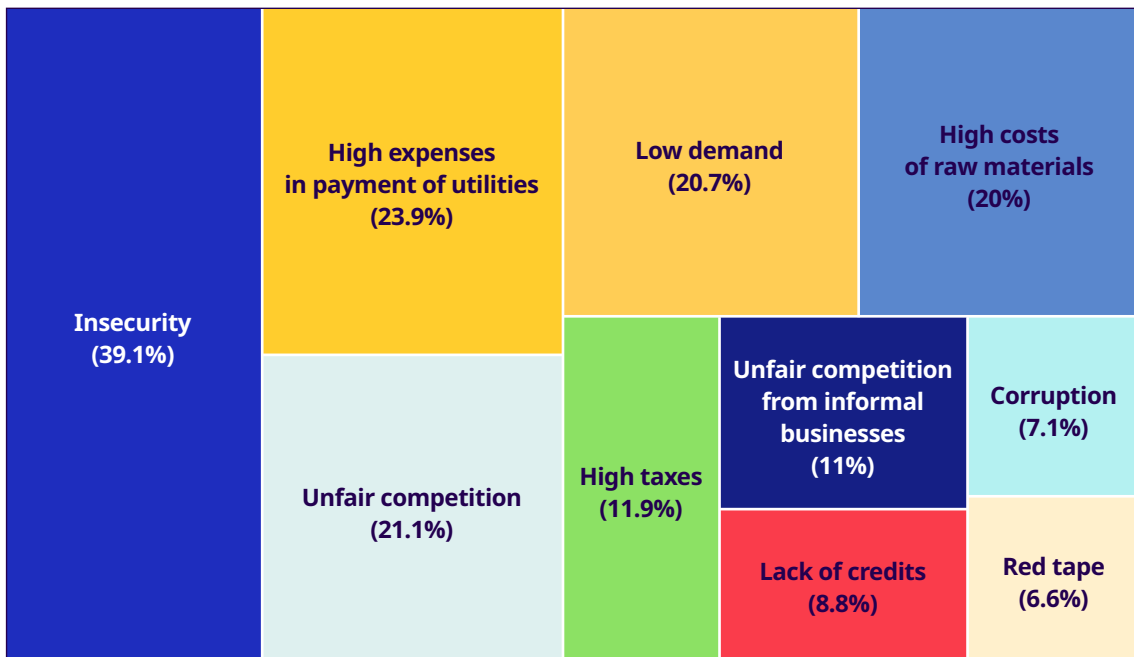
► 4. Enabling environment to address productivity gaps and spatial inequalities

To build forward better in the aftermath of the COVID-19 pandemic and enhance a job-reach recovery, an enabling environment for sustainable enterprise development is essential (ILO 2007 and 2021b). The 2019 Economic Census reveals persisting barriers to enterprise development, which may hinder the creation and quality of jobs. Among the main problems that establishments face to operate, the following stand out: insecurity (39.1%), high expenses in payment of utilities such as electricity, water and telephone (23.9), unfair competition (21.1%), low demand (20.7%), and high costs of raw materials (20%) (see Figure 14).

To reduce regional inequalities and productivity gaps, public policy plays a key role to devise incentives through the tax and transfer system. Public investment in connectivity, local infrastructure, public services, and workforce’s skills development, are essential to create a “level playing field” to establish an enabling environment for sustainable enterprise development and attract private investment for the creation of sustainable employment hubs in lagging States such as Guerrero, Oaxaca and Chiapas.

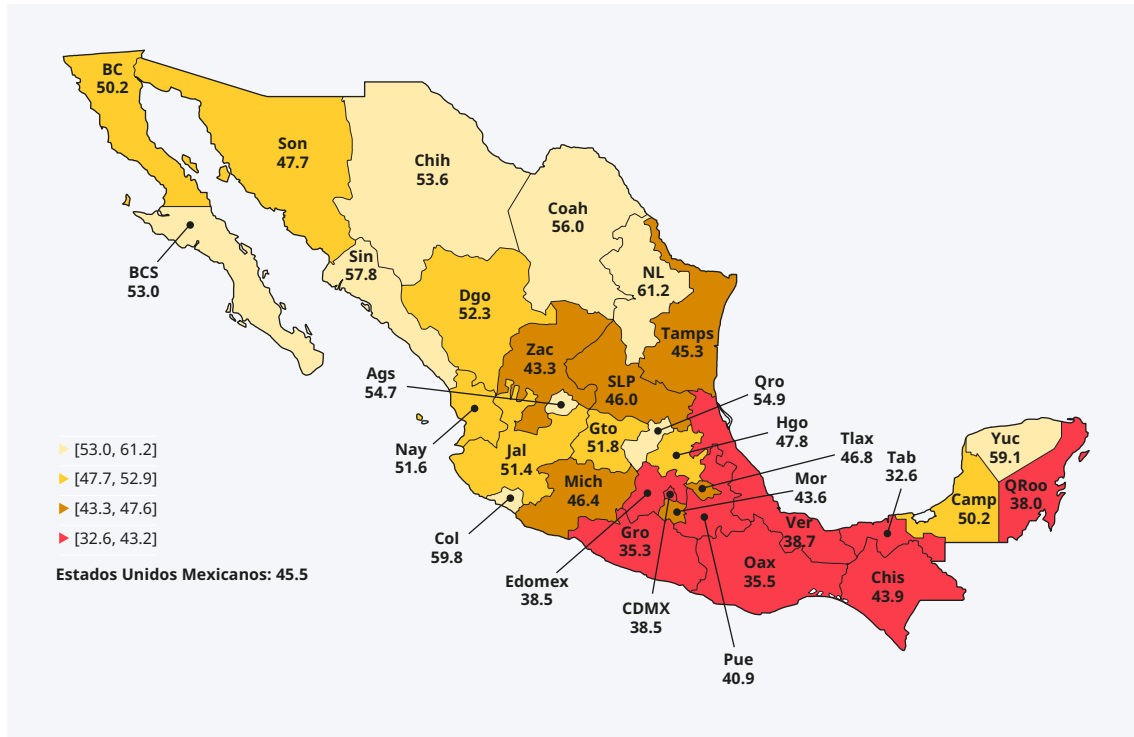
Moreover, **public policy frameworks to support micro and small enterprises in attaining a minimum efficient scale to reach economic viability, increase productivity, and improve job quality, are also necessary.** Enterprises do not operate in a vacuum. The environment in which they operate and compete affects them. In addition, management practices may help enhance business efficiency and productivity. By reconciling and seeking complementarities at micro and macro level, a coherent and comprehensive approach would enable MSEs escape from the low-productivity trap (ILO, 2021a; ILO, 2020).

► Figure 14. Obstacles to business operations, 2019 Economic Census



Source: INEGI.

► **Figure 15. General satisfaction of the quality of public services (% of people that responded to be satisfied or very satisfied)**



Source and elaboration: (INEGI 2017).

In this section, we examine both the role of cross-jurisdictional connectivity infrastructure as well as local service delivery in attracting higher productivity investments. Creating a conducive business environment for sustainable employment generation.

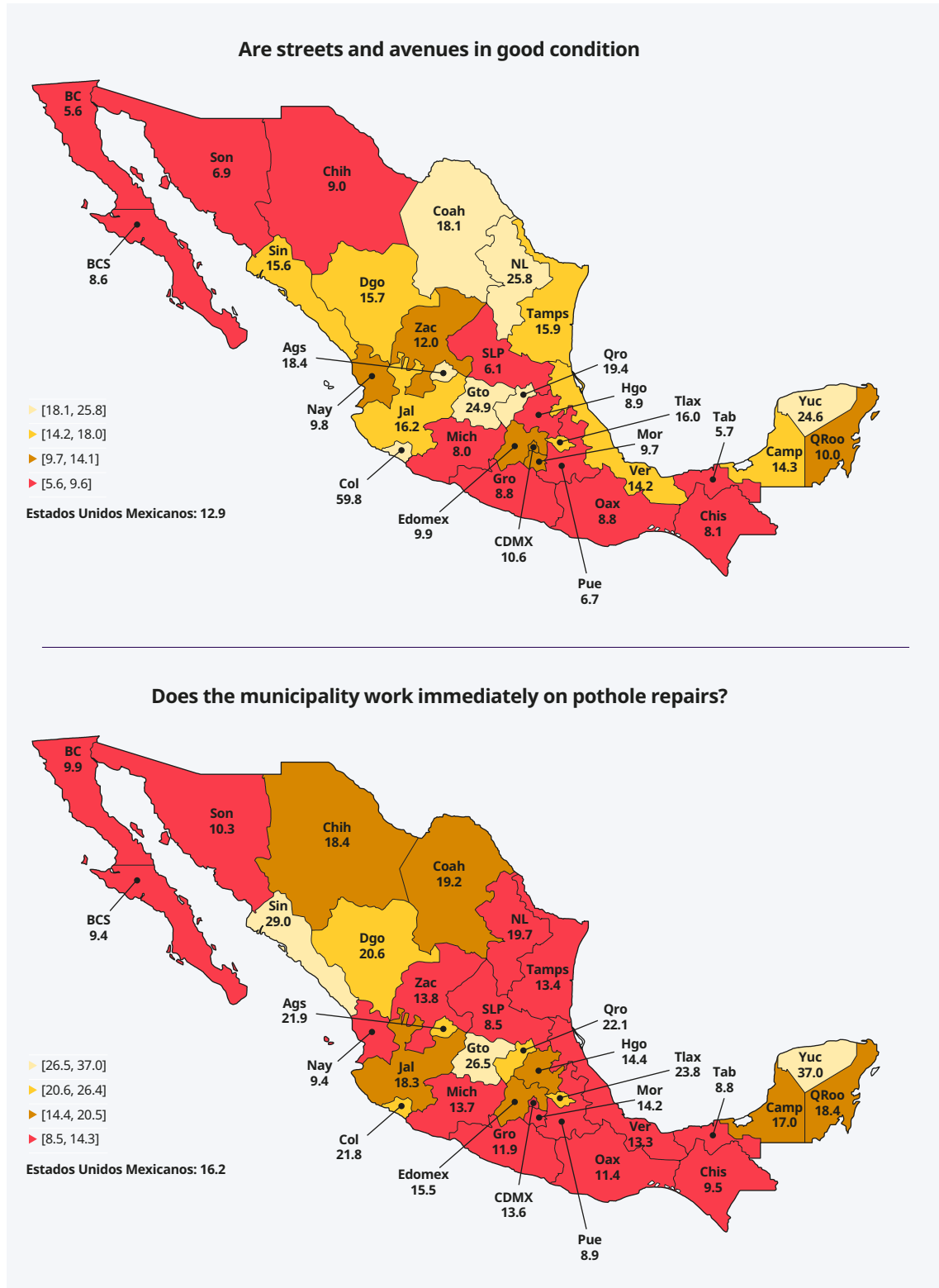
As shown in previous sections, the examination of drivers of productivity highlight the role of local government policies to create an enabling business environment, provide appropriate infrastructure (transportation) and access to quality services (education, health, among others) to facilitate the access to domestic and international markets, attract skilled workforce, and foster local economic development. Sufficient own revenues at the local level are essential to unlock innovative financing instruments in a sustainable way (Ahmad and Viscarra 2021).

As a general measure, we used the satisfaction of the population with public services as a proxy to measure the ability of municipalities to provide access to quality services. (Straub 2008). Figure 15 shows the general dissatisfaction with the quality of public services in the Southern states. The low-growth states exhibit the lowest percentage of population who are satisfied with the quality of public services.

4.1 Importance of connectivity infrastructure

Connectivity is related to interactions and interdependence between states within a country as well as cross-border value chains. The interaction is understood both in terms of transportation and communication networks, and how well connected and integrated municipalities and states are along corridors and highways. The literature indicates that strong connectivity enables growth and supply chain efficiency. An additional aspect of connectivity relates to

► Figure 16. Percentage of population 18 years and older that responded that streets and avenues in municipality are in good condition (top map) and that municipality works immediately on pothole repairs (bottom map)



Source: Encuesta de Calidad e Impacto Gubernamental (INEGI 2017).

sustainable transportation networks within cities and municipalities, and this is increasingly related to a clean environment without congestion and pollution. This is the focus of much of the sustainable urban transition's literature (Ahmad and Viscarra, 2021). As data suggest, within city connectivity in Mexico leaves much to be desired (see Figure 16). Investment is urgently needed to develop and upgrade connectivity infrastructure in Mexico, an essential element to attract FDI and enable sustainable enterprise development.

Straub (2008) reviewed studies from developing countries and found a positive link between connectivity and growth. Connectivity makes labour markets more efficient and productive. Global value chains (GVCs) have transformed the links between enterprises and markets allowing the efficient "just-in-time" production process in different interconnected locations that involve frequent cross-border transactions to produce finished goods, such as mobile phones and computers as well as electric vehicles. Given the commitments of countries to meet global emissions targets, many multinational enterprises, including some that have invested heavily in Mexico, have announced a shift to electric vehicles. This will require a significant upgrading of existing plants in the more advanced states, as well as investments in charging stations within and across states in Mexico as part of a sustainable transformation in the medium term.

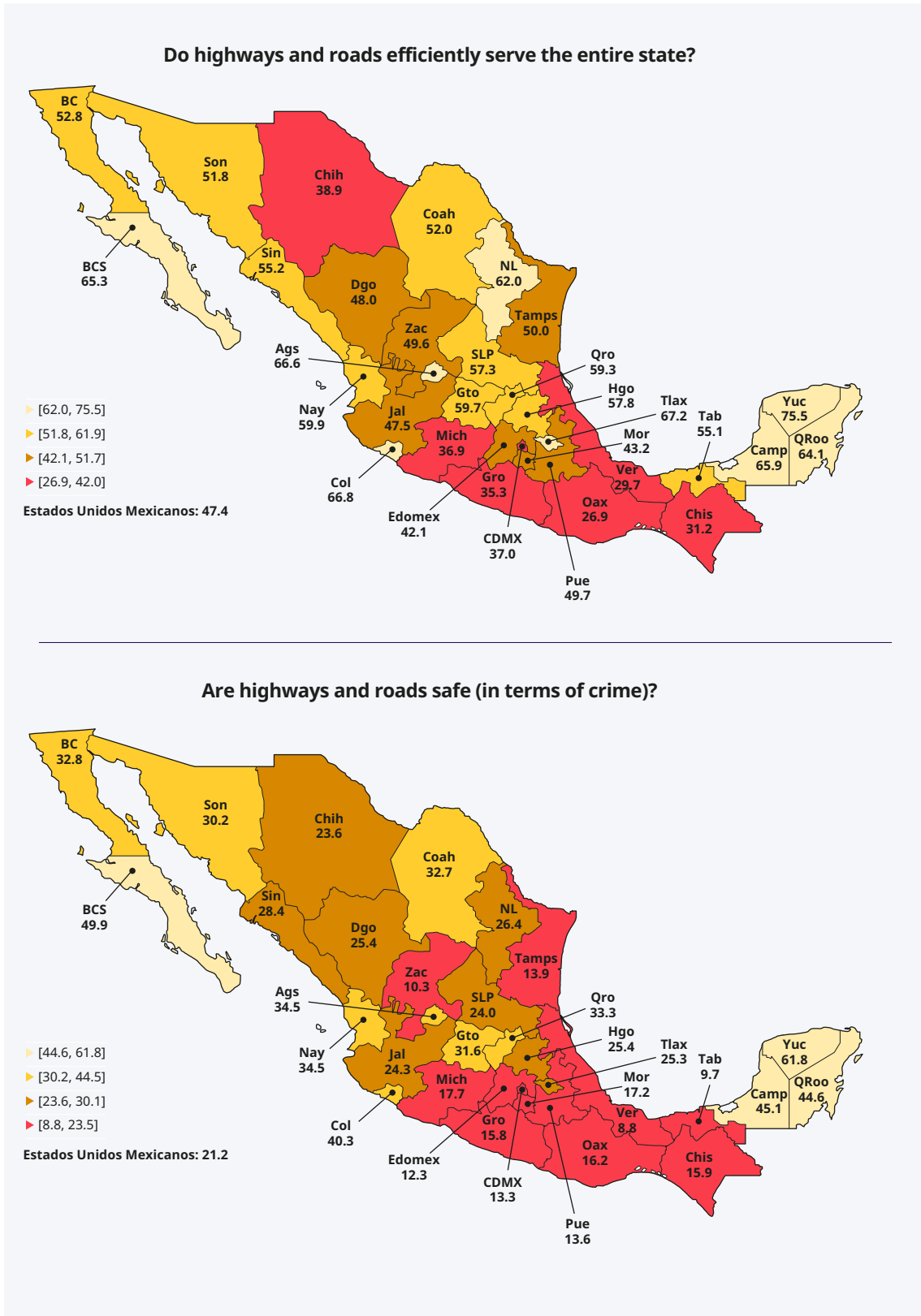
As expected, **high-productivity enterprises in Mexico are located in cities and municipalities with good connectivity and access to local and/or global markets.** Inadequate connectivity infrastructure seems to discourage high-skill industries. Such states (Guerrero, Oaxaca, Chiapas) also exhibit low satisfaction with in-city transport conditions and maintenance. This is also typically correlated with low productivity (see Figure 17). Citizens in northern states, which have higher levels of productivity, perceive that highways and roads are efficient and provide effective connectivity and are relatively safe from crime.

The design and financing of clean infrastructure in large metropolitan areas is problematic and a constraint to the continued expansion, for instance, in the Mexico City metropolitan area, where the formal jurisdiction (which has the highest incomes in the country, and the largest revenue base) covers less than half of the population. With urban sprawl, the informal sector in particular is pushed further into the municipalities outside the central area, and face long and lengthy commutes. The initial investment required for clean metro systems in a seismic area on a dried lakebed is significant, and operations and maintenance costs are high. Cash-strapped municipalities outside the central district are even less willing or able to contribute. The US-model of the metro area authorities (see WRI 2021) is quite inappropriate. The collapse of metro line 12 in May 2021 underlines the difficulties.

Investment in sustainable transport systems as part of building forward better is essential for the regional development of the poorer Southern states to encourage private investment and local market development. This would also provide potential links with Central America, as well as Asia and Europe. A cross continental high-speed railway,²⁰ for instance, could connect the Atlantic and Pacific, and in so doing reduce transaction costs and encourage intraregional and international trade, and foster regional economic growth and the creation of sustainable employment hubs in the Southern states.

20 Some of the environmental impacts would include reduced greenhouse gas emissions, improved energy efficiency, and revitalized communities.

► Figure 17. Efficiency and safety of connectivity infrastructure



Source: Encuesta de Calidad e Impacto Gubernamental (INEGI 2017).

4.2 Service delivery gaps

Municipalities and states that are able to provide a high coverage and quality of public services, appropriate connectivity and infrastructure are more attractive to skilled personnel and high-end investment by domestic firms and FDI. In addition to access to markets and supplies, enterprises need access to clean and continuous energy, access to ICT and high-speed internet, and to quality basic public services.

A simple multinomial regression model suggests a positive correlation between productivity and access to public services (see Table 6). The results indicate that productivity is positively correlated with access to housing services and the provision of internet after controlling for other municipality-level variables. To analyse service delivery gaps between states, we used the Quality and Government Impact Survey held by INEGI. The following maps show the answer of the population (18 years and older) of every state regarding public services perception.

► **Table 6. Productivity and access to public services**

Variables	Log of productivity
High-growth productive sectors	0.0483*** (0.0109)
Monthly salary	8.22e-05*** (2.73e-06)
Electricity cost	0.000220*** (3.67e-06)
Informality	-0.203*** (0.0109)
Number of economic sectors in municipality	-0.000146*** (2.17e-05)
Investment in mobility	-0.00354*** (0.000248)
Access Housing Services	0.865*** (0.0436)
Access to Internet	1.372*** (0.0272)
Number of social organizations	-0.00141*** (3.68e-05)
Urban density	-0.00729*** (0.00194)
Foreign direct investment	0.000148*** (2.20e-06)
Constant	-0.429*** (0.0497)
Observations	100,516
R-squared	0.270

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

There is a gap in the access to potable water through public network between southern and northern states (Figure 18). The lowest percentage of population that responded “yes” to this question was found in the centre of Mexico (CDMX, Edomex, Michoacán and Puebla). The case of CDMX is interesting because it has one of the highest growth rates and has an important presence of high-productivity enterprises working in the financial sector but is now suffering from a severe water shortage as the ground water is depleted and the city begins to sink significantly (it is situated in a dried lakebed). In addition, the survey also asked about the ability to provide continuous service of potable water. In this case, Guerrero, Oaxaca and Chiapas in the south and Zacatecas in the north have the worst indicators.

Drainage and sewage systems improve the sanitary conditions of cities and reduce health risks related to contaminated water and improper waste disposal. Poor sanitation and sewage limit attractiveness of cities for enterprises as well as workers, especially in the aftermath of a pandemic. The Southern States perform poorly in this critical aspect (Figure 19).

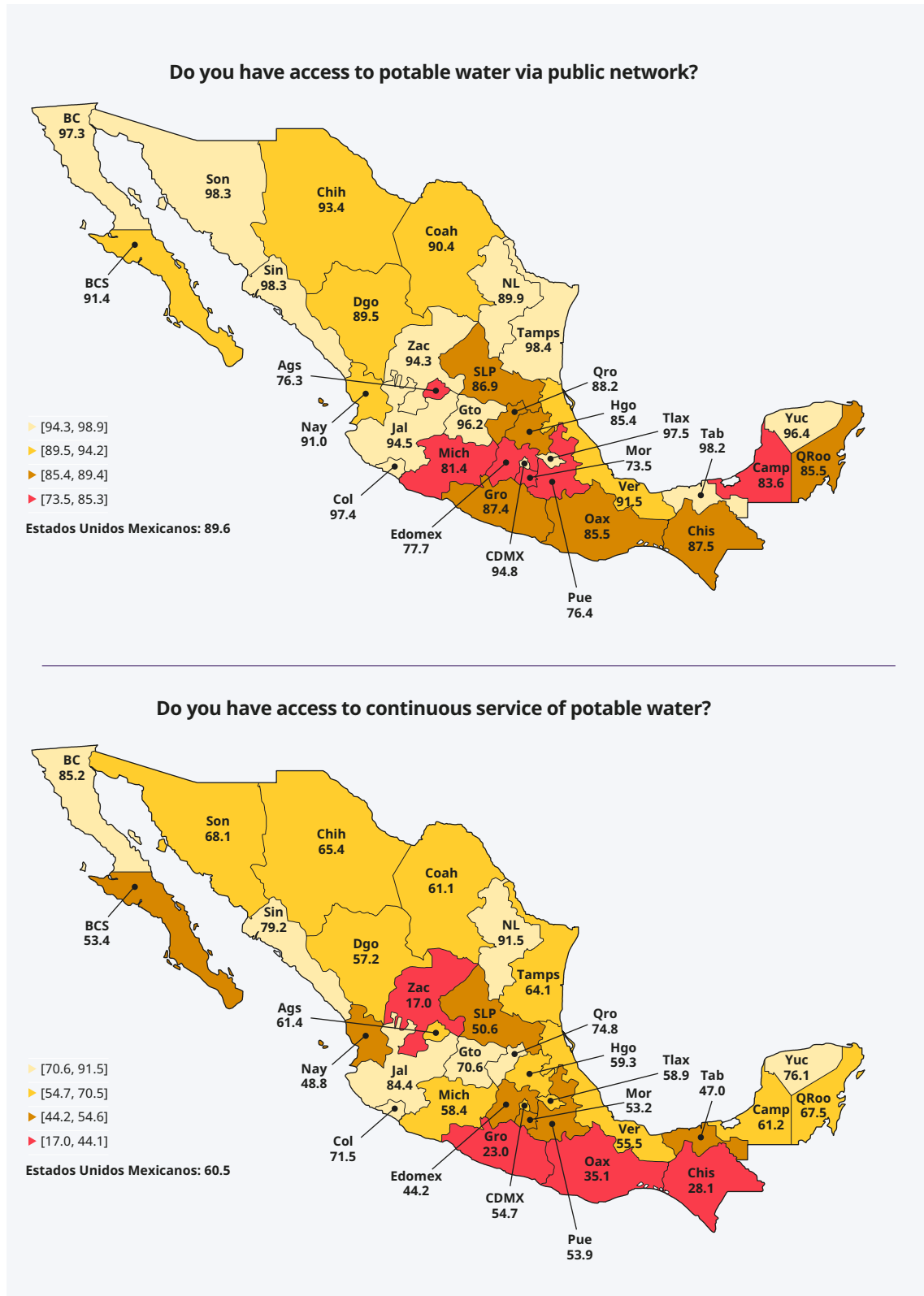
The spatial analysis reinforces our findings on the factors that affect the decision of high-productivity enterprises to operate in certain municipalities and states. Northern States perform much better than the lagging south.

The provision of quality public services and connectivity needs to be complemented with additional policies to attract high-skilled workers and high-productivity industries: sustainable urban planning, policies to improve congestion, adequate access to public spaces, access to quality health and education services, as well as green spaces and parks (Figure 20).

The access gap to health centres and quality schools between low and high-productivity states is large. In 2016, only 14.6% of the economically active population from Chiapas, 14.3% from Oaxaca and 18.2% from Guerrero had access to health centres compared to Querétaro (44.8%), Nuevo León (58.7%), Mexico City (44.2%) and Edomex (36.3%). The percentage of quality schools in Chiapas (18.8%), Oaxaca (9.7%) and Guerrero (18.6%) were less than half the percentage in states such as Querétaro (34.4%) or Mexico City (34.4%).

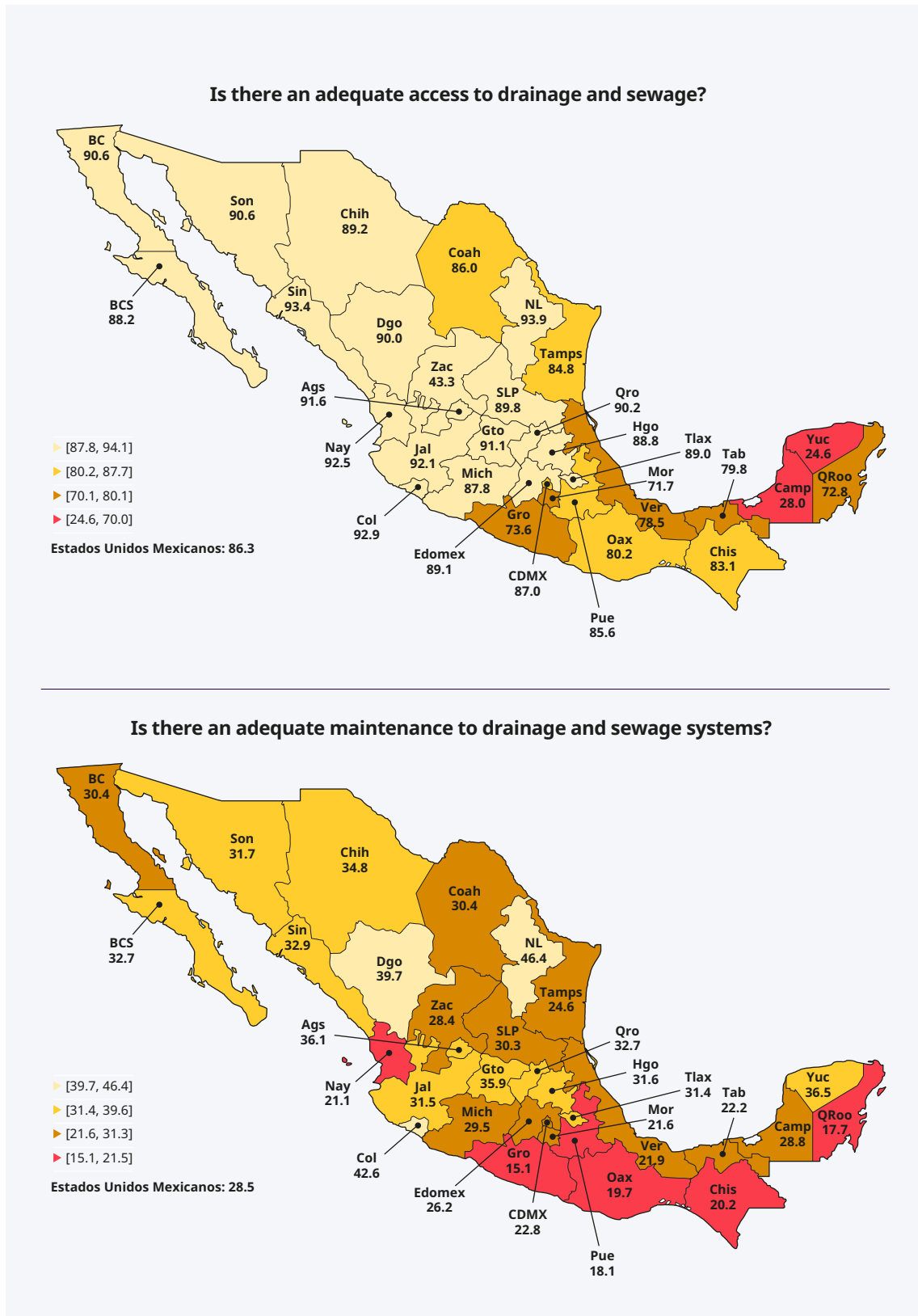
Excessive bureaucracy and paperwork that seriously affect the business climate (Figure 21) compound the physical constraints that enterprises and workers face in the Southern States. Hence, improvements in governance with streamlining of processes and procedures is also essential.

► Figure 18. Access to potable water via public network and access to continuous service of potable water (Percentage of people over 18 years)



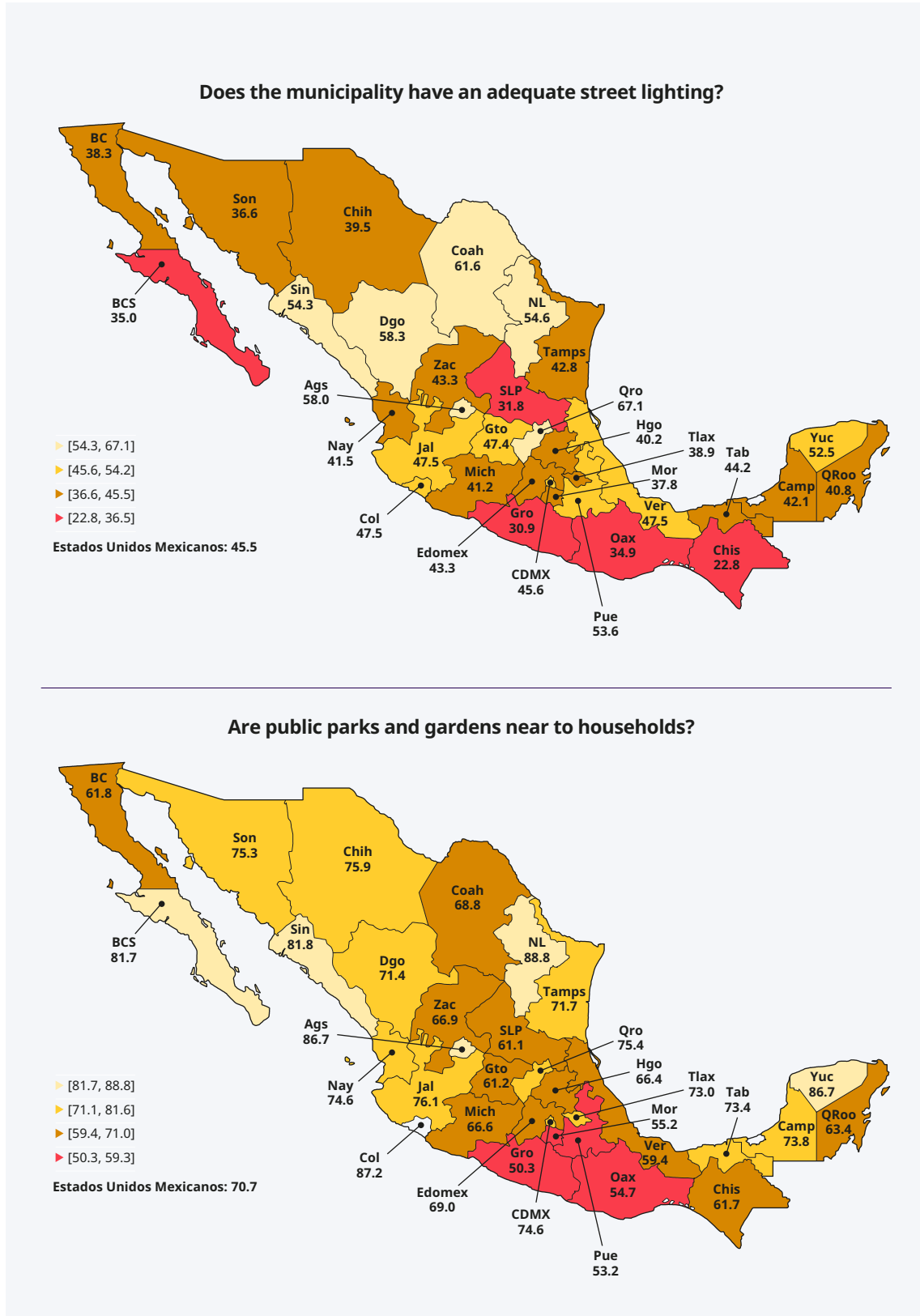
Source: Encuesta de Calidad e Impacto Gubernamental (INEGI 2017).

► Figure 19. Access to drainage and sewage



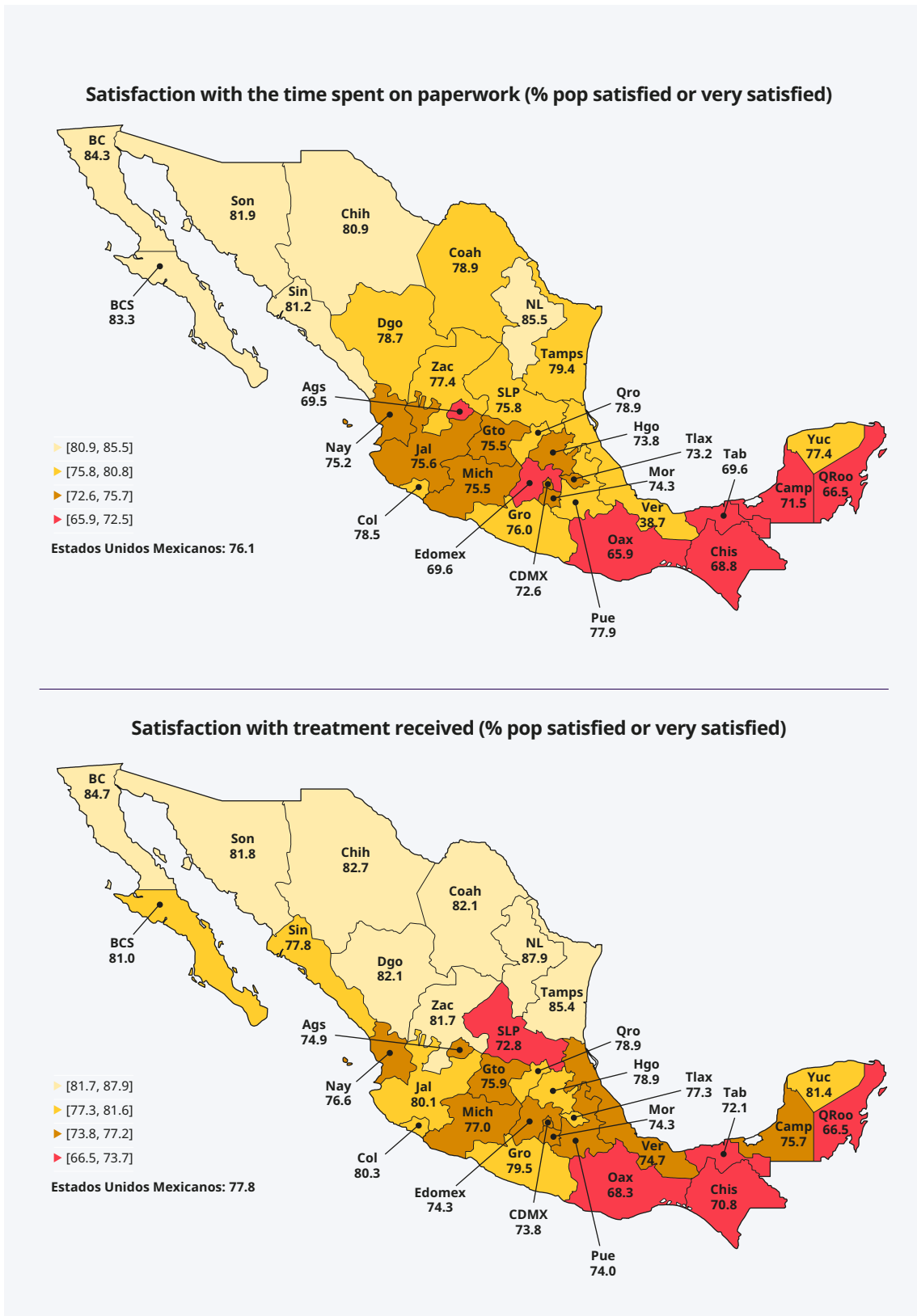
Source: Encuesta de Calidad e Impacto Gubernamental (INEGI 2017).

► Figure 20. Street lighting and proximity of public parks and gardens



Source: Encuesta de Calidad e Impacto Gubernamental (INEGI 2017).

► Figure 21. Satisfaction with public institutions



Source: Encuesta de Calidad e Impacto Gubernamental (INEGI 2017).

4.3 Human capital

The education and training of the workforce is a major factor in determining the productivity of each state and municipality. Major industrial and modern services sectors need a skilled workforce. At the same time, workers increase their earning potential by improving their capabilities and skills. Table 7 presents skills sets available by selected state. Again, CDMX, Edomex and Querétaro have a superior performance than the Southern States. This analysis does not consider the quality of education and the match between skills needed by the industries and education curricula.

► **Table 7. Percentage of population by level of education over total population of state**

States	No education	Primary education	Incomplete high school	Complete high school	Technical or commercial studies with completed primary	Upper secondary education	Higher education
Aguascalientes	2.3%	19.9%	6.4%	26.0%	0.4%	22.0%	22.9%
Chiapas	12.7%	32.9%	6.5%	18.8%	0.1%	16.7%	12.2%
Mexico city	2.1%	14.0%	5.0%	18.8%	0.5%	26.4%	33.0%
Guerrero	11.1%	27.8%	7.7%	18.6%	0.1%	20.2%	14.3%
State of Mexico	3.3%	19.8%	6.2%	24.8%	0.3%	25.4%	20.0%
Nuevo León	1.9%	16.0%	5.4%	26.9%	0.8%	24.0%	24.7%
Oaxaca	9.7%	32.5%	6.8%	20.6%	0.1%	17.2%	13.0%
Querétaro	4.0%	18.5%	5.5%	24.0%	0.3%	21.7%	25.8%

Source: INEGI, Population Census 2020.

Most of the high skilled and educated population works for medium and large enterprises located in states with high-productivity industries (Table 8). The 2018 Labour Survey (ENOE) shows that medium and large enterprises employ a higher share of workers with college education than micro and small enterprises. Only 30% of personnel working in microenterprises graduated from college compared to 53% in enterprises with 51-100 employees.

► **Table 8. Graduation from college, percentage of workers, 2019**

Graduated from college	Enterprise size by number of workers					Total
	1 Employee	2-10	11-50	51-100	>100	
No	87.30	71.40	45.84	46.42	58.55	60.37
Yes	12.70	28.60	54.16	53.58	41.45	39.63
Total	1197555	1.23e+07	5908919	2140962	2.86e+07	5.01e+07
	100.00	100.00	100.00	100.00	100.00	100.00

Source: INEGI, ENOE, 2019.



5

**Concluding
remarks**

► 5. Concluding remarks

This paper examines productivity gaps and spatial inequalities in Mexico. We find that within-state productivity, employment and income differentials are significant. Access to basic services, access to ICTs, FDI, and informality, are important factors associated with productivity gaps between municipalities. Moreover, the convergence analysis suggests that Mexican States do not converge to a unique steady state. Instead, the presence of three different clubs is observed. Club 1 is made up of States with high median growth rates (Mexico City, Querétaro, Nuevo León, Quintana Roo, among others). Better ICT infrastructure and access to internet, a conducive business environment, quality academic institutions, and access to hospitals and medical care, help explain membership to such a club and the presence of high-productivity enterprises.

By contrast, the spatial analysis shows that microenterprises are more likely to be located in low-growth municipalities and States. High-growth municipalities have high-productivity large and medium-sized enterprises whereas low-growth municipalities have a *high low-productivity microenterprise density*, which tend to operate in low-value added economic activities such as grocery and food retail trade and diverse private non-financial services such as accommodation and repair and maintenance services. These results suggest that devising a coherent and comprehensive policy framework to support micro and small enterprises in reaching a *minimum efficient scale* and economic viability to increase productivity and improve job quality, is of the utmost importance.

To foster inclusive economic growth, reduce inter- and intra-regional inequalities, harness technological progress, and cope with global trends and risks such as climate change, migration, and changes in globalization, it is indispensable to upgrade the productive structure across regions to diversify, and develop the competitive advantage of lagging States for structural change.

Persisting barriers to private investment and sustainable enterprise development, such as insecurity, costly utilities, unfair competition, low demand, among others, affect Mexico's potential of attracting FDI, growing at higher rates and increasing living standards.

Clean connectivity, that is, sustainable transport systems, the provision of basic services and local infrastructure are necessary but insufficient conditions. A fiscal agenda must be part of a coherent policy framework aimed at enhancing a conducive business environment, investing in skills development and quality education, promoting the transition from the informal to the formal economy, and fostering productivity growth and sustainable employment hubs in the lagging regions. Such an integrated strategy is the central plank of the *building forward better* agenda to reduce regional inequalities and foster inclusive economic growth.



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▶ Appendix

► Appendix

► Table 5-A. Summary statistics by enterprise size, Commerce sector, 2019 Economic Census

Size	Employed personnel by economic unit (average number of workers)	Remuneration per worker (thousands of pesos per worker)	Fixed assets per employed personnel (thousands of pesos per worker)	Fixed assets per economic unit (thousands of pesos per economic unit)	Gross Value Added per employed personnel (thousands of pesos per employed personnel)	Remuneration over Gross Value Added (Percentage)	Remuneration over Gross production (Percentage)
Commerce	3	88.4	298.7	994.1	1467.3	13.9	70.6
Micro	2	64.2	126.2	258.5	625.7	14.4	72.0
0-2	1	47.9	74.6	104.2	325.5	8.8	74.8
3-5	4	58.5	109.6	386.8	634.6	17.1	72.2
6-10	7	81.7	316.3	2,307.4	1,546.1	16.6	69.8
Small	17	85.5	465.6	7,822.2	2,207.5	15.2	72.0
11-15	13	82.0	539.7	6,887.2	2,330.4	13.9	72.2
16-20	18	83.7	376.5	6,706.5	2,056.8	17.1	72.2
21-30	25	91.0	456.3	11,272.1	2,194.9	15.2	71.6
Medium	53	114.5	838.1	44,376.4	2,646.3	13.2	67.1
31-50	39	104.8	1,055.6	40,992.3	2,423.3	13.5	72.0
51-100	71	123.1	686.4	48,691.7	2,802.0	13.0	63.9
Large	198	134.1	413.4	81,953.3	3,093.5	13.1	70.9
101-250	149	138.0	508.8	75,945.6	2,721.5	9.9	72.0
251-500	337	144.6	344.6	116,075.0	5,536.6	22.1	65.7
501-1000	688	101.2	128.6	88,564.8	890.8	20.9	73.4
1001 and more	2028	135.4	55.3	112,254.6	332.8	56.7	62.4

Source: INEGI.

► Table 5-B. Summary statistics by enterprise size, Services sector, 2019 Economic Census

Size	Employed personnel by economic unit (average number of workers)	Remuneration per worker (thousands of pesos per worker)	Fixed assets per employed personnel (thousands of pesos per worker)	Fixed assets per economic unit (thousands of pesos per economic unit)	Gross Value Added per employed personnel (thousands of pesos per employed personnel)	Remuneration over Gross Value Added (Percentage)	Remuneration over Gross production (Percentage)
Services	6	119.5	221.1	1,261.8	270.5	27.2	57.0
Micro	2	60.4	125.8	295.5	146.0	16.6	55.4
0-2	1	53.5	118.4	165.1	193.4	5.0	63.4
3-5	4	57.3	119.2	431.5	97.9	28.8	48.6
6-10	7	67.5	149.6	1,112.9	136.8	32.6	47.6
Small	20	81.8	169.2	3,468.4	199.3	29.2	48.7
11-15	13	74.6	154.7	1,926.5	178.7	29.2	50.2
16-20	18	77.8	170.9	3,052.4	165.4	33.3	44.7
21-30	25	82.3	177.2	4,421.5	224.1	25.9	50.2
31 - 50	39	89.6	174.7	6,834.5	216.5	30.2	48.4
Medium	70	116.3	197.3	13,905.8	248.8	33.2	48.7
51-100	70	116.3	197.3	13,905.8	248.8	33.2	48.7
Large	472	165.0	341.4	161,059.6	427.9	29.9	60.6
101-250	152	133.6	211.2	32,169.7	300.3	33.2	55.3
251-500	357	123.2	171.7	61,337.7	345.1	26.6	64.2
501-1000	676	132.1	184.3	124,629.2	263.2	37.1	58.9
1001 and more	3,185.4	198.7	496.8	1,582,661.8	552.0	29.0	61.2

Source: INEGI.

