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Gaps in Human Capital and Labor Demand in Oaxaca

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Abstract

This report examines the structural barriers that constrain the development of talent in the Mexican state of Oaxaca. It proposes concrete strategies to translate the region's cultural, productive, and social richness into well-being for all. The report describes and analyzes the state's indicators on education – where access inequality and low indexes of higher education are prevalent – and the migration to other regions of Mexico and abroad that reinforces labor shortages in local industries. It adopts an encompassing approach to act in the short, medium, and long term, creating employment and stimulating Oaxaca's industries, based on successful case studies. Informed by numerous testimonials, this research demonstrates how to develop the capacities the state needs, as well as how to retain talent, particularly young workers, by reducing inequality and preserving artisanal knowledge and ethnic diversity.

Keywords: education, inequality, development, Mexico, Oaxaca, traditional knowledge, traditional cultures, talent, employability, industries

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Résumé

Ce rapport examine les obstacles structurels qui freinent le développement des talents dans l'État mexicain de Oaxaca et propose des stratégies concrètes pour transformer la richesse culturelle, productive et sociale de la région en bien-être pour tous. Il décrit et analyse les indicateurs de l'État en matière d'éducation – où l'inégalité d'accès et les faibles taux d'enseignement supérieur demeurent prégnants – ainsi que la migration vers d'autres régions du Mexique et à l'étranger, qui renforce la pénurie de main-d'œuvre dans les industries locales. Le rapport adopte une approche globale visant à agir à court, moyen et long terme pour créer de l'emploi et stimuler les industries de Oaxaca, en s'appuyant sur des études de cas réussies. Nourrie de nombreux témoignages, cette recherche montre comment développer les capacités dont l'État a besoin, ainsi que les moyens de retenir les talents, en particulier les jeunes travailleurs, en réduisant les inégalités et en préservant le savoir-faire artisanal et la complexité ethnique.

Mots-clés: éducation, inégalités, développement, Mexique, Oaxaca, savoirs traditionnels, cultures traditionnelles, talents, employabilité, industries

Introduction

Oaxaca is at a crossroads. Its historical challenges and its extraordinary potential converge on the possibility of connecting its cultures and resources to position the state as a strategic actor in the global value chains. However, inequality, a lack of infrastructure, and a disconnection between the education system and the labor market persist as critical barriers. This situation arises as the construction of the Interoceanic Corridor on the Tehuantepec Isthmus promises to transform the regional economy, but only if Oaxaca provides the right talent to capitalize on the project's benefits.

The opportunity of the Interoceanic Corridor will translate into real progress if Oaxaca successfully tackles inequality, which fragments the social fabric, restrains collective potential, and perpetuates an exclusion cycle that curbs growth. To stop young people from abandoning school because they find no reason to continue studying, or leave behind traditional trades and their region to work somewhere else. Oaxaca needs to create access to more educational, professional, and productive opportunities. These strategies should be tailored to the local territory, with active participation from the local people.

This report combines methodologies and perspectives in robust and determined diagnostics, based on the experiences and aspirations in Oaxaca's education, business, and government sectors. The first chapter provides the context to understand the challenges and opportunities in key industries – agribusiness, food and beverages, light industry, and textiles – and highlights how traditional practices and innovation can help overcome these barriers. The second chapter addresses the structural challenges that restrain talent development and exposes a mindset to think in terms of solutions that promote the retention of local talent and the inclusion of rural communities in economic development. The third chapter examines the potential of Oaxaca's industries and their ability to connect with global value chains (GVCs). Finally, the fourth chapter presents a set of recommendations, from immediate actions such as implementing dual learning models and training certificates, to medium- and long-term initiatives focused on improving education infrastructure, creating productive projects, and linking the education and business sectors.

Oaxaca's cultural wealth is an invaluable heritage and a distinctive competitive advantage. Integrating it into development strategies could drive sustainable, inclusive growth with a unique identity.

1. Methodology

The goal of this study is to identify skill inequalities in industries with the highest potential to integrate into value chains connected to foreign markets. This research is a result of cooperation among the government, educational institutions, the business sector, and civil society. It combines a qualitative and quantitative approach to capture the contextual nuances in the experiences and perceptions of leaders from the business community, academia, and the government—all key actors in the development of the region's talent.

1.1. Specific objectives

The purpose of this study is not only to describe the existing disparities in human capital development in Oaxaca, but also to provide a structured and strategic framework for addressing them. To this end, the research pursues five interconnected objectives that together offer a comprehensive approach to understanding and strengthening the state's talent ecosystem.

First, it seeks to assess the magnitude, nature, and distribution of talent inequalities across the sectors with the greatest potential for integration into global value chains. This involves examining the existing skills base, identifying the educational and occupational gaps that constrain productivity, and evaluating how these disparities affect competitiveness at the regional, national, and international levels.

Second, the study aims to identify the challenges and opportunities that companies face when attempting to participate in global markets. By analyzing structural barriers — such as infrastructure deficits, regulatory hurdles, and limited access to qualified labor — alongside emerging opportunities — such as nearshoring dynamics and sectoral diversification — the research seeks to inform policies and interventions that can enhance the capacity of local enterprises to insert themselves into these value chains.

A third objective is to define the concept of talent in ways that reflect Oaxaca's specific socio-economic and cultural context. Talent here is not conceived solely as a set of technical skills, but as a combination of cognitive, socio-emotional, and cultural capacities shaped by local traditions, collective practices, and territorial realities. This contextualized definition is crucial for designing interventions that are both relevant and sustainable.

The fourth objective focuses on mapping the supply and demand of skills in strategic industries. This entails analyzing current educational offerings, labor market needs, and areas of mismatch, as well as understanding the dynamics of migration, informality, and gender inequality that shape the availability and utilization of talent in the state.

Finally, the research proposes to develop concrete strategies to strengthen talent formation and deployment, drawing on Oaxaca's cultural assets and social capital. These strategies include promoting technical and transversal skill development, fostering closer collaboration between education and industry, and designing inclusive policies that bridge the gap between traditional knowledge and the demands of a modern, competitive economy.

1.2. Strategic industries in Oaxaca

To determine which sectors in Oaxaca's economy would take more advantage of the nearshoring wave by integrating into GVCs, this study analyzes the institutional and economic factors in every state of Mexico, through three different approaches.

The first approach identifies the sectors with the highest industrial presence in each state that exports to the US, according to the 2019 Economic Census of the Statistical and Geographic

National Institute. After observing six variables – value added generated, employment, investment, absolute productivity, and relative productivity index – we create a score to describe the integration potential of every sector. The Industrial Diversity Index provides a score that assesses the potential for integration across various sectors. The next step involves grouping the state's economic sectors using the k-means algorithm, which creates clusters of similar economic activities. In this initial approach, we selected the clusters with the highest scores.

In the second approach, we identify the most prominent industries that export to the United States. The third approach involves listing sectors with the potential for integration into Global Value Chains (GVCs), based on their product export volumes and the perspectives of local stakeholders.

Using the first approach, the study identified nineteen sectors with high export potential and a solid industry in Oaxaca, including clothing manufacturing and the production of petroleum and paper derivatives. The second filter identified the sectors that are part of the supply chains of industries connected to foreign markets, considering the National Input-Output matrix. Based on this result, we list the sectors in Oaxaca with a value added greater than USD 60 million, including nine manufacturing industries that could integrate as providers in GVCs. Among these sectors, we identify the air conditioning, lighting appliance, and measuring instrument industries.

For the final perspective, we utilized Mexico's fishing and agro-alimentary information system (SIAP) database to identify the agricultural products in Oaxaca with the highest growth rates and production values. We compared this list with the agricultural products in the US with the highest demand to create a third list of sixteen products with export potential to that country.

Those three analytical approaches applied to Oaxaca revealed five sectors with potential to integrate into global value chains: food, beverages, textiles, agribusiness, and light industry.

1.3. Economic and education indicators

In our study, we utilized public data sources, including Mexico's 2020 Population and Housing Census, to explore the education trajectories of 23-year-old individuals (23 years is the average age at which people typically complete a bachelor's degree), as well as databases and reports from the Ministry of Public Education to characterize Oaxaca's education outlook. Based on the Formato 911 (2022-2023 cycle), we analyzed enrollment at the career level, disaggregated by gender, to calculate participation rates and determine which careers have the highest demand. This information was also used to identify young individuals who migrate to other states for higher education or employment, according to the National Survey of Occupation and Employment (ENOE) from the second quarter of 2024.

1.4. Semi-structured interviews

We conducted multiple semi-structured interviews via the Zoom platform with individuals who hold leadership and innovation roles in their industries, have experience in talent management, and possess local knowledge. We also interviewed academic and government leaders who are involved in public policy.

The interviews revealed patterns and subjects related to regional strengths, barriers to adopting technologies, and perceptions of local talent and skills deficits. We compared sectors that highlighted similarities in structural challenges, such as employee turnover, and specific issues, including cultural resistance to new labor methodologies.

The small sample size may limit the representativeness of the findings; however, the qualitative

approach does not aim for generalization, but rather seeks analytical depth. Still, the richness of the answers collected allows us to say that the findings are robust and offer a detailed outlook on the problem.

1.5. Co-creation tables

We analyzed the data collected during a co-creation workshop in Oaxaca with key actors of government, academia, and the business community, about five main subjects:

- a) General challenges to enhance talent.
- b) The region's meaning of talent.
- c) Transversal skills to enhance.
- d) Opportunities for business development.
- e) Concrete actions to strengthen talent.

The study has inherent limits due to its qualitative design; the dependence on who attended the workshop might introduce bias in the collected data. The conclusions are limited to the context in Oaxaca, which may restrict their generalizability to other regions.

1.6. Personal Data

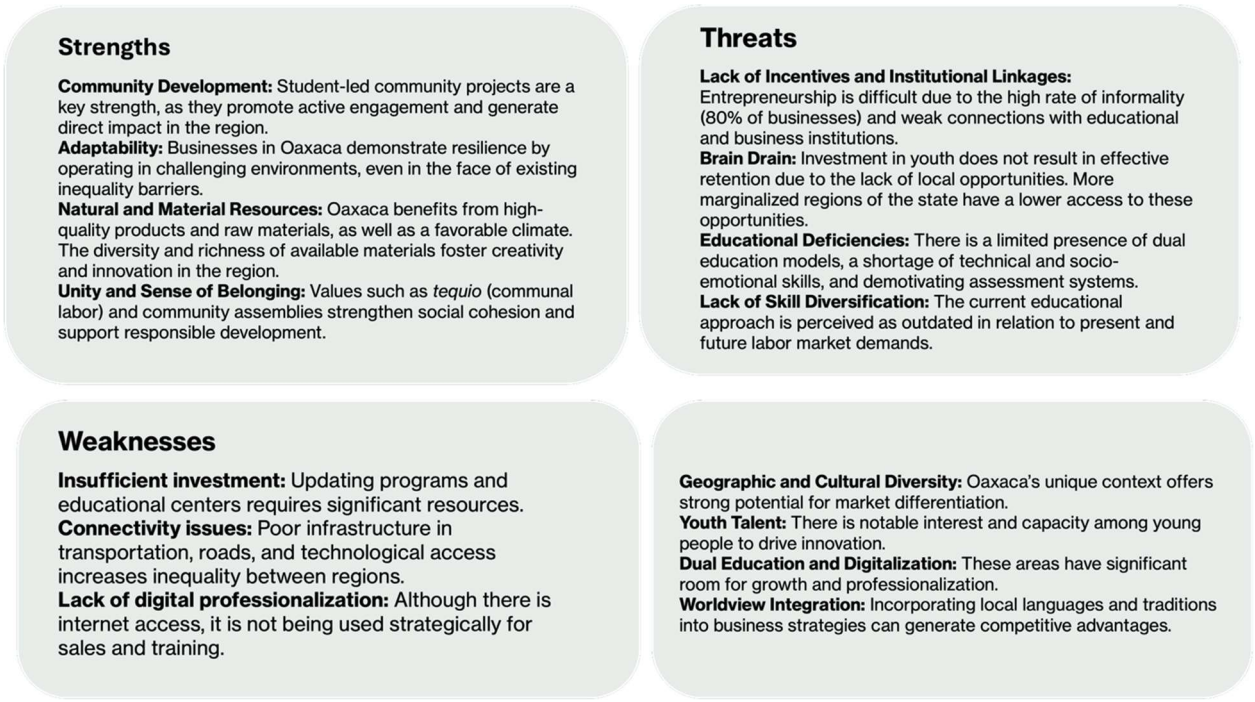
The research complied with the basic principles of confidentiality and informed consent. Every participant was aware of the study's purpose and informed that we could use their answers in this report, with the guarantee of protecting their identity. We recorded the virtual sessions only after obtaining the explicit authorization of interviewees, and we saved them in accordance with safety standards to protect their privacy.

2. Tradition with purpose: Oaxaca's Road towards the Global Economy

2.1. Results of SWOT Analysis

To identify both the competitive advantages and barriers that Oaxacan companies face in the domestic market and their connection to international markets, the research team implemented a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats).

Figure 1. SWOT matrix for key actors in Oaxaca
Source: Own elaboration based on information from co-creation workshops.



2.1.1. Strengths

Oaxacan businesses have demonstrated resilience in challenging environments, offering creative solutions to adversity, a key attribute in a changing global context. Their unique agricultural products, high-quality raw materials, and a climate favorable to a wide range of productive activities generate innovation and competitiveness. Oaxaca is the third-largest agricultural producer in Mexico, accounting for approximately 9% of the country's total production (SIAP, 2023). Practices such as *tequio* and assemblies, which promote cooperation and solidarity, foster a business culture that prioritizes collective well-being and sustainable development.

2.1.2. Threats

One of the primary challenges that businesses in Oaxaca face is the lack of incentives and connections to the local education system. Labor informality, which reaches 80.2% (INEGI, 2024), limits businesses' ability to access financing, training, and strategic collaboration networks. In Oaxaca, 72% of jobs are provided by micro, small, and medium-sized enterprises (MSMEs).

According to INEGI (2019), the average life expectancy for these establishments is 11.4 years, which is the highest in the country; however, this does not always translate into better working conditions. Many MSMEs in Oaxaca operate with narrow margins that prevent them from offering better wages and social security. These challenges are more prevalent in certain regions, given state-wide inequalities. The Oaxacan government plans to implement tax incentives in 2025, including exemptions from the IEPS tax, real estate benefits, and targeted support to promote tourism. Low wages incentivize migration and dependence on government aid. This assistance, although necessary for the subsistence of many families, discourages participation in formal employment and limits opportunities for personal and professional development.

2.1.3. Challenges

Connectivity is another major challenge. Poor road infrastructure limits access to broader markets and increases logistics costs, while persistent inequalities in internet connectivity hinder the adoption of digital tools and integration into GVCs. Although internet access has improved, most businesses fail to capitalize on the internet's full potential to boost online sales, establish business connections, or conduct virtual training in an increasingly digital environment. In rural areas, the gaps in connectivity and access to resources are more pronounced.

2.1.4. Opportunities

Oaxaca's geographic and cultural diversity offers excellent potential. The National Chamber of the Restaurant and Seasoned Food Industry has supported a gastronomic tourism strategy that stimulates local restaurants to pursue Michelin-starred awards. There is interest and capacity among young people to innovate and adapt to the demands of an ever-changing labor market. With the proper support, they can drive regional development, especially in emerging sectors such as technology and sustainability.

2.2. Discussion

The SWOT analysis highlights the paradox that defines Oaxaca's productive landscape: businesses are both empowered and constrained by their deep connection to local traditions. This duality is at the heart of the state's economic dynamics. On one hand, rootedness in community practices — such as *tequio*, assemblies, artisanal production methods, and reliance on endogenous knowledge — provides a distinctive identity that can differentiate Oaxacan products and services in national and international markets. These cultural attributes are increasingly valued in global value chains, where authenticity, sustainability, and traceability are sought-after qualities. On the other hand, this same rootedness can slow adaptation to new technologies, discourage risk-taking, and reinforce insular production models that limit scalability and competitiveness.

To transform tradition into a driver of innovation, Oaxaca needs a deliberate strategy that bridges local knowledge systems with modern economic demands. This requires interventions on multiple fronts. First, education and skills development must evolve to support the specific needs of local industries while preserving their cultural foundations. Curricula should integrate technical competencies, digital literacy, and language training with modules that recognize and build upon traditional practices. Strengthening teacher training, improving infrastructure, and expanding access to quality education in rural areas are essential components of this agenda.

Second, technological adoption and innovation ecosystems are crucial to unlocking productivity gains without eroding cultural identity. Many micro, small, and medium-sized

enterprises (MSMEs) lack the capacity to adopt even basic digital tools, limiting their ability to participate in e-commerce, optimize supply chains, or access virtual training platforms. Establishing regional innovation hubs, providing targeted incentives for technology adoption, and fostering partnerships between universities and businesses can facilitate this transition. In sectors such as textiles, beverages, and agribusiness, introducing appropriate technologies that complement rather than replace artisanal knowledge can significantly enhance product quality and market reach.

Third, infrastructure development is indispensable. Poor transport and digital connectivity continue to isolate communities, raise transaction costs, and limit access to broader markets. Addressing these bottlenecks — through better road networks, expanded internet coverage, reliable energy supply, and improved logistics platforms — would not only enable businesses to scale but also attract investment and talent to the region. Without these foundational improvements, even the most innovative local enterprises will struggle to compete beyond regional borders.

Moreover, the discussion must account for the institutional and policy environment. Fragmented policies, limited incentives, and weak coordination between education systems, businesses, and government agencies reduce the effectiveness of development efforts. Establishing collaborative governance platforms that bring together public authorities, private actors, and civil society can help align strategies, pool resources, and accelerate collective problem-solving. Policies should also focus on reducing informality — which affects over 80% of the workforce — by offering incentives for formalization, simplifying regulatory procedures, and expanding access to finance and training.

Finally, it is crucial to reframe cultural heritage as an economic asset rather than a barrier. Local traditions should not be seen as incompatible with modernization, but as a foundation upon which inclusive, sustainable development strategies can be built. Promoting value-added narratives around artisanal knowledge, biodiversity, and Indigenous practices can increase product appeal, attract responsible consumers, and secure premium prices in global markets. At the same time, fostering intercultural dialogue and mentorship programs can help younger generations see traditional sectors not as vestiges of the past, but as viable and dynamic career paths.

In sum, the future of Oaxacan businesses depends on their ability to balance continuity and change — preserving the essence of their cultural identity while embracing innovation, education, and infrastructure as levers of transformation. This delicate equilibrium will determine whether Oaxaca's economic model remains fragmented and inward-looking, or becomes an engine of inclusive, competitive growth in the global economy.

3. Today's challenges for the talent of tomorrow

This section assesses whether talent is a barrier to economic and social growth in Oaxaca, using the Growth Diagnostics approach (Hausmann, Rodrik, & Velasco, 2008), which identifies the factors that limit investment and productive expansion. The hypothesis guiding this research is that the accumulation of human talent in Oaxaca has been insufficient in both volume and quality, and that failures in its allocation within the productive apparatus restrict economic dynamism.

3.1. What is Human Talent?

The concept of human talent has evolved beyond the classic notion of human capital, which refers to the investment in skills to increase individual productivity (Schultz, 1961; Becker, 1964). It includes cognitive, technical, socio-emotional, and cultural capabilities arising from education, work experience, health, nutrition, and community life (OECD, 2007; World Bank, 2020). Evidence suggests that additional years of schooling do not necessarily guarantee greater learning or

employability (Pritchett, 2013; Kaffenberger and Pritchett, 2020), particularly in contexts of inequality and low educational quality. In economies with constant technological change and innovation, talent is measured by its relevance, applicability, and social recognition. It only drives development if it is surrounded by an environment that values, absorbs, and transforms it.

In Oaxaca, it is necessary to look beyond educational coverage. It is not enough to know how many people study. It is essential to understand what they learn, where they apply it, and whether they access decent employment, productivity, or entrepreneurship. Evaluating talent as a potential constraint involves analyzing its supply, demand, territorial allocation, and the factors that determine whether it is utilized or wasted.

3.2. Access to School

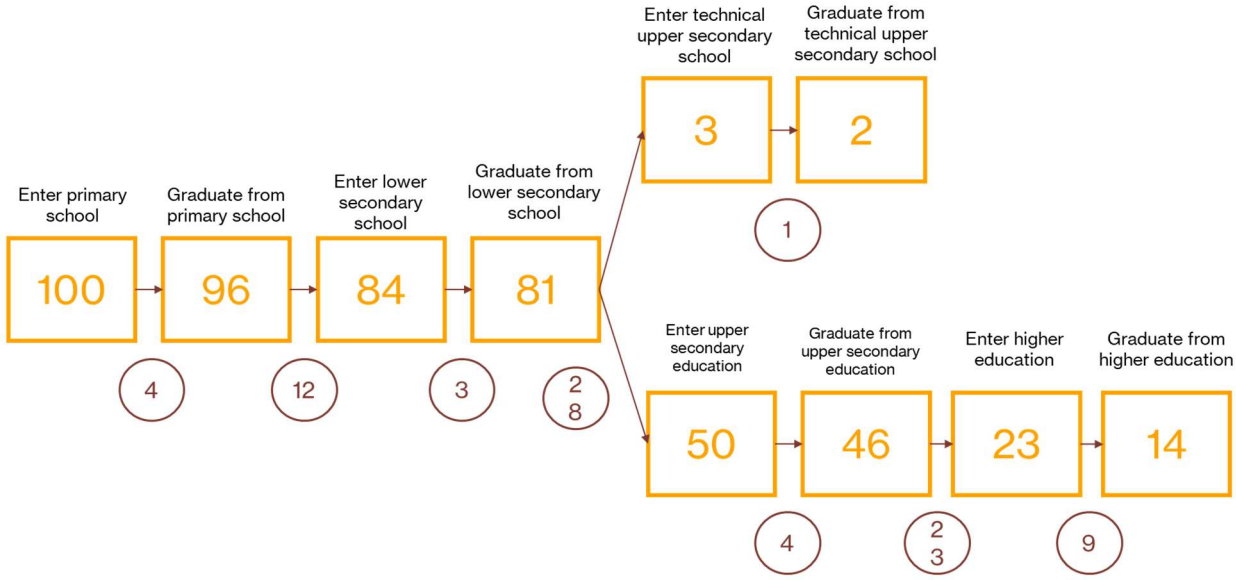
Oaxaca has one of the lowest rates of educational completion in the country. Although primary education coverage is high, school retention drops dramatically at higher levels.

Table 1. Coverage by education level in Oaxaca
Source: Ministry of Public Education (2023-2024)

Education level	Coverage	National	Difference	Ranking
Prep school	**80.3%**	**67.6%**	**+12.7%**	**2**
Primary	**101.4%**	**100.8%**	**+0.6%**	**9**
Secondary	**90%**	**92.2%**	**-2.2%**	**23**
High school	**64.1%**	**81.1%**	**-17%**	**31**
University	**22.1%**	**43.8%**	**-21.7%**	**31**

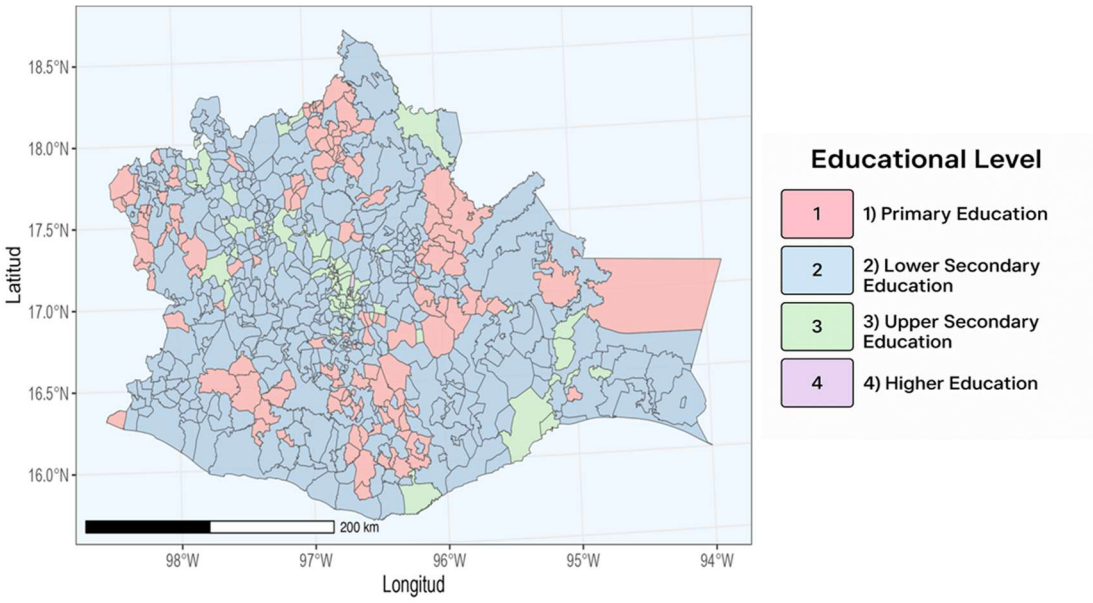
According to the Population Census (2020), out of every one hundred students who started primary school in 2008, only fourteen completed a bachelor's degree in 2020. During the transition from secondary school to high school, 28% of students drop out, and from high school to university, another 23% leave school.

Figure 2. Education trajectories in Oaxaca students (2008–2020)
Source: Population and Housing Census, 2020



In almost 80% of municipalities, the average level of schooling barely reaches the secondary level, equivalent to 6–9 years of education. In 7% of the localities, the average level is high school. Five municipalities in traditionally marginalized regions have an average schooling of less than four years. The following figure captures the prevalent inequality in educational attainment between Oaxacan municipalities.

Figure 3. Average education level in municipalities (2020)
Source: Ministry of Public Education

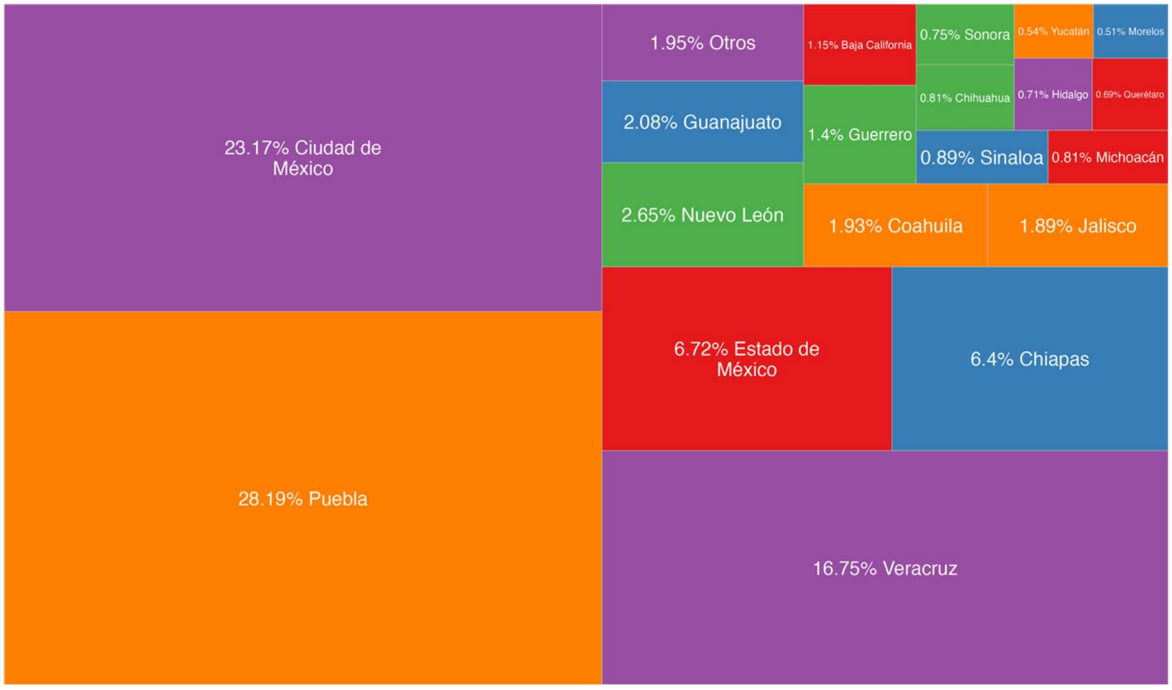


In the state, 188 municipalities do not have a single high school, while another 243 municipalities have only one. Municipalities with more schools have higher average enrollment rates, making access to education unequal across the state. Of the 570 municipalities, 512 do not have any higher education institutions. In contrast, the state's capital, Oaxaca de Juárez, has twenty-five

and cannot meet the demand of young people throughout the state.

Of every one hundred students who graduate from high school, twenty-four do not access higher education within the state, in part because young people do not expect returns on continuing their studies (Becker, 1964), due to such geographical barriers and economic costs (Sen, 1999). Approximately 24% of Oaxacan higher education students enroll in other states, even if their degree is available in Oaxaca, as they seek more prestigious universities and better-paying jobs.

Figure 4. Educative migration- destination states for students from Oaxaca (higher education)
Source: Formato 911, Ministry of Public Education

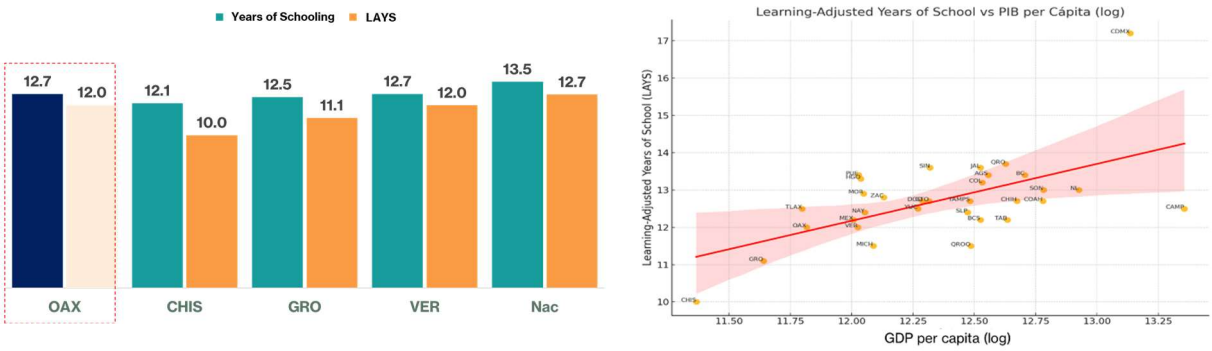


3.3. The Development of Essential Skills

Deficiencies in mathematics and ineffective communication affect students from the earliest levels, making it more difficult for them to access quality jobs. Nationally, 64% of 15-year-olds who complete middle school or enter upper secondary education have difficulties understanding the central message of a text, and 70% struggle with mathematics. These figures are worse among the most disadvantaged socioeconomic groups. Oaxaca does not have recent standardized test results, but the 2017 PLANEA results, although not representative of the state, are concerning: 37.2% of students are at the lowest achievement level in communication, and 65.4% at the lowest level in mathematics.

The illiteracy rate in Oaxaca in 2020 was 13.34%, primarily among people of working age. Of the total illiterate population, 40% are men and 60% are women (INEGI, 2020). The quality of learning lags behind what other states in the country achieve. To weigh years of schooling based on learning outcomes, the proper measure is Learning Adjusted Years of Schooling (LAYS), which finds that while the average schooling is 12.7 years in Oaxaca, the learning adjusted years are only 12.0. There is a loss of eight months of effective learning.

Figure 5. Learned Adjusted Years, average (LAYS) – 2023
Source: own elaboration with information from the Ministry of Public Education and INEGI.



Oaxaca faces the challenge of developing advanced technical skills without consolidating essential core competencies.

3.4. Teacher training: A key challenge for talent development

Effective teaching has a lasting impact that can extend throughout a student's life. According to Elacqua et al. (2018), it not only improves immediate educational outcomes but also increases the likelihood of students accessing higher education and earning higher salaries in the labor market. However, Oaxaca faces difficulties in attracting the best candidates for teaching, as Ñopo (2015) points out.

The challenges in teacher training range from candidate selection to the lack of ongoing training to update teachers on current educational demands. Long hours, inadequate resources, and precarious working conditions generate high levels of stress and demotivation, which can deter young people from pursuing a career in this profession. Another key problem is the limited capacity of teachers to foster transversal skills in their students. As well, educational programs do not effectively integrate competencies such as teamwork, assertive communication, and problem-solving.

The lack of recognition and support for teachers as agents of change limits their ability to positively impact the education system. Instead of acknowledging teachers as community leaders and social transformers, people view them solely as transmitters of knowledge.

3.5. Infrastructure and connectivity: A structural obstacle

Gaps in infrastructure and connectivity represent one of the most significant challenges to talent development and competitiveness in the region, particularly in rural areas, where distances to schools or training centers discourage efforts to access education. The lack of reliable electricity, drinking water, and equipped industrial spaces limits the attraction of investment and the growth of businesses that could generate quality jobs.

3.6. Market Alignment

Young people lack the skills required for available jobs, while companies struggle to find qualified talent. Educational programs continue to focus on traditional disciplines, disregarding the current needs of Oaxaca. Although there are programs with high potential for linking to

strategic sectors of the state's economy, in practice, many fail to translate into quality jobs within the region. This lack of coordination perpetuates the cycle of migration.

In the 2022–2023 school year, the most widely studied technical programs in upper secondary education show potential alignment with key productive sectors. However, the limited presence of established companies or projects that absorb these types of profiles prevents capitalizing on local talent.

Teaching-related majors are among the ten most studied in the state, reflecting the need for professionals in the field of education and the tradition of teaching as a stable option. However, law, medicine, administration, and architecture continue to attract a large portion of the student population, which may limit the diversification of talent in strategic sectors such as agribusiness, emerging technologies, and tourism. This situation suggests a lack of awareness among young people about the job opportunities offered by specific key sectors in Oaxaca.

In the Isthmus, courses in electrical engineering, power generation, electronics, automation, and mechanical-electrical applications have become increasingly important in recent years, possibly in anticipation of the future development of the Interoceanic Corridor.

However, employers are not actively involved in curriculum design. Many young people are unaware of existing job opportunities or the skills required to take advantage of them. Small and medium-sized businesses face challenges recruiting qualified talent due to a lack of programs and incentives for them to participate in job training initiatives. Vocational guidance must be integrated as an essential component at all educational levels.

Shadow prices, relative scarcity, and disincentives for female talent

According to the Mincer model estimated for Oaxaca, the returns to education are consistent with those observed nationwide. However, using a differential diagnosis approach (Hausmann, Rodrik, & Velasco, 2008), the gender wage gap reveals an inefficient allocation of available human talent. Women earn 51.5% less than men with the same education and experience. This gap is more acute at lower educational levels.

This pattern suggests that the shadow price of female human capital is lower than that of males, not due to fundamental differences in productivity, but instead to market structures that undervalue their capabilities. While work experience increases earnings, its marginal effect diminishes after age 24, suggesting that the returns to seniority are also limited by structural dynamics that affect women more intensely.

This evidence indicates that the labor market in Oaxaca does not efficiently or equitably compensate for all available skills and therefore does not generate the necessary incentives for sustained talent accumulation. Instead of allocating wage premiums to critical development skills, it reproduces inequalities that discourage training, especially among historically undervalued groups.

Figure 6. Monthly income per schooling and gender
Source: Occupation and Employment National Survey, 2024 second quarter

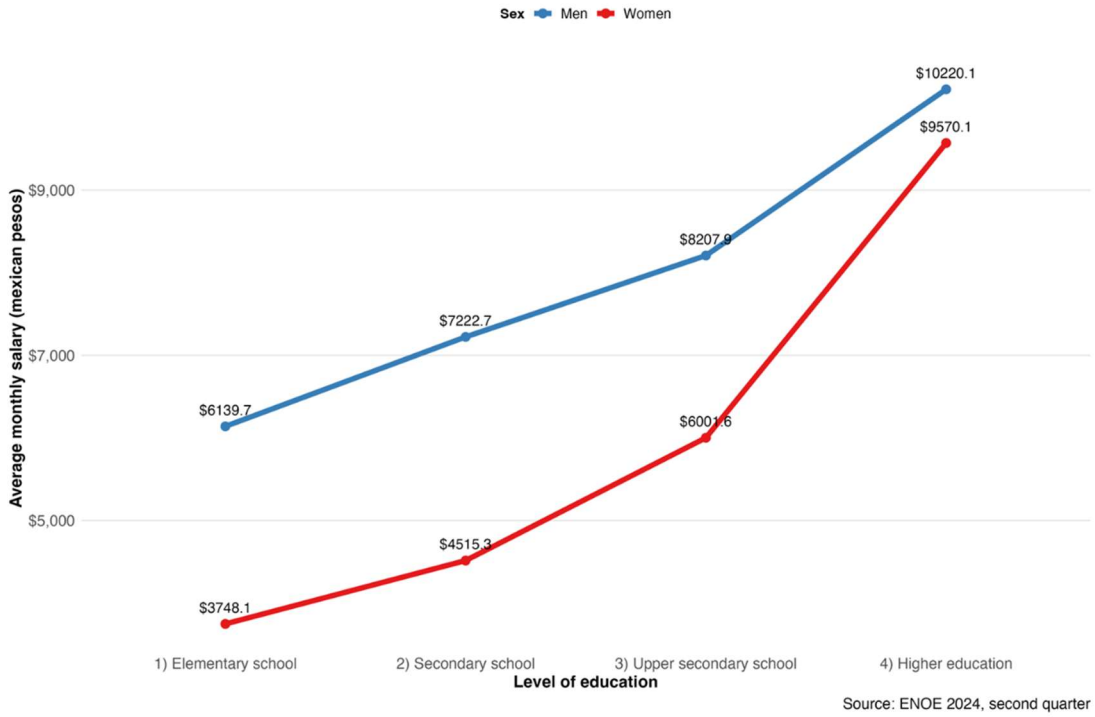
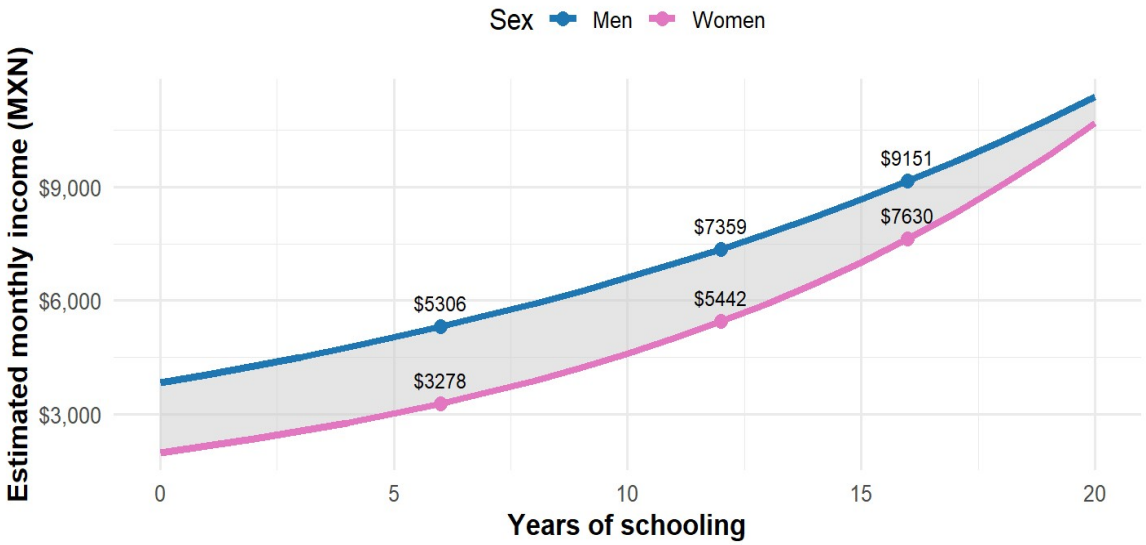


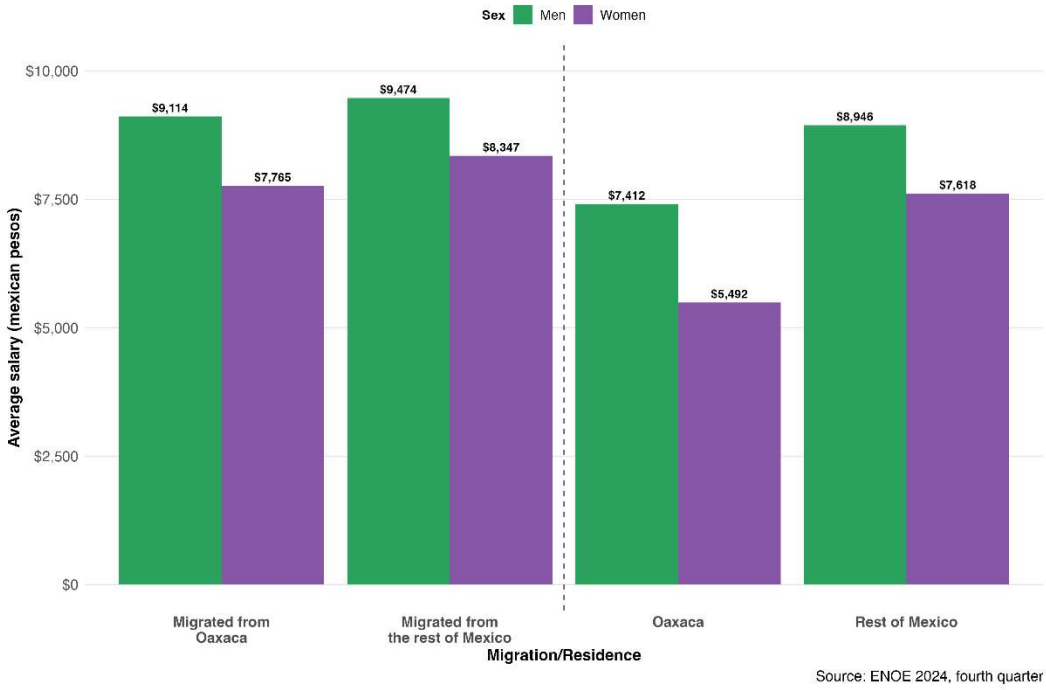
Figure 7. Monthly income estimated per additional year of schooling (Mincer model)
Source: Occupation and Employment National Survey, 2024 second quarter



One of the primary challenges in harnessing human talent in Oaxaca is the increasing migration of its residents to other states, primarily due to the poor quality of the local labor market. Those who moved to other states in the last year earn, on average, 36% more for men and 57% more for women. Talent trained in Oaxaca is valued in other markets but underutilized locally. The monthly average wage received by an Oaxacan upon migrating is $9,114, while if they remain in the state, they receive $7,412. This difference of 1,702 pesos per month even offsets

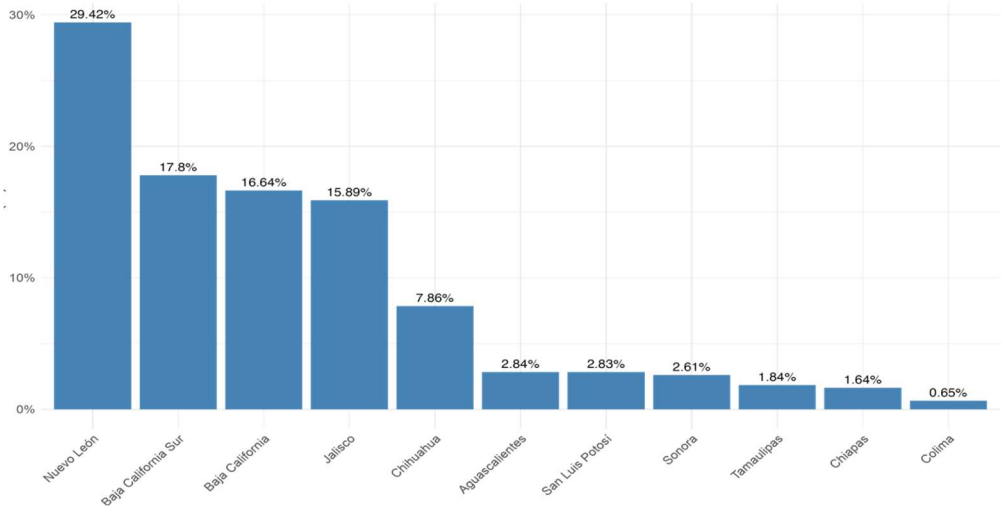
the estimated cost of migration, which is close to 9,474 pesos.

Figure 8. Income comparison: Oaxaca vs. the rest of Mexico
Average monthly income by sex for people born in their state of residence and those who migrate to other states in the country.
Source: Occupation and Employment National Survey, 2024 second quarter



Migration from Oaxaca is concentrated in the north of Mexico, with the top three destination states absorbing 64% of Oaxacan migrants over the past year.

Figure 9. Where do people from Oaxaca migrate to? – Destination states for people who migrated from Oaxaca a year ago or less
Source: Occupation and Employment National Survey, 2024 second quarter



The sectors in which Oaxacans are employed outside the state also exist in Oaxaca, but with less competitive salaries.

Table 2. Sectors in which people who migrated from Oaxaca to other states in the country work.
Source: Occupation and Employment National Survey, 2024 second quarter

Sectors	Percentage
Manufacturing accessories, electric appliances, and power generation equipment	15.89%
Agriculture	14.77%
Hosting services	12.89%
Other manufacturing industries	11.56%
Homes with domestic employees	11.53%
Basic metallic industries	8.92%
Food industry	7.01%
Wholesale of groceries, food, beverages, ice, and tobacco	4.56%
Travel agencies and reservation services	4.03%
Private hospitals	2.84%
Chemical industry	2.83%
Retail sale of textile products, jewelry, clothing accessories, and footwear	0.87%
Personal services	0.82%
Masonry work for plumbing and electrical installations, as well as exterior work	0.82%
Federal administration	0.65%

At the same time, the return of migrants with new skills is minimal, due to the perception that those who return do so because they have failed abroad. However, increasing immigration restrictions in the United States have already led to the return of migrants to Oaxaca, bringing with them the knowledge they acquired in the United States. Oaxaca must be prepared to receive this talent, fully integrate it, and avoid the mistake of letting it go a second time.

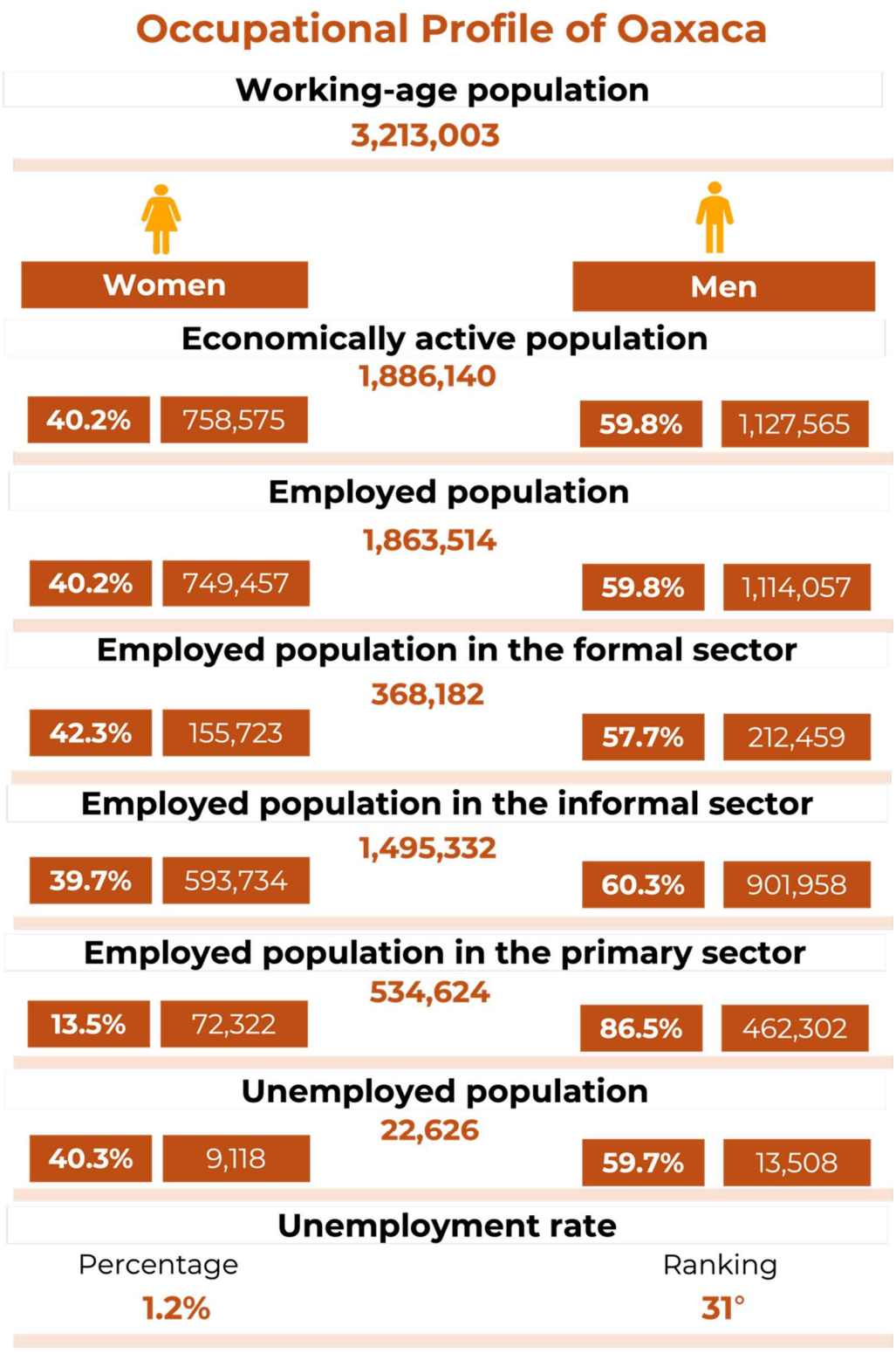
3.7. Social inequality and school dropout rates: a profound challenge for talent development

Many young people in Oaxaca face economic pressures that force them to drop out of school to support their families. Many rural communities perceive education as an elusive privilege. One school official added: "Dropout is also related to the perception that educational programs have no real impact on employability."

Poverty plays a complex role in this dynamic. Social programs, such as *Jóvenes Construyendo el Futuro* (Youth Building the Future), which are essential for the subsistence of many families, can, in some cases, generate dependency. Without proper balance, these measures can act as a brake on investment in education and professional training, perpetuating the lack of skills and opportunities among young people.

Oaxaca's cultural structure is both a strength and a challenge for talent development. While it reinforces community values and local dynamics, it can also restrict the adoption of modern approaches essential for competing in a globalized marketplace. The lack of adequate mentors makes it challenging for many individuals to recognize and develop their full potential.

Figure 10. Occupational profile in Oaxaca by gender.



Source: National Employment and Occupation Survey (ENOE), Oaxaca. Press Release No. 531/24, September 2, 2024. INEGI

4. Key Skills for Oaxaca's Strategic Industries

Oaxaca can rise in the national and international scene if its key industries strengthen the skills of the people who support them.

4.1. Food industry

Oaxaca's food industry occupies a strategic position to integrate into GVCs by exporting processed products with efficiency and quality. Public policies that promote innovation, access to financing, and training will be crucial in enhancing the sector's competitiveness.

The US, the region's largest importer of processed fruits and vegetables, offers a market worth more than $1.8 billion annually. Mexico, as its leading supplier, holds a competitive advantage over its Asian counterparts.

Between 2013 and 2018, the food industry in Oaxaca experienced a 183% increase in value added. However, 90% of their economic units are still microenterprises with fewer than five employees, with limited capacity to integrate into more sophisticated GVCs.

The food industry in Oaxaca plays a crucial role in local productive chains and territorial development. It complements traditional activities, such as textiles and beverages, while encouraging diversification toward products with higher value-added. This action reduces dependence on traditional sectors and opens new opportunities in international markets, strengthening the region's economic resilience to external fluctuations.

The inclusion of restaurants in this industry strengthens connections with gastronomic tourism, generating economic benefits for rural and urban communities, and stimulating the conservation of cultural heritage.

4.1.1. Challenges and opportunities for companies in the Oaxaca food industry

The food sector faces a series of challenges that threaten its sustainability and competitiveness, such as high employee turnover, unfair competition, and gentrification. Informal options, such as Airbnb, are proliferating with little regulation, while rising rents are forcing many businesses to close their establishments or limit their expansion.

4.1.2. We are hiring: the key profile to drive the food industry.

Only 4.61% of workers in this industry have higher education, making it challenging to adopt advanced practices to compete in GVCs. Although salaries tend to increase with educational level, the gap between high school and college is often marginal, discouraging the pursuit of advanced studies. At the same time, many roles in this industry, such as machinery maintenance or manufacturing, require specific skills that are not always adequately compensated. The average salary of $5,708 per month is below expectations for an industry with high value-added potential. This salary level discourages the retention of qualified young talent and encourages the flight of human capital to other sectors or regions with better economic prospects.

4.1.3. Main findings and challenges in vertical and horizontal mismatches

With university graduates occupying technical positions that do not require such training, the Oaxaca labor market is failing to tap the potential of skilled workers. Professionals with training in fields such as literature and educational guidance are working in unrelated sectors, highlighting a mismatch between the academic offerings and the real needs of the labor market.

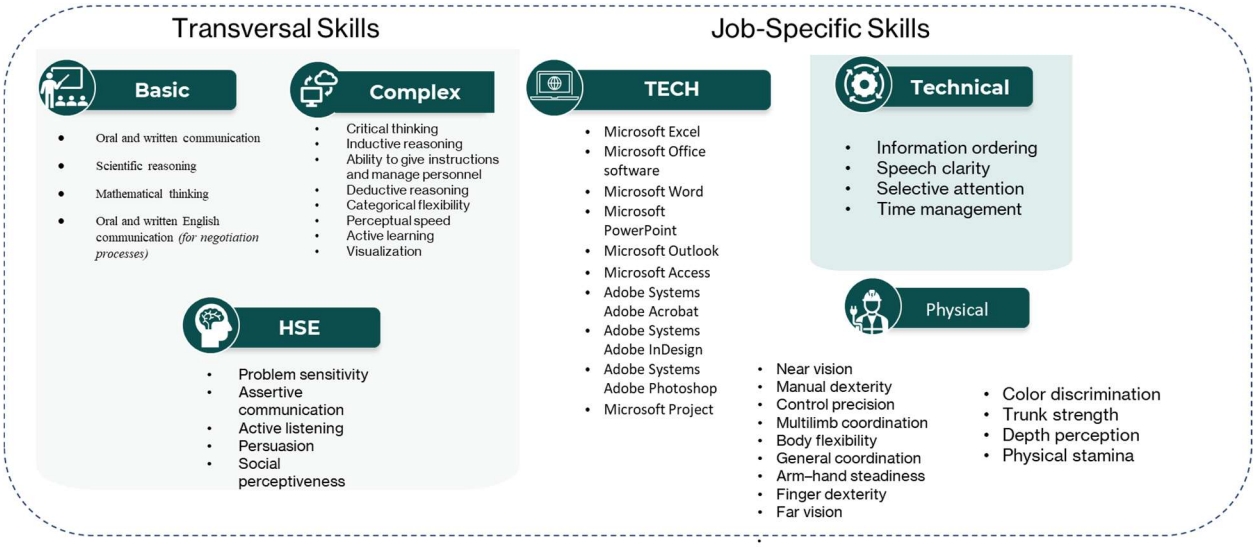
4.1.4. Talent profile required by the food industry

Companies highlight the commitment of the local workforce but warn that many workers lack specific training for industrial environments that require precision, sanitary controls, and mastery of technical processes. The learning curve is steep, and mistakes have high costs in terms of quality, safety, and food safety. According to the production manager at a prepared food company, "We need people who can follow precise instructions, record what they do, and detect when something is wrong." Many young people are not motivated to work in a factory environment, adhere to strict schedules, or work weekends and holidays.

Companies agree on the need to promote training programs that combine technical skills with transversal competencies such as attention to detail, collaborative work, and continuous improvement. In the long term, it will also be necessary to rethink working conditions to make them more compatible with the cultural realities of local workers.

Figure 11. Essential skills in the food industry

Source: own elaboration.



4.1.5. Actions to close the skills gap in the food industry.

One of the most important measures is to implement technical training and language programs, especially English, to meet the demands of international tourism. Secondly, to establish certifications in hygiene and advanced culinary techniques. It is crucial to strengthen partnerships with technical schools and universities.

4.1.6. Best practices in the food industry

Some companies have enhanced their workers' sense of belonging by implementing new hiring and retention strategies, offering productivity bonuses, introducing more flexible work arrangements, and providing incentives to reduce staff turnover. They have also developed comprehensive induction programs focused on the safe use of machinery, hygiene practices, and quality control standards. Additionally, they offer workshops on operational discipline, teamwork, and effective communication. There have been efforts to strengthen relationships with local suppliers through sustainable purchasing agreements and guidance on conservation, packaging, and standardization of inputs. This approach has improved the traceability and quality of raw materials while generating economic benefits for rural producing communities. Some industries have begun to invest in the well-being of their

employees by implementing initiatives to recognize and reward their top-performing workers.

Success stories: Fruvethy, a women-only company

Founded in 2018 by Nina Escamilla Calleja, Fruvethy specializes in freeze-dried products—snacks, flours, and powders—made from fruits, vegetables, and herbs, and works directly with small producers in Oaxaca. The company operates with a workforce of fifteen women, many of them between 23 and 36 years old; 90% of them are single mothers. The workload—40 hours a week, excluding weekends, with work ending before dark—offers decent conditions in a state where informal employment is prevalent. The company also offers psychological support for emotional communication and leadership development.

Fruvethy has had to pay for external training in Guadalajara and invest in the development of its own operational team. For Escamilla, an innovation center in Oaxaca would provide a realistic and affordable connection between academia, businesses, and governments. Fruvethy has had to cover additional costs to import machinery and process permits in a system poorly adapted to industrial processes. Even so, Fruvethy sells 90% of its products outside the state, including in the US.

Tierra del Sol Oaxaca, good food as an act of social and environmental

Founded by Mixtec chef Olga Cabrera, restaurant Tierra del Sol purchases daily ingredients at a fair price from a network of small producers and collaborates with organizations that promote financial inclusion. It develops its own methodologies to ensure the traceability of its products and mitigate environmental risks. This approach has earned its inclusion in the Michelin Guide.

Although many people are drawn to working in the kitchen due to its culinary tradition, fewer are interested in professionalizing customer service. The team has identified patterns: young people between 23 and 29 years old, without complete training, with immediate aspirations but little resilience. The response has been ongoing training. They hold weekly workshops, conduct diagnostics based on internal surveys, and offer workshops for developing soft skills such as empathy and communication. Tierra del Sol's talent team relies on processes, manuals, and written philosophy.

4.2. Beverage industry

The alcoholic and non-alcoholic beverage industry is a key element of the state's economic development, due to its leadership in mezcal production, its diversification into spirits, beers, and natural and organic beverages, and its ability to compete in national and international markets. It has a positive impact on rural and Indigenous communities and positions itself in premium segments, combining tradition, biodiversity, and craftsmanship.

Thanks to the use of endemic flora, such as the thirty-five native corn strains used in whiskey and local botanicals for gin, producers have developed high-value-added beverages. The sector has grown significantly. In 2018, it led the state in the number of paid employees, with 2,754 workers, representing a 50% increase from 2014. Between 2013 and 2018, the number of companies increased by 169%, from 625 to 1,684 firms, representing 10% of the total economic units in the analyzed sectors. Microenterprises were the driving force behind this boom, with a 220% increase that led to the creation of 1,009 new companies. The sector's value-added totaled 403 million pesos, representing an 81% increase during the analyzed period.

With more than 90% of national production, producers export Oaxacan mezcal to sixty-eight countries. The US acquires 60% of the state's output, 2.6 million liters annually. More than 48,000 families directly depend on mezcal production. International certifications—such as Fair Trade or the Small Producers' Symbol—can enhance working conditions, ensure more equitable prices, and bolster the autonomy of producing communities.

Oaxaca is the sixth-largest beer producer in Mexico and one of the leading ones in the growing craft beer industry. Further, another highlight is the range of juices and natural waters made from added fruits, with the potential to enter the growing US market with a differentiated offering of organic products.

4.2.1. Challenges and opportunities in the beverage industry

Small businesses can respond to global market demands if they overcome the challenges of a logistics infrastructure shortage, complex regulations, high operating costs, and a tax burden. The Special Tax on Production and Services (IEPS), which can reach up to 53%, reduces profitability, especially for small businesses.

Although traditional knowledge remains a pillar of mezcal and distilled spirits production, producers often lack key skills in quality control, administration, and international trade, which affects their ability to comply with the regulatory standards of markets such as the US and Europe.

From the efficient management of natural resources, such as water, to the development of sustainable agricultural practices, the sector needs training to guarantee its long-term viability. The overexploitation of maguey threatens to exhaust the fundamental raw material of mezcal. While some producers have begun to implement reforestation programs, most lack the instruments and knowledge necessary for responsible management.

4.2.2. We are hiring: key profiles are scarce in the beverage industry

Just 4.89% of employees in the sector have higher education degrees. The representation of university-level technicians (TSU) is just 0.46%.

4.2.3. Wage inequality by education level

Workers with higher education have an average salary of $9,086.23, which is 34% higher than those with higher secondary education ($7,046.61). Sales managers and supervisors exhibit a significant disparity: workers with primary or secondary education earn an average of $2,337.06, while employees with higher education receive up to $12,000.00, a difference of more than 400%. Some TSU receive lower salaries than workers with middle and high school diplomas.

4.2.4. How beverage companies define and perceive talent in their workforce and in Oaxaca

Most workers in this sector concentrate on manual activities, involved in various aspects, from planting and managing maguey plantations to distillation and bottling processes. Many alternates between seasonal and permanent jobs, according to the agricultural cycle and the artisanal nature of production. Young people often associate this trade with intense physical work, rather than its economic and creative potential.

4.2.5. Skills to strengthen the beverage industry

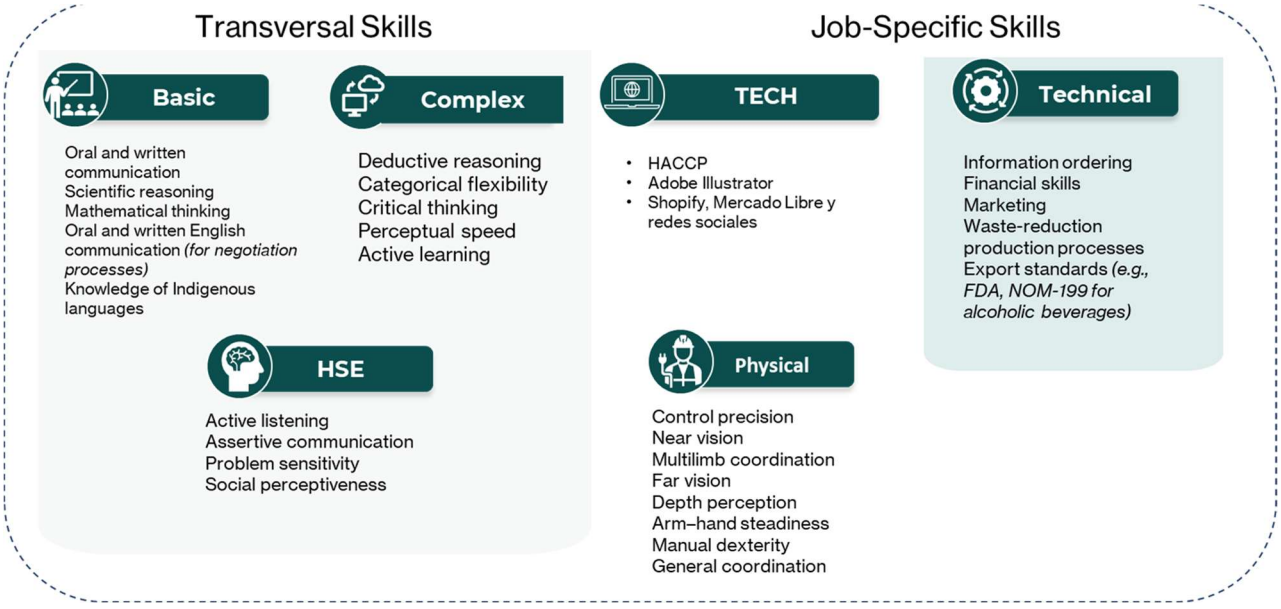
This sector faces a paradox between the domain of traditional processes and the need for technical and administrative skills that allow its consolidation in broader markets. As explained by an export-dedicated businessperson, "We know how to make a good mezcal, but certifying and exporting it is another story. The procedures are a maze, and we need people trained to navigate it."

This sector requires modern technologies that enhance efficiency, but it must not compromise

the artisanal essence of its products. Additionally, quality analysis, inventory management, and partial automation can optimize production and reduce costs; however, a lack of training in these areas remains a significant obstacle. This gap puts the sector at a disadvantage against international competitors with more advanced systems. According to a beer producer, "In the United States and Europe, demand for artisanal drinks grows, but we do not know how to get to those markets. We lack commercial vision and the ability to negotiate."

Developing competencies in sustainable production processes, adhering to export standards such as FDA and NOM-199, and acquiring financial and marketing skills are essential to improve competitiveness. Additionally, incorporating socio-emotional skills fosters a more inclusive and effective work environment.

Figure 12. Essential skills for the beverage industry
Source: own elaboration.



The interviewees highlighted the urgency of implementing technical and professional training programs. As well, they recommended creating innovation and biotechnology centers as a strategic solution to enhance product quality. As explained by a distillate producer, "We need laboratories where we can analyze the product and certify it without having to go to Mexico City."
Collective marketing platforms allow small producers to overcome the logistics and financial challenges associated with export. Government and private institutions can implement training programs in Digital Marketing, Foreign Trade, and Logistics, providing the necessary tools to compete in foreign markets.

4.3. Textile industry

The Oaxaca textile industry, which combines ancient traditions with sustainability and modernity, is a national and international reference, utilizing techniques such as the waist loom and pedal loom. Since 2013, the number of economic units in the sector has increased by 46%, reaching 8,910 companies, while the number of occupied staff has grown by 30%, reaching 12,321 workers. However, the growth in paid personnel was only 6%, indicating that a significant portion of the workforce operates under informal or unpaid arrangements.

The value added by the textile industry reached 366 million pesos in 2018, representing a 148%

growth since 2013. In 2018, microenterprises with between 0 and 5 workers experienced the most significant increase (+118%), followed by small businesses with 6 to 10 workers (+49%). In contrast, companies with more than ten employees decreased in number, indicating a tendency towards a family and artisanal economy, such as agribusiness.

The textile industry in Oaxaca represents 52% of the companies in the analyzed sectors, with a total of 9,025 signatures in 2018 (+116%). However, its orientation towards small and familiar economic units limits its ability to generate formal jobs and capitalize on the opportunities of the global market.

The Oaxaca textile industry has a strategic opportunity to position itself in the growing global ethical fashion market. Analysts project this market will reach $15.5 billion. The key to capitalizing on this opportunity is fair trade certifications. Indigenous and rural communities, such as Teotitlán del Valle and Santo Tomás Jalieza, already operate under principles aligned with this philosophy, ensuring fair remuneration for producers. Ecological fashion is another segment where Oaxaca stands out for its use of natural materials and its environmentally friendly practices.

4.3.1. Challenges and opportunities in the textile industry

The textile sector in Oaxaca needs to professionalize its talent. New generations are losing technical skills due to declining interest necessary to maintain production standards are being lost, necessary to maintain production standards, due to the lack of interest in traditional trades. Another significant obstacle is the lack of adequate infrastructure and technology to produce and market textiles effectively. "If we had access to better tools, we could produce parts with greater precision and reduce delivery times," said a craftsman. Producers depend on self-financing to invest in improvements, which exposes them to delays in payments and difficulties in fulfilling large orders. They rely on intermediaries that often capture most of the profits, limiting the margin for artisans. Additionally, many consumers lack knowledge about the cultural value of Oaxaca textiles compared to cheaper industrial products.

Training centers would integrate traditional techniques with modern design, management, languages, and marketing skills. "A space where young people learn from colorimetry to design and marketing could transform the way this trade is valued," said a businessperson. The improvement in infrastructure and financing represents another crucial opportunity. More adequate premises to exhibit and sell products would attract high-profile customers, and public support programs could facilitate the cash flow of artisans, thereby eliminating the financial uncertainty that currently limits their production capacity through initiatives such as purchasing for government institutions.

4.3.2. We are hiring: key profiles to drive the textile industry.

In the workforce in the Oaxaca textile industry, only 0.95% have higher education degrees. Employees with incomplete primary education receive an average salary of $ 1,158.28, while those with upper secondary and higher education earn $ 5,726.70 and $ 9,479.00, respectively. However, certain occupations, such as embroiderers, weavers, and threadwork artisans, show low wages regardless of the employees' educational level.

Administrative and legal occupations, such as lawyers, are the best paid, with an average annual salary of $ 111,202. This salary difference highlights a greater appreciation for the functions that support the management and formalization of the sector. However, they represent a small proportion of the workforce.

4.3.3. How companies define and perceive talent in the textile industry

The textile sector in Oaxaca is deeply rooted in its traditions. As explained by a weaver teacher

of the Oaxaca Valley, "Since childhood, children learn to weave, dye, and understand the importance of designs."

However, many young people prefer to devote themselves to better-paid jobs in other sectors, which puts the continuity of traditional practices at risk. As explained by a local businessperson, "young people do not want to learn because they believe this has no future. We need to show them that textiles can be profitable and worthy."

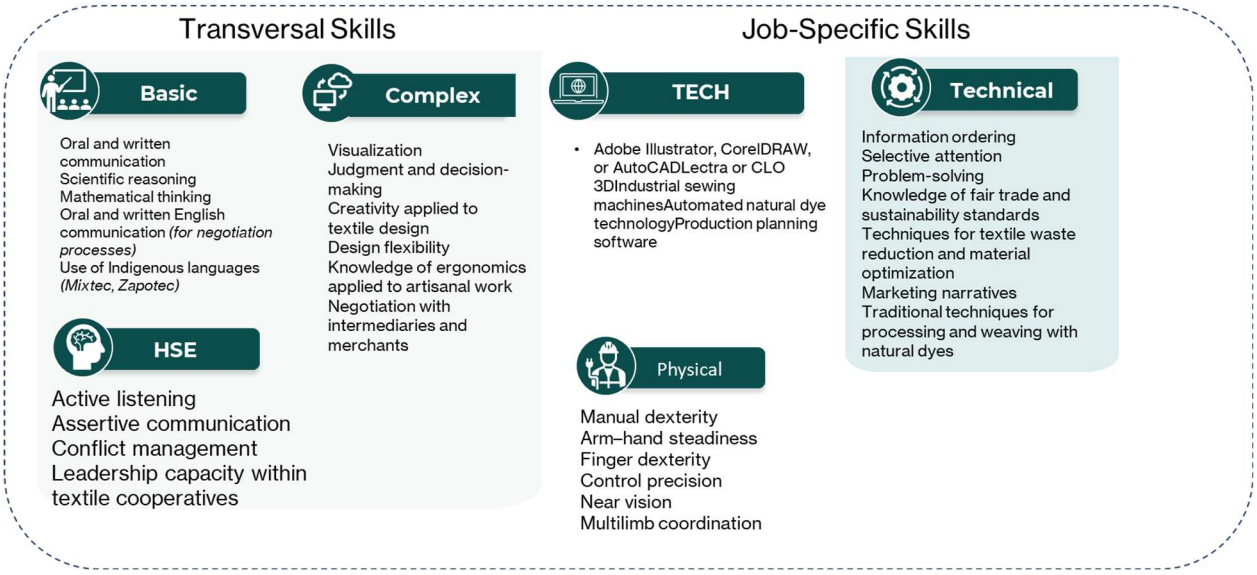
4.3.4. Key skills to strengthen in the textile industry

The primary challenge for the textile sector in Oaxaca is the lack of technical and management skills. Introducing design software and online sales platforms could enhance competitiveness. "We cannot depend only on physical tourism. If we learn to use platforms such as Etsy or Amazon Handmade, we could reach larger markets," added an entrepreneur dedicated to embroidered textiles.

The family structure of many workshops generates challenges in the organization and professionalization of work. Lack of English speakers limits access to international buyers. As a craftsman commented, "We have clients from the US and Europe, but without English, we cannot negotiate or understand their needs."

Knowledge of fair trade and sustainability regulations, as well as techniques to reduce textile waste and optimize materials, is vital for positioning products in premium markets. Additionally, marketing narratives that highlight traditional techniques are essential for effective product positioning. In addition, socio-emotional competencies, such as conflict management, leadership in textile cooperatives, and negotiation with intermediaries, would encourage a collaborative and efficient environment.

Figure 13. Key skills in Oaxaca's textile industry
Source: own elaboration.



4.3.5. Actions to close the skills gap in the textile industry

One of the proposed key strategies is the creation of dual training centers that integrate formal education with artisanal learning. Access to financing is another critical need. Government programs that provide working capital facilitate the acquisition of machinery, improve production facilities, and ensure the continuity of trade. Finally, diversifying products into new niches, such as fashion and decoration, represents a significant opportunity.

4.3.6. Best practices in the textile industry

Constant innovation, such as the introduction of modern designs and colors, has proven to attract premium markets without compromising quality or relying on traditional methods. Individualized training has established itself as a crucial practice for raising the standards of the sector. Specialized workshops in quality, measurement, and color combination enable artisans to enhance their skills and produce high-value products for the market.

Success stories: Guenda weaves heritage and future

Although 80% of the inhabitants of Santo Tomás Jalieza know how to weave on a waist loom, it seemed inevitable that this tradition would disappear. Families send their children to study other professions so that they do not follow in their footsteps. However, Wendy and Nelson decided to return to Oaxaca, after studying architecture, to rescue what others had lost: they founded Guenda, a company that hires twenty-three artisan families to design, make, and sell handmade textiles.

Since 2014, Guenda has helped formalize what was informal income for families in the municipality for decades: the waist loom. They now apply design criteria and quality standards, and provide continuous training. In their workshops, children begin learning as early as age five or six. This strategy actively helps to reconnect new generations with their heritage.

Guenda has also received national and state-level awards for the quality of its pieces. Nevertheless, its success is measured in the impact it has on the community. "Before, if a professional returned to the community to weave, they rejected him. They thought that person had failed," their founders say. However, now there are young people who, seeing that it is possible to make a living from textiles, are returning. They participate in national competitions, try new materials, and proudly claim that their trade is valuable.

Guenda complies with regulations, pays taxes, and invests in training despite the bureaucracy and fiscal costs. Its most significant investments are in human resources, supplies, and machinery for producing finished products. Wendy, one of the founders, personally trains in colorimetry, measuring, and finishing. They dream of creating a training center for young people who want to specialize in the waist loom technique.

4.4. Agribusiness

Oaxaca's agribusiness leverages its unparalleled natural wealth and strategic location near international markets, including the US. With an offer that includes high-quality coffee, mezcal, lyophilized fruits, and natural oils, the Oaxaca agro-industrial sector directs more than 90% of its sales outside the state, despite its modest scale.

Oaxaca has a territory of 9.4 million hectares; producers use three million hectares for agriculture and dedicate 0.8 million to forestry. They allocate 1.2 million hectares to crops and use a similar area for pastures and activities related to forests and jungles. Although the planted area is 906,160 hectares, there are 380,061 active agricultural production units, in addition to 146 forest production units and 29,347 units whose lands remain idle, which suggests a capacity that can be optimized (INEGI, 2022).

Oaxaca's agribusiness stands out for its diversified capacity in agricultural, livestock, and fishing production.

Table 3. Main annual crops, 2022
Source: INEGI. Agricultural Census, 2022.

Crop	Production (tons)	Planted area (hectares)
White corn	324,337	364,354
Pumpkin	92,105	26,877
Feedstock sorghum	62,077	4,880
Yellow corn	47,049	35,833
Feedstock corn	45,311	4,489
Sorghum in grain	37,648	16,476
Beans	12,847	64,863
Watermelon	12,006	1,136
Tomatoes	9,487	728

Table 4. Main perennial crops, 2022
Source: INEGI. Agricultural Census, 2022.

Crop	Production (tons)	Planted area (hectares)
Sugar cane	3,743,997	72,568
Planted grass	904,079	100,886
Mango	250,854	28,774
Papaya	210,338	2,747
Lime	201,960	33,524
Pineapple	194,223	3,978
Alfalfa	158,848	4,150
Agave	116,603	37,885
Bananas	55,924	8,314
Coffee	30,441	69,883

Oaxaca's potential for food industrialization and transformation presents opportunities to generate value-added products. Dehydrated fruits and vegetables, as well as prepared stews, can be exported to global markets where demand for processed foods and ready-to-serve products is increasing. The production of cornmeal, as the basis of multiple gluten-free food products, and diversification into condiments and cereals has the potential to generate greater value-added, along with coffee, via the expansion of roasted, ground, and concentrated lines.

4.4.1. Challenges and opportunities for agribusiness

Infrastructure and logistics deficiencies are significant obstacles. "We have quality products that could compete globally, but our roads and traditions do not allow us to grow as we should," said a coffee businessperson. The lack of continuous access to light and water adds to the costs and time required for importing machinery. "Bringing new equipment to innovate in our processes takes months and money," said a producer of processed fruits.

Fiscal and legal barriers discourage formalization, making profitability difficult. Small family businesses perceive taxes, such as the income tax (ISR), as disproportionately high. These businesses form the backbone of the sector. "We pay more taxes than great producers," said a leader of the coffee sector. Complex regulatory processes, such as labeling permits or COFEPRIS

certifications, slow down access to other markets, where more industrialized products and better logistics conditions compete.

The high turnover of young personnel is a constant issue. "Young people only come to learn and leave as soon as they find something better," said a representative of agribusiness. The lack of organic production certifications remains a critical barrier that prevents capturing differentiated prices and consolidating more profitable and sustainable models. The possibility of maquila for large brands also arises to capture greater value added in the region.

4.4.2. We are hiring key profiles to drive growth in the agribusiness sector.

The workforce in Oaxaca's agribusiness is predominantly composed of workers with basic educational levels. The upper secondary educational level is represented by only 7.18%, despite the fact that professionals such as agronomists and agricultural supervisors are essential for implementing advanced practices, improving productivity, and meeting the specific demands of international markets. The lack of representation at the technical and university levels restricts specialization in key activities, such as pest control, specialized crop management, or the supervision of agricultural operations.

Employees with incomplete primary education have an average salary of $4,298.21, typically in manual roles such as loaders. Paradoxically, workers with upper secondary education have a lower average salary, at $3,952.52, compared to those with lower educational levels. The type of jobs performed explains this peculiarity, such as fumigators or agricultural supervisors, which require greater specialization but lack an adequate compensation structure. In contrast, workers with higher education receive an average salary of $7,425.14, the highest among all educational levels.

4.4.3. How companies define and perceive talent in agribusiness

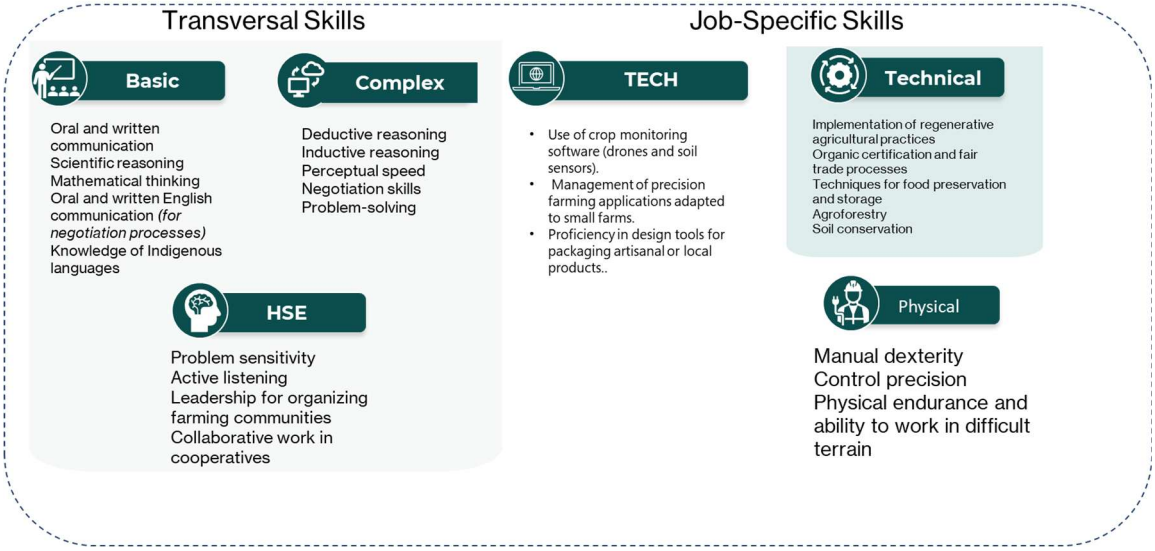
Companies perceive talent as resilient and adaptive in the Oaxaca agro-industrial sector. As well, they perceive it as deeply connected to practical knowledge of the land. Nevertheless, this empirical knowledge lacks formal support in terms of technical training and certifications, which hinders access to more competitive markets.

4.4.4. Key skills agribusiness needs to strengthen.

In the Oaxaca agro-industrial sector, the most in-demand skills and profiles reflect an urgent need for modernization and professionalization, both in production processes and business management. "We need people who know how to operate irrigation systems or drones to monitor crops, but we do not find anyone with that profile," said a producer.

At the operational level, trained personnel are required for the management of machinery, as well as technicians in food and agricultural production. In the administrative field, talent with skills for data analysis, digital tools, and productivity improvement is sought. Finally, at the management level, sector leaders emphasize the need for profiles with competencies in strategic planning, resilience, and change management. "The crops require managers, not only manual workers. We need people capable of organizing processes and leading teams," insisted an entrepreneur in the sector.

Figure 14. Essential skills in agribusiness
Source: own elaboration.



4.4.5. Actions to close the skills gaps in agribusiness

The Oaxaca agri-industrial sector requires integrating training, technological modernization, and economic incentives. One of the most outstanding proposals is the integration of programs that alternate theoretical learning with practical experience for young people. "If we link universities and technical centers with companies, we can train people with concrete skills in a few months," said an agro-industrial leader.

Credentials for specific technical skills, such as machinery management, efficient irrigation, and digital trade, were another solution frequently indicated by the interviewees. Adjustments in the tax burden, such as reducing taxes on inputs and equipment, were identified as key measures to ease the economic constraints on companies, as well as updating roads and electrical services.

The interviewees emphasized the importance of strategies to retain local talent, such as structured contracts, continuous training, and fair working conditions.

Success stories: Selvática, handmade resilience.

Abigail did not expect to start a company. She just wanted to relieve her daughter's pain, given her rare skin condition. What began as a domestic search for solving a family health problem has evolved into an artisanal production model that generates jobs and distributes natural products in more than twenty-five states in Mexico.

In 2019, they opened their first store in downtown Oaxaca. Shortly after, they built their own workshop in San Pablo Etla, where they produce everything from soaps, balms, and shampoos to gourmet foods and pet products, without parabens, sulfates, or animal cruelty. The majority of the fifteen team members are women. Raw materials arrive from small producers and beekeepers who employ agroecological practices. Selvatica holds the "made in Oaxaca" certification and complies with the labeling and elaboration regulations required by COFEPRIS.

4.5. Light Industry

Oaxaca could write a new chapter in its economic development, with the light industry as the protagonist, which can connect it with global markets such as the automotive sector, one of the most dynamic in the world.

The light industry in Oaxaca is characterized by its focus on simple, short, and environmentally friendly processes, in contrast to heavy industry. Between 2013 and 2018, this sector showed the most significant growth among the analyzed sectors. The value added increased by 209%, from 88 million pesos to 273 million pesos. However, it represents less than 0.6% of the state economy.

The 1,247 economic units in this industry employ 2,319 people, of whom 810 receive formal remuneration. The number of companies increased by 59% during the analyzed period. Enterprises with no more than five employees comprise 97% of the sector. In 2013, there were no companies with more than 100 employees; however, by 2018, authorities registered four such companies. The number of small companies decreased from 33 to 16 between 2013 and 2018, primarily due to closures.

4.5.1. Challenges and opportunities for the light industry

The light industry has the potential to integrate into the GVCs of the automotive sector, Mexico's leading exporting industry. With its ability to produce key components and supplies, Oaxaca can contribute to the automotive supply chains at all tiers, including Tier 1, Tier 2, and Tier 3, focusing on products such as air conditioning equipment, lighting accessories, measurement instruments, hardware, and metallic components.

There is considerable potential in renewable energies to enhance the operability and sustainability indicators of the industrial sector. Oaxaca already operates twenty-nine wind farms in the Isthmus of Tehuantepec, with an approximate annual production of 2,758 megawatts, one of the largest in Mexico. However, the region has the potential to exceed forty-four thousand megawatts within an area of 8,800 km².

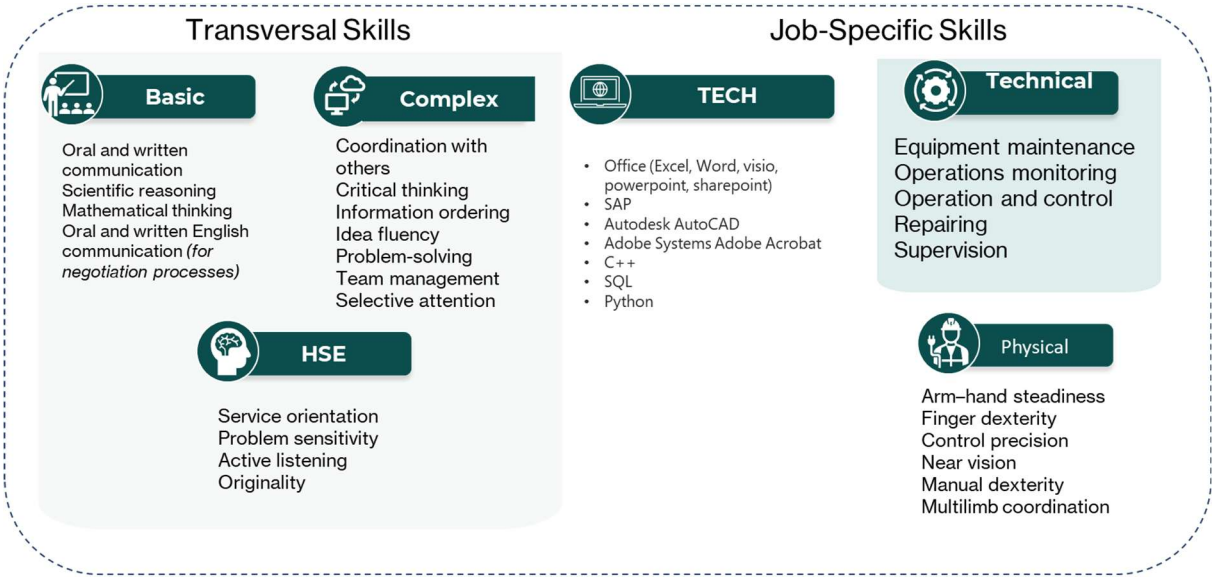
4.5.2. We are hiring: key profiles to foster the light industry

In the light industry in Oaxaca, 71.96% of employees have only primary and secondary education. Only 3.65% of employees received higher education degrees. Employees with primary and secondary education receive an average competitive salary of $ 8,153.26. Especially in specialized manual occupations, such as locksmiths and blacksmiths, where income can exceed $9,000. Contrary to expectations, workers with upper secondary education have a lower average salary, at $4,970.13. Technical occupations, such as blacksmiths and maintenance workers, earn an average of nearly $5,300, indicating an undervaluation of the educational and technical effort compared to less qualified activities.

4.5.3. Key skills to strengthen the light industry

The ability to operate digital tools such as SAP and AutoCAD, as well as programming languages like Python, along with equipment maintenance skills, operations monitoring, and repair, is crucial to guarantee sustainability and competitiveness. In addition, socio-emotional competencies, such as service orientation, sensitivity to problems, and active listening, encourage a work environment that prioritizes quality and innovation.

Figure 15. Essential skills in the light industry
Source: own elaboration.



4.5.4. Actions to close skills gaps in the light industry

This sector requires a structured approach that combines technical training, access to advanced technologies, and talent retention strategies. "If universities and technical centers design specific programs for the needs of local companies, we could train highly competent personnel in a short time," said a sector leader.

Interviewees suggested credentials in machinery operation, quality control, and computer-aided design (CAD) as another solution. In addition, they proposed to tax incentives for acquiring specialized machinery and software, as well as financing to modernize micro and small businesses.

5. From Oaxaca to the World: Strategies for the Development of Competitive Talent

From aligning educational programs with emerging sectors to implementing technical certifications and promoting socio-emotional competencies, we suggest an integral approach to prepare the next generation of Oaxacans for inclusive, equitable, sustainable development, deeply rooted in their cultural heritage.

5.1. Short-term strategies

5.1.1. Alignment of educational programs with the needs of the emerging labor market

In Oaxaca, the actors interviewed recognize the need to align their academic offerings with the demands of sectors such as logistics, renewable energy, and light manufacturing, based on periodic assessments of the technical and transversal competencies required by the market. Educational institutions have begun implementing projects to strengthen collaboration with local companies, supported by ongoing feedback on labor requirements.

5.1.2. Preparatory courses and learning recovery

Some institutions have developed practical preparatory courses to address basic skills such as mathematics and literacy; however, an interviewee commented that "one or two weeks are not enough to cover accumulated deficiencies." Therefore, institutions should complement these courses with longer-term strategies such as personalized tutors and recovery programs in critical areas to address learning inequalities.

5.1.3. Promotion of specific certifications that increase employability

Labor certifications can enhance the competitiveness of workers in both the local and international labor markets, enabling them to access specialized jobs without requiring a whole career path. The Upper Secondary Distance Education (EMSAD) system, which operates in marginalized communities, has already implemented proposals to certify skills in technical support, logistics, and administrative management. Authorities and institutions should design certification programs that align with the emerging labor market, such as the Interoceanic Corridor and strategic sectors. This strategy demands constant dialogue with the productive sector. Educational institutions must offer flexible options for rural communities and provide incentives to encourage them to obtain these certifications.

5.1.4. Reinforcement of basic and socio-emotional competencies from initial levels

The academic community in Oaxaca identifies strengthening basic and socio-emotional competencies from the first educational levels as a priority identified. This effort aims to address fundamental gaps in areas such as reading, writing, and mathematics, while also developing essential skills for the work environment, including leadership, teamwork, and stress management. Resilience workshops, assertive communication, and critical thinking are some of the initiatives designed to prepare students. To maximize the impact of these initiatives, it is crucial to invest in teacher training and community awareness about the importance of socio-emotional competencies. Authorities should also incorporate these workshops into the school curricula in a structured and continuous way.

5.1.5. Language centers

Employers demand English more than almost any other transversal skill in the global labor

market. Educational institutions in Oaxaca have begun to recognize the importance of language education by implementing language centers and extracurricular workshops. Certain universities already have programs in which English proficiency is a degree requirement.

5.2. Medium and long-term strategies for unleashing talent in Oaxaca

5.2.1. Design of educational programs that integrate cultural and economic realities

These initiatives aim to provide an educational offering that combines identity and competitiveness, incorporating courses on economics and community management into the existing curriculum, while also preserving cultural heritage. To implement these programs, it is essential that educational institutions collaborate with local communities, governments, and businesses, and invest in teacher training.

5.2.2. Dual training

One of the most prominent strategies in technical institutions is dual training. In Oaxaca, this model is expanding in sectors such as logistics, manufacturing, and renewable energies. However, many companies are unfamiliar with this approach and lack the resources or space to accommodate students in practice, especially in rural areas. Geographical dispersion and lack of affordable transport hinder access to business centers. It is essential to strengthen cooperation between companies and educational institutions, along with increased investment in infrastructure, teacher training, and raising business awareness about theory-based and practical education.

5.2.3. Improvement of educational infrastructure and strengthening links with the productive sector.

The improvement of educational infrastructure is fundamental. It should include the modernization of laboratories, libraries, and technological centers that enable students to access high-quality resources. The creation of advisory councils between the academy and the industry can guide the design of educational programs that respond directly to the demands of the labor market.

5.2.4. Incentives to retain talent and combat migration

Creating competitive job opportunities that respond to local needs can help reduce labor migration, particularly through projects in tourism, crafts, and renewable energy. It is crucial to transform migration into a positive phenomenon by facilitating the return of migrants with incentives such as access to credit, specialized training, and support for local ventures. This approach leverages the skills acquired by migrants abroad, opening doors to investment, collaboration, and development. Digital platforms that link migrants with community initiatives can strengthen these connections, promoting the active participation of the Oaxacan diaspora in regional development.

Conclusions

The lack of equitable access to educational, labor, and productive opportunities has restricted development in Oaxaca. Today, the sectors of agribusiness, food, beverages, light manufacturing, and textiles offer a path to transform this reality, provided that structural gaps that exclude much of its population are addressed.

The Interoceanic Corridor and other strategic projects expand the possibilities of connectivity and growth. However, success will depend not on physical infrastructure, but on the state's capacity to reduce the inequalities that currently prevent people from taking advantage of those opportunities.

Oaxaca's cultural identity should not be seen as a passive heritage, but as a competitive advantage in a market that today values authenticity and sustainability. Mezcal, traditional textiles, and endemic crops retain a high value added, but require better logistics routes, certifications, and specialized training.

Forming young people with technical and socio-emotional skills, and promoting innovative channels that preserve their traditions, will enable Oaxaca to compete globally without compromising its identity.

Oaxaca has everything it needs to become a culturally entrenched, economically competitive, and socially fair development model. However, time is of the essence. Letting go of this opportunity deepens the gaps that have historically marginalized millions of Oaxacans. It is time to act decisively, build consensus, and ensure that the future of Oaxaca does not depend on where one is born, but on the talent and dignity of its people.

Tradition and innovation should not be opposite paths. United, they can be the way to build a more equitable and competitive Oaxaca.

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