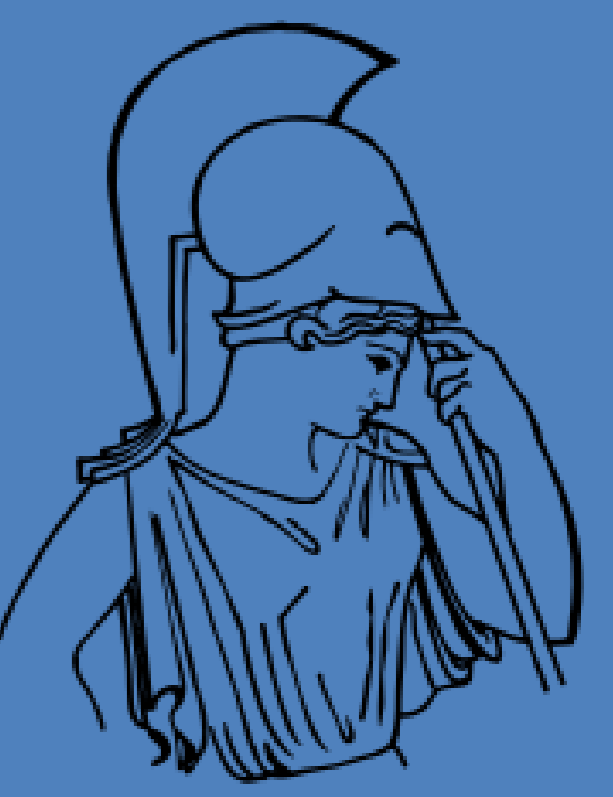




# ANALYSIS OF URBAN MOBILITY SCENARIOS BASED ON CENTRALITIES IN A MEDIUM-SIZED CITY: THE CASE OF THE METROPOLITAN REGION OF XALAPA, VERACRUZ, MEXICO

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## Introduction

The aim of this research is to construct alternative urban mobility scenarios that allow for a connection between the less mobile areas of a medium-sized city and the centralities established by employment units, through a territorial analysis that allows for an understanding of all the physical, social, economic and political aspects involved in this process.

These scenarios are related to the notion of **mobility transition** caused by the COVID-19 pandemic, considering that in this city there are people who work in private businesses, public services, schools and those who have the opportunity to stay at home. However, there are people who still need to travel by public transport, so its improvement is key to the guarantee of their right to mobility, already incorporated in our Constitution.

It is hypothesised that the mobility option which will connect the centralities identified on the basis of employment units consists of a multimodal system that includes a BRT-type transport system on the old railway line (Ruiz Cortines Avenue) and a metrocable that will take people living in popular neighbourhoods to the city centre. This will reduce inequality and commuting times to work and other activities, improve accessibility from the outskirts to the city centre and promote the improvement of people's quality of life by using a safe, comfortable and fast means of transport, whether motorised or not.



Urban transport on the streets of Xalapa (Images: Own source)

## Methodology

### Baseline generation

Contextual framework of the Metropolitan Region of Xalapa (MRX) | Analysis of public policies concerning mobility in this region (review of documents and interviews with public officials). | Analysis of the urban dynamics of the MRX

### Identifying centralities and proposing mobility alternatives

Analysis of DENUÉ\*\* data to locate workplaces and their density per AGEB | Surveys of people on their origin and destination, experience and perception of mobility

### Urban-regional analysis

Spatial analysis through GIS to assess relevance of results

What has been done: The diagnosis has been carried out through research on the physical and social characteristics of the region, as well as the description of the urban dynamics to highlight mobility difficulties.

What still needs to be done: Interviews with public officials involved in urban development in the municipalities, as well as with people who use public transport to find out their perceptions.

### Relevant bibliographical references:

- BID (2014) *Plan de acción Xalapa Sostenible. Visión para un futuro con servicios eficientes, un territorio resiliente y cuentas transparente.*
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- Singh, D. Z., Giucci, G., & Jirón, P. (2018). *Términos clave para los estudios de movilidad en América Latina.* Editorial Biblos.



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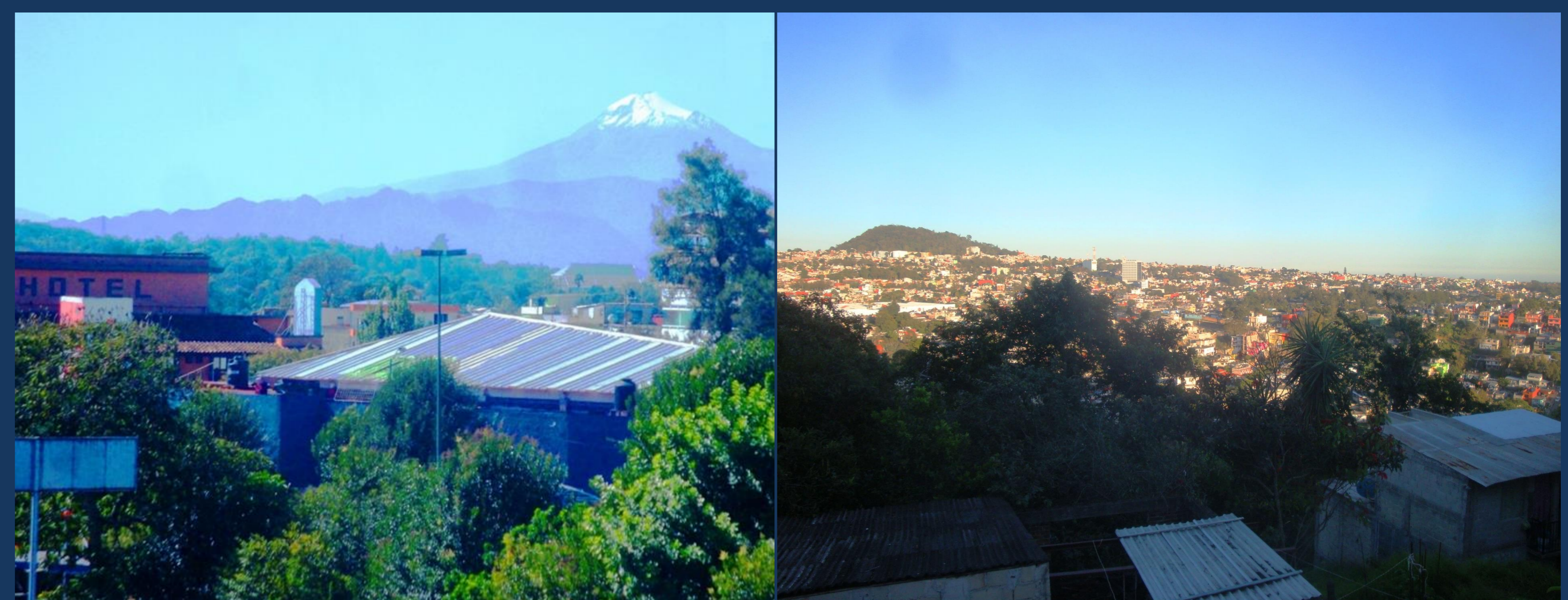
## Contextual framework

The Metropolitan Region of Xalapa is located in the central mountainous zone of the State of Veracruz, in the east of Mexico, with an average altitude of 1,400 m.a.s.l. Its geographical location is between the coordinates 19° 32' North and 96° 55' West.

Until the 1970s, the city grew moderately and did so in a ring structure around the historic centre. From 1980 onwards, the growth of the urban sprawl accelerated due to, among other reasons, the construction of rich people's subdivisions and the formation of informal settlements, to a greater extent by peasant migration. These settlements are increasingly located further away from the urban centre. According to the last census (2020), in this region, there is a population of 713,588 inhabitants of which 68.5% is concentrated in the city.

Xalapa is categorised as a medium-sized city with many traffic problems owing to its peculiar topography and because it concentrates government offices and higher education schools as the state capital. These have historically been concentrated in the central area, but have now shifted to the south-east of the city.

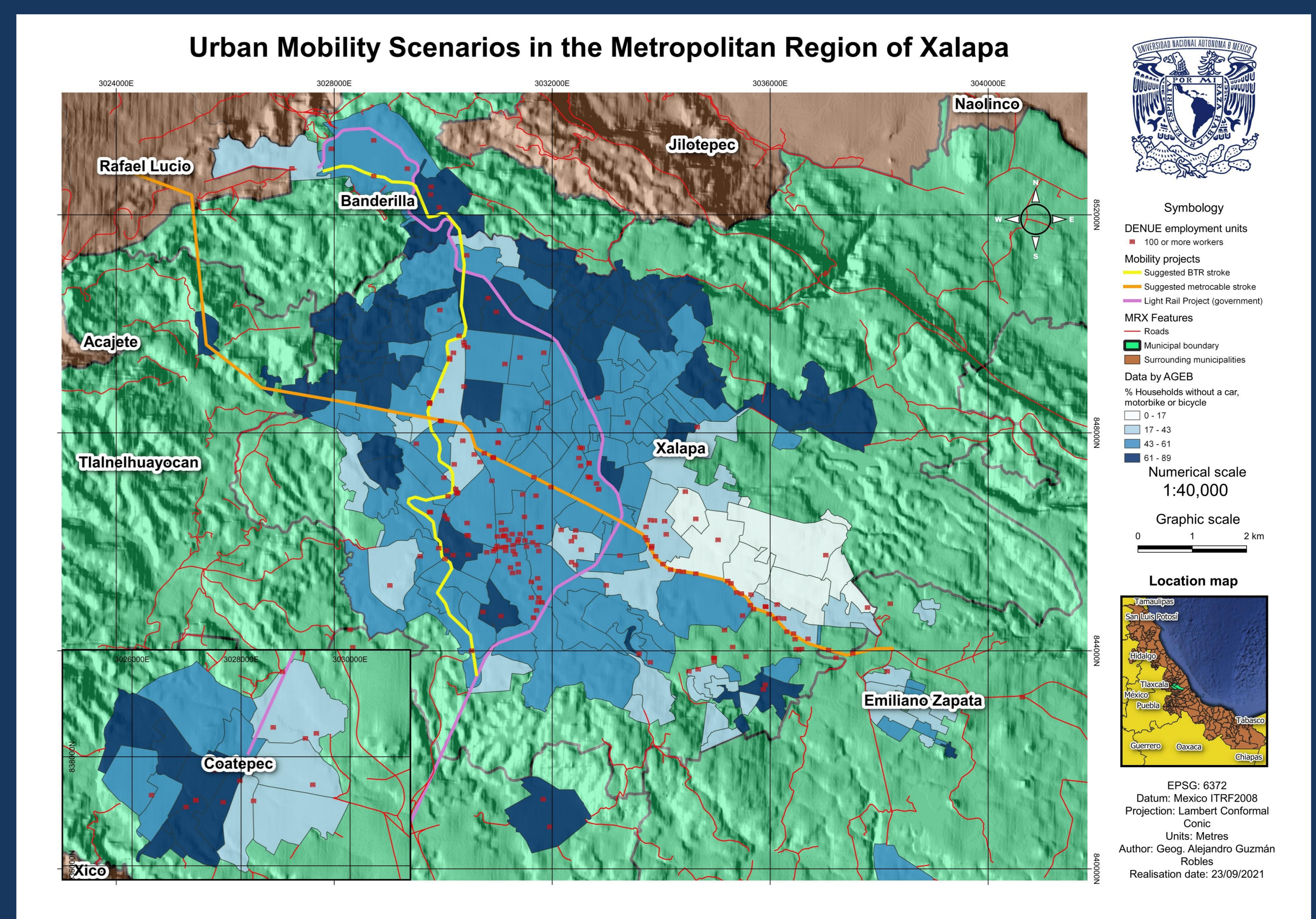
The state government has proposed the construction of a light rail linking the conurbations with the city, but the impact on the most needy population, especially those living in the periphery with poor accessibility, is not yet known.



The city of Xalapa has a rugged topography (Images: Own source)

## Results and Discussion

Once the data from INEGI's 2020 Population and Housing Census was obtained, the following map was made, illustrating three main characteristics of this region: the mobility projects that are contemplated in this research, the work centres with a number of workers greater than 100 (through which the centralities will be calculated) and the percentage of inhabited dwellings that do not have cars, motorbikes or bicycles by AGEB\*, resulting in the following map:



As can be seen, the concentration of housing without transport is located in the north and west of the city, which coincides with those areas with steep slopes. The proposed light rail route will increase access to the northern neighbourhoods through branch routes connecting the stations, while the BRT will increase access to the western neighbourhoods. However, neither has close access to the centre, so a metrocable that connects the western zone, passes through the centre, and also connects to the southern zone, where many of the employment units and commercial areas are located, would be needed.

Once the fieldwork has been carried out, an urban-regional analysis will be conducted to determine whether these proposals are relevant or not, through a GIS accessibility analysis and integrating an analysis of the discourse resulting from interviews with public officials and the general population.

\*AGEB: INEGI Basic Geostatistical Area

\*\*DENUÉ: INEGI National Statistical Directory of Economic Units