



**XXIVth World
Road Congress
Mexico 2011**
Mexico City 2011.

IMPROVING MOBILITY IN URBAN AREAS URBAN DENSITY AND TRANSPORT SOLUTIONS IN LARGE AND MEDIUM CITIES.

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INTRODUCTION

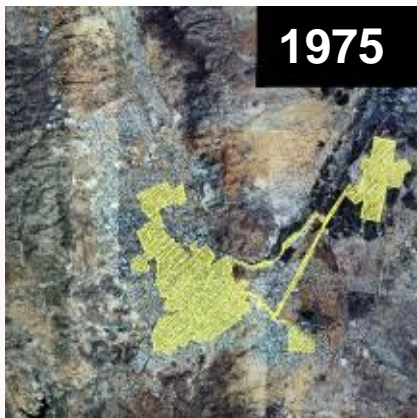
- This report describes the urban density and transportation system in the **city of Chihuahua and Mexico city**. The study is a part of the PIARC Technical Comitee's (TC B.32) work on Improved Mobility in Urban Areas, with special focus on land use planning and urban transport.
- The purpose of this study is to explain the relationship between urban densities and the choice of transport modes in several cities around the world.



THE CASE OF CHIHUAHUA CITY

Population, Urban Structure and Transportation System

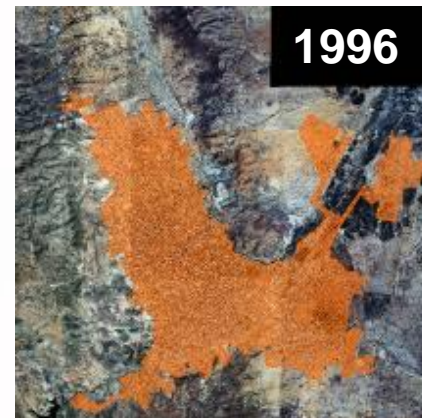
- Chihuahua City is one of the lowest density cities in Mexico, passing from 67 inhabitants per hectare in 1975 to 40 inhabitants per hectare in 2005 (812,743 inhabitants in an area of 19,000 hectares).



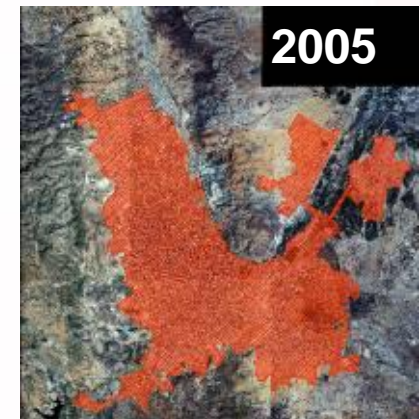
5,040 Hectares.
Density: 67 hab/ha



11,703 Hectares.
Density: 36.5 hab/ha.



16,908 Hectares.
Density: 44 hab/ha.



18,850 Hectares.
Density: 40 hab/ha.



THE CASE OF CHIHUAHUA CITY

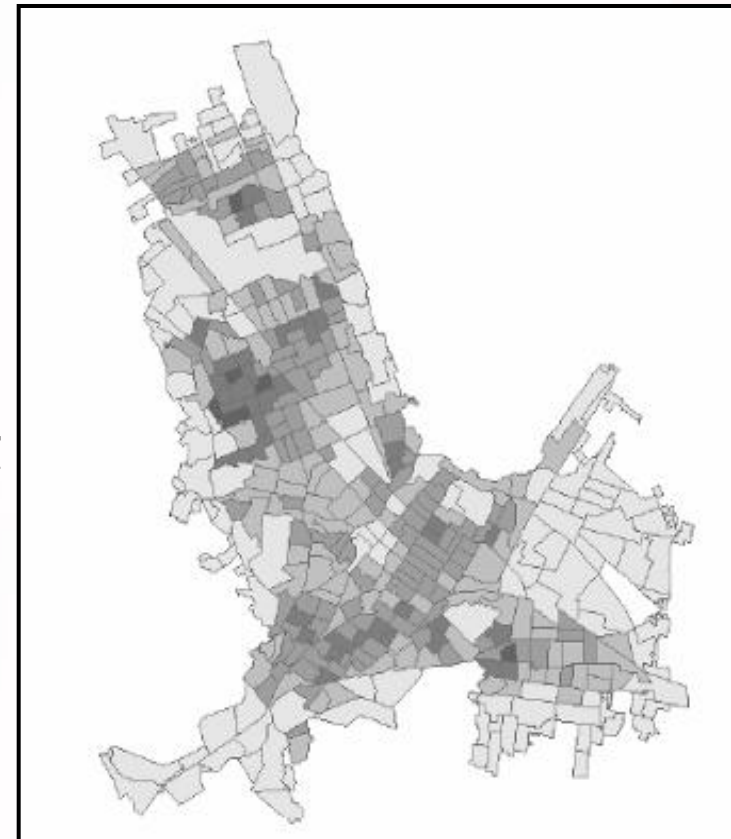
- The public transport in Chihuahua City is based only in a network of buses and taxi cabs that circulate for the main streets.
- This network has 67 routes and more than 500 buses. There are no subway, light rails, trolleys, etc.
- The road structure in the city is very discontinuous, which increases the travel distance and time between one area and another.
- In the city of Chihuahua there is one car for each 2 persons and more than 60% of the daily trips in the city are made by car.



THE CASE OF CHIHUAHUA CITY

METHODOLOGY

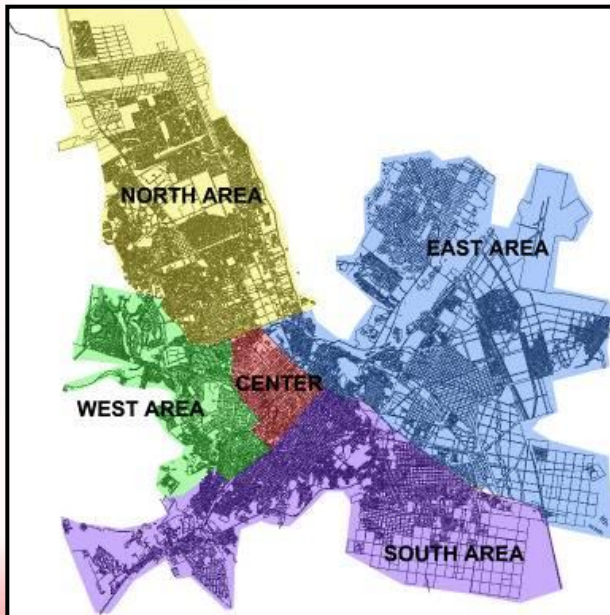
- The limit of the study area is the urban area itself, or the city limits.
- The study area can be divided in a large scale by the cardinal points: center, north, south, east and west sides of the city.
- In a smaller scale, the statistics on population and employment in a more detailed level are available in specific administrative areas called AGEBS:



THE CASE OF CHIHUAHUA CITY

Population and Employment Density Analysis

- In this study, the data about population and employment is analyzed by small and specific areas called AGEBS.

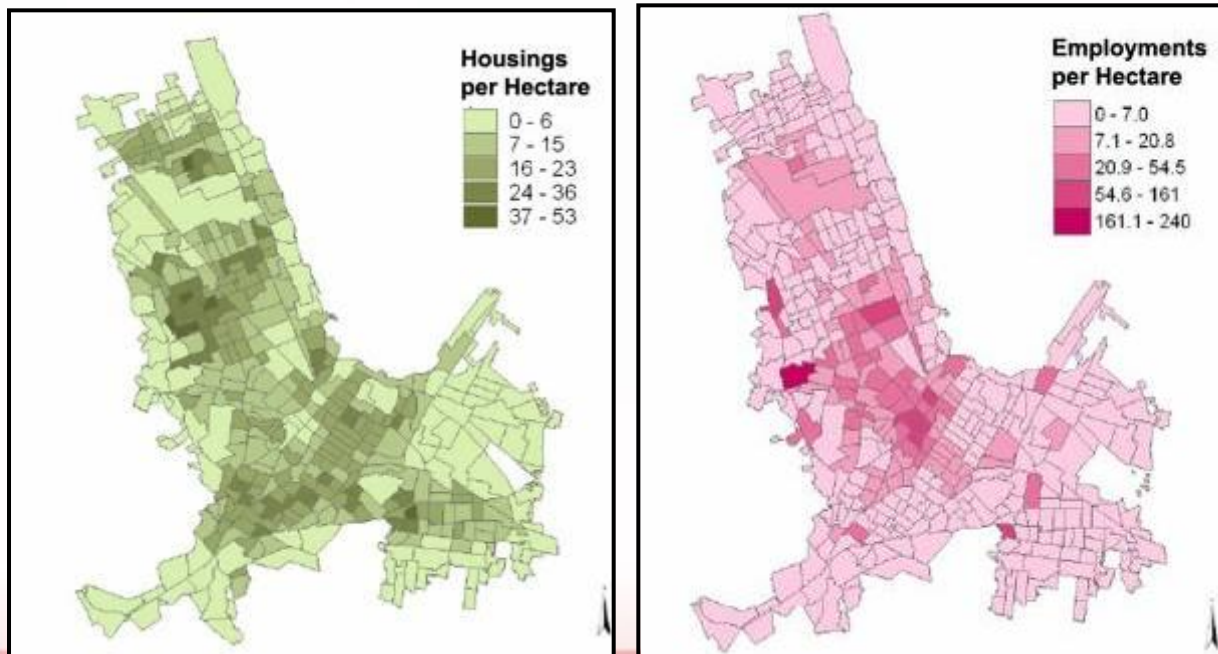


<u>AREA</u>	Area (km2)	Distance to city centre (km)	Total Population 2000	Employed Population 2000
NORTH AREA	54.1	9	266,666	109,464
WEST AREA	19.5	3.5	68,563	28,250
CENTER AREA	10.68	1	39,779	16,583
EAST AREA	60.30	8.5	61,824	24,778
SOUTH AREA	43.90	8.5	212,010	84,541



THE CASE OF CHIHUAHUA CITY

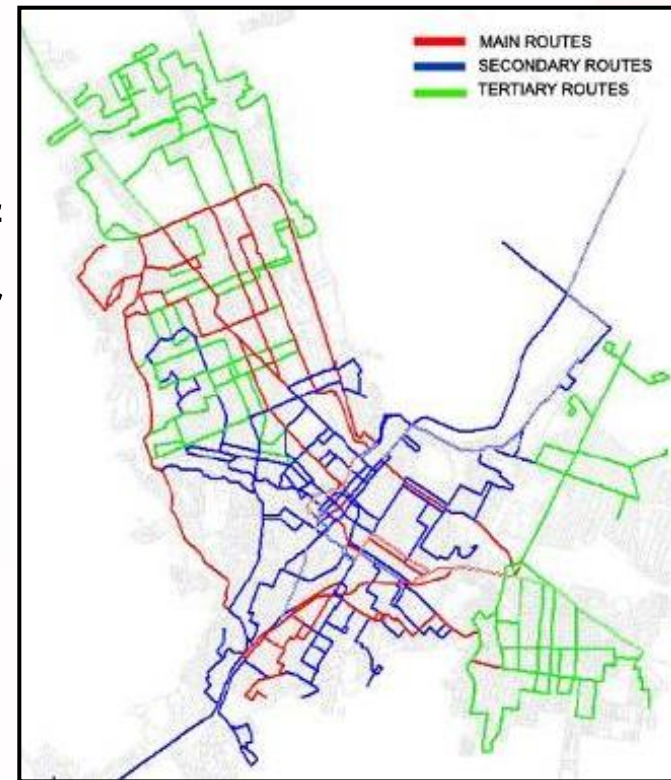
- According to the Sectorial Plan of Sustainable Urban Mobility and the data obtained by the AGEBS, two maps were elaborated, one showing the population density in the city, and another one showing the employment density:



THE CASE OF CHIHUAHUA CITY

Main Characteristics of the Transportation System in Chihuahua City

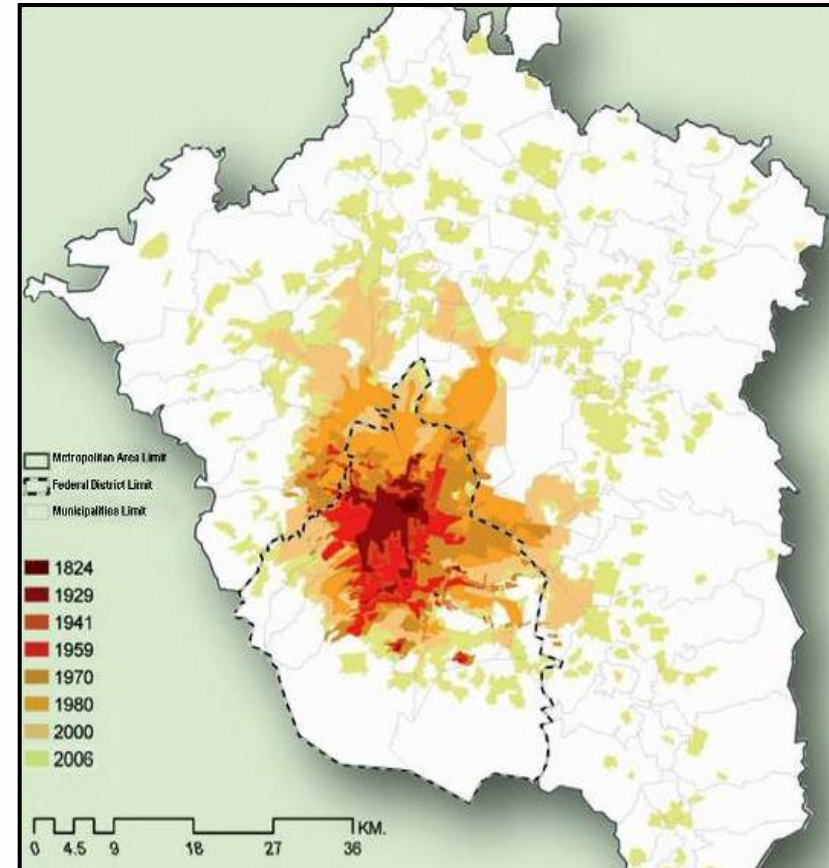
- The public transport in Chihuahua City is based only in a network of buses and taxi cabs that circulate for the main streets.
- In average, the total time of a trip in car takes 22.6 minutes, and 41.1 in public transport, In rush hours, these times increase.



THE CASE OF MEXICO CITY

Population and Urban Structure

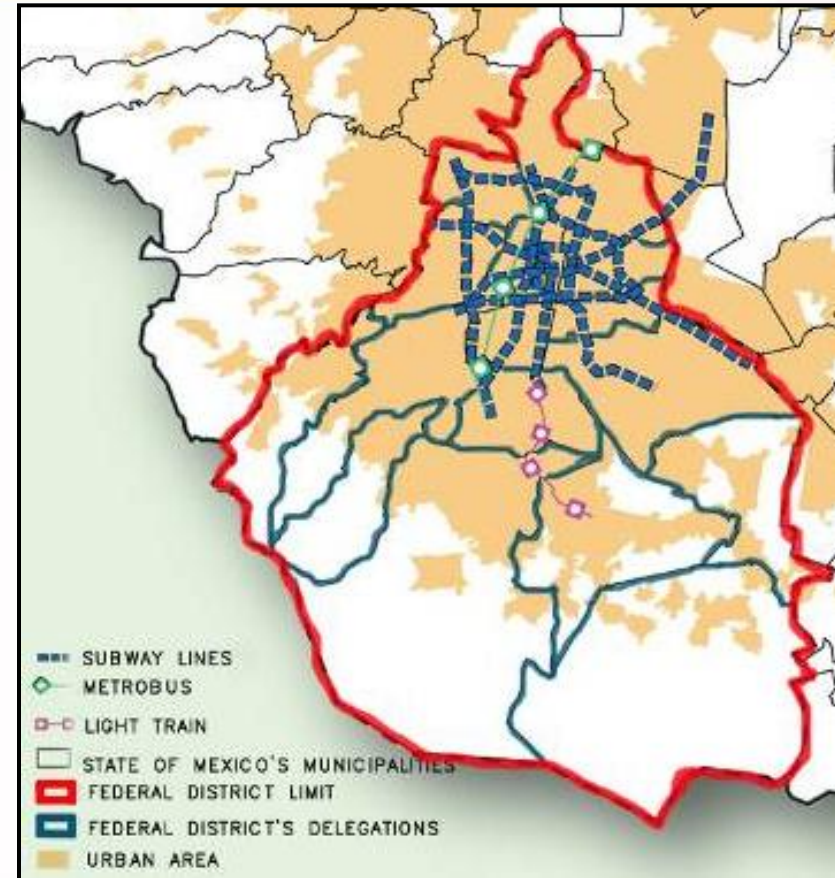
- The Mexico City it is conurbated with 59 municipalities forming a Metropolitan Area of 19, 239, 910 inhabitants.
- From a population of 1.6 millions in 1940, it increased to almost 20 millions nowadays in a surface of about 150 thousand hectares, which means an average density of 122.6 inhabitants per hectare.



THE CASE OF MEXICO CITY

Transport System

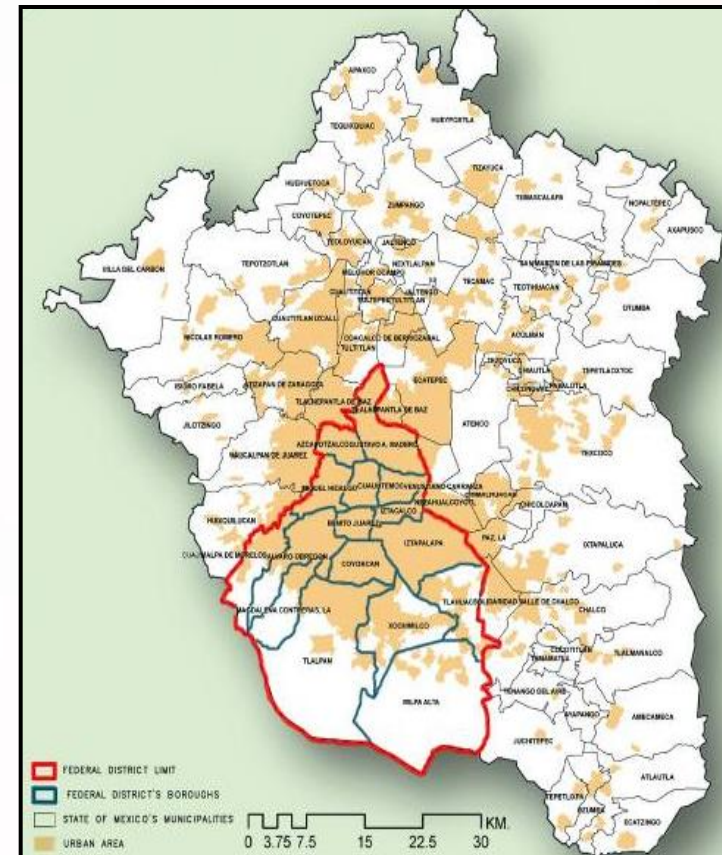
- The public transport in Mexico City Metropolitan Area can be divided in:
 - Metropolitan Transport
 - Subway
 - Metrobus
 - Light Train
 - Electrical Transport Services
 - Concession Transport
 - Suburban Train.



THE CASE OF MEXICO CITY

METHODOLOGY

- The limit of the study area is the Metropolitan area (DF, 58 municipalities of the state Mexico and one municipality from the state of Hidalgo.
- The statistics of the population and employment were obtained from INEGI. Data were obtained on the transport system and the mobility of the study "Mobility and Quality of Life."



THE CASE OF MEXICO CITY

Population and Employment Density Analysis

- Mexico City Metropolitan area generate a little more than 39 millions of trips per day.
- There are currently more than 4 millions of cars circulating. In the year 2020 there will be almost 7 millions of private cars.
- The average circulation speed is less than 24 km/h.
- Of a monocentric city has started to change into a polycentric city.
- The average time between home and work place in Mexico City is 60 minutes.



Main Characteristics of the Transportation System in Chihuahua City.

Urban problems:

- Big amount of vehicles
- Urban Sprawl
- Poor authorities coordination.
- Long commuting time.
- Deficient pedestrian infrastructure
- Heavy load vehicles in the streets
- Lack of parking spaces

Implementing the 6 strategies of action of study called "Mobility and Quality of Life"



The study called “Mobility and Quality of Life”

- The main objective to achieve is that the coverage of the transport system really be metropolitan

The six key strategies:

- Quality Mass Transport for the Whole Metropolitan Area.
- A Walkable Metropolitan Area.
- Clean Technologies.
- Diminish the Use of Private Cars.
- Improve the Heavy Load Transport Infrastructure.
- Public Transport, Axis of the Urban Development.



CONCLUSIONS

- This report shows how large is the scope of actions that are implemented in various cities over the world to improve urban mobility.
- The comparison and the benchmarking of the urban strategies must be made on the basis of coherent data, surveys, models and assessment tools.
- Develop tools to implement the principles of modal share evolution in terms of infrastructure design.
- The promotion of non-motorized mobility.
- Respect the local culture and “spirit” of the city.



CONCLUSIONS

- The PSMUS the city of Chihuahua, has the characteristic to consider in a holistic manner several actions: control of urban expansion, creation of bicycle paths and pedestrian paths, improved urban space and route restructuring and implementation of BRT public transportation system.

