Improvement Proposal for the Urban Development Strategy, Preventing Negative Effects of Gentrification in the Doctores Neighborhood

Marc Takahiro SHIMIZU KINOSHITA[1], Yoshihide NAKAGAWA[2]

[1]Member of JSCE, Student, Dept. of Civil and Environmental Engineering, Waseda University
(3-4-1, Okubo, Shinjuku-ku, Tokyo 169-8555, Japan)
E-mail: marcshimizu@fuji.waseda.jp
[2]Member of JSCE, Professor, Dept. of Civil and Environmental Engineering, Waseda University
(3-4-1, Okubo, Shinjuku-ku, Tokyo 169-8555, Japan)
E-mail: naka@waseda.jp

This research paper encloses an Improvement proposal for the Urban Development Strategy, preventing negative effects of Gentrification in the Doctores Neighborhood by identifying an occurring process of gentrification and its urban and social influences in a Mexican neighborhood so-called Doctores. The delimited area of study indicates that the possibility of occurrence of a gentrification phenomenon is conceivable due to its urban, demographic and socioeconomic characteristics. Similarly, the situation comparison between different city areas worldwide by means of recognizing their context, their significant circumstances and characteristics that led to a gentrification process is been considered in order to define the occurring phenomena in the neighborhood. By formulating a necessary urban strategy that prevents upcoming undesirable conditions and boosts positive alterations through urban and community planning will maximize the Neighborhood infrastructure, development projects, cultural assets and the life quality and standard of its inhabitants.

Key Words: *City Planning, Community Development, Urban Gentrification, Urban Revitalization*

1. INTRODUCTION

(1) Research Background

The recent demographic growth; the varied socioeconomic conditions of the urban population; the infrastructure development investment interest; and the metropolitan progress of inner Mexico City (Distrito Federal) has brought consequently the need for better services; inner city space; and the improvement of the city infrastructure. It is obligatory to aim the demand of the citizens for addressing a better life quality and life standard by avoiding situations that linger the urban growth and the sustainable development of the city. As well, the different areas of the metropolitan zone of Mexico City have a disproportionate development due to the diverse conditions of each municipality, delegation or governmental borough.

It is necessary to carry out a research of the Doctores Neighborhood since it is a transition zone due to many different socioeconomic and demographic variations, urban modifications, community and city development plans, and urban revitalization conditions. The government and some cohorts attached to the neighborhood are strengthening the existing assets and creating new values in the area, in order to cover the arising necessities of the sprawling progress of inner Mexico City. In the case of the Doctores neighborhood, location within the inner metropolitan area of Mexico City, inside the Cuauhtémoc Delegation, as shown in **Fig.1**, an urban crisis is occurring since 1985, but nowadays it is region with great urban development potential with notable socioeconomic vicissitudes, demographic changes and city assets that must be valued as emblematic symbols of the city. (i.e., emblematic governmental buildings; symbolic halls; public spaces of the city; museums, government offices; public hospitals; and markets) Several conditions of the neighborhood and its precise location in the city, a process of gentrification in the locality might occur in a near future due to the demand of citizens and the developing neighboring areas.

Fig.1 Cuauhtemoc Delegation Map[1)].

(2) Research Objective

The objective of this research consists in the improvement proposal for the Urban Development strategy in order to prevent the negative effects of gentrification in the Doctores Neighborhood, by attaining an analytical study and determination of the existence of a gentrification process in the area. The study of the Doctores neighborhood will define the positive and negative aspects of the gentrification process occurring in zone, triggering preventions for upcoming problematic city conditions.

2. LITERATURE REVIEW

(1)Previous Research

The introductory chapter of this paper describes the particular terms and keywords used along this research work. It refers expressions applied in the city and regional planning field, avoiding any kind of misunderstanding by clarifying the concepts, justifying the bases of the analysis of this research and differencing the perspectives between the city planning language used in Asia (Japan), America (Mexico and the United States of America), Europe, other countries and international institutions. As well, the terminologies and the expressions of this research field vary because the extensive range of theoretical ideas, ideological analysis and empirical works, have great differences in patterns that sometimes can´t be describe statistically with census neither by a common evaluation following case-by-case circumstances.

The existing research related to the thesis about the Gentrification process in Doctores neighborhood is not related directly to the topic itself, but complements the significant theoretical general knowledge to support the fundaments of this paper. The literature revisions related to this investigation consist in:

(a) Studies of analyzed area

There are government and other public and private institutions data about the current situation of the area and its urban transition trough development. Many important beneficial facts for the region such as urban programs, plans, buildings and cultural movements are considered. Several writings evaluate the city and its value.

(b) Theoretical analysis of urbanism and city development

Many explanatory theories and studies concerning the terms used in the urbanism field are analyzed in order to clarify each concept that sustain the fundamentals of city development, its concerns and relating issues.

(c) Gentrification study cases

The gentrification phenomenon is a process studied internationally focusing and delimiting several study cases in which the phenomena had a great impact in the cities as in development and transition of neighborhoods.

(d)Studies of social activity in cities

Lately, cultural trends and population ideological movements are a great concern in the urbanism, urban and regional planning field since many city developments and urban planning have their origins in social movements. There are several investigation of this occurrence in the cities that is why in this research is also fundamental the revision of this kind of readings.

(2)Research Position

The position of this research is to create a proper investigation of the Doctores Neighborhood to be a helpful literature review for Mexico City neighborhoods development. With the assistance of this urban analysis and study, the origins of the Doctores Neighborhood will identified by focusing the virtues of the region, as well as the problems that are affecting the area and the existing failures of the occurring revitalization processes. Likewise, proposing urban strategic solutions for the neighborhood the programed urban revitalization plans, city plans and community development plans will be able to follow a path with different standpoints. Costs and benefits

for all the stakeholders resulted from the city changes will be more equitable by considering different opinions in order to create a friendly development between the cohorts of the area and those who are primarily involved.

3. RESEARCH METHODOLOGY

(1) Research Analytical Framework

An analytical framework as shown in **Fig.2** is been conducted in order to achieve the proposed objectives of this paper. The following diagram shows the conduction of the seven main sections of research throughout the thesis.

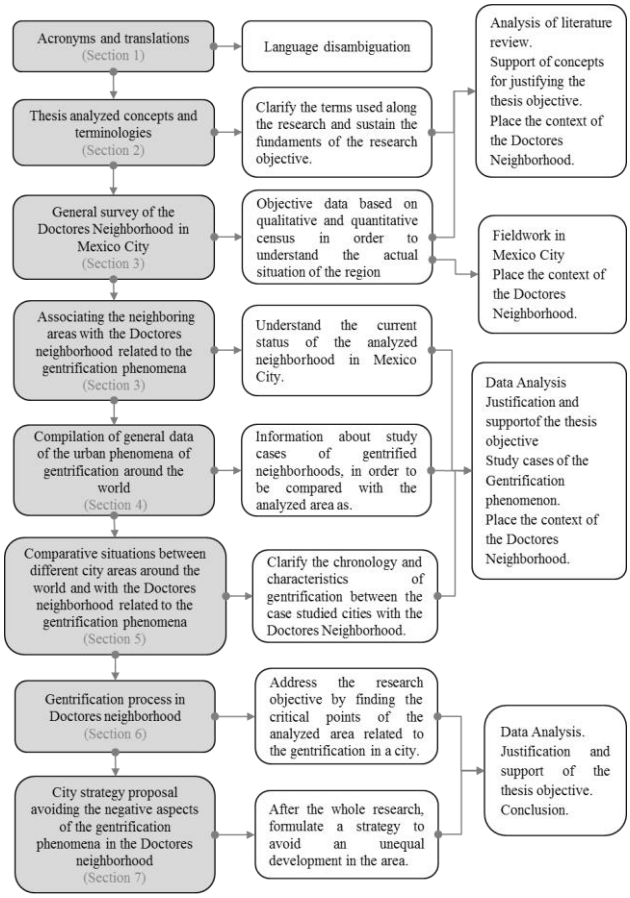

Fig. 2 Research Analytical Framework diagram

(2)Research Method

To conduct the acquisition of knowledge of this research paper, different methodological aspects of investigation are took into consideration, as followed in **Fig.3**.

Firstly, a deductive method is been followed to obtain a general idea of the focus of the thesis and its objective. After, an observation method is been completed to have a visual perception of the Doctores neighborhood and Mexico City, equally an empirical city living experience is taken into account to understand the behavior of the city. Then, a profound research of theoretical and ideological theories, investigations, articles, newspapers and texts written by experts of the field is been carried out justifying and supporting this paper. After a deep city observation and profound research, an inductive method is been followed such as the analysis of qualitative, quantitative, objective and subjective data with the purpose of obtaining several arguments to sustain the thesis objective and the conclusions of this research. Along the thesis of the gentrification process in the Doctores Neighborhood a synthetic method is observable since a cause and effect phenomenon occurred in the city is one of the main purposes of finding the answers of this research, such as the analysis of simple data to complex data. In addition, statistical and comparative methods are been conducted to place the context of the Doctores Neighborhood and understand different study cases of the Gentrification phenomenon.

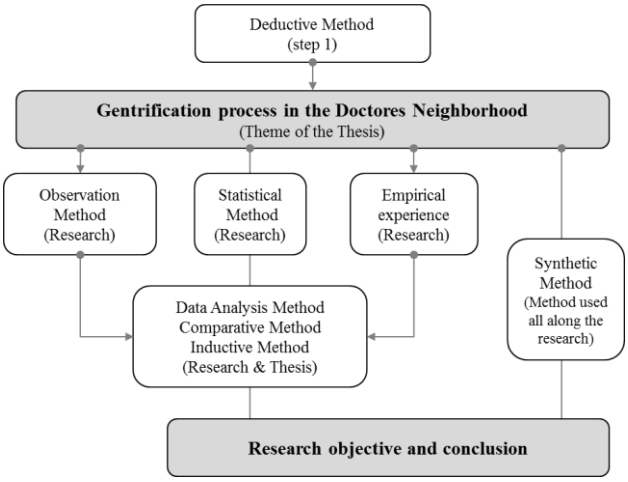

Fig.3 Research Method Diagram

4. STUDY AREA & DATA ANALYSIS

(1)Historical Background

The origins of the Doctores Neighborhood are quite uncertain, but date back to 1700, before the independence of Mexico against the Spanish reign. Mexico City was a small village with roughly 37,000 habitants, and several urban settlements were scattered around the central area of the city, which a slight fragment of them established on the east side of neighborhood. Today, only in the Doctores neighborhood sum approximately 40,000 habitants[2)]. In the 1850´s, the streets and avenues had plotted around the area today known as the Cuauhtemoc Delegation, which the Doctores is one of its Neighborhoods.

Initially the urbanization of the neighborhood was during the era of the Spanish Colony, building in the north side several colonial houses, the “Belem Prison”

and the Campo Florido Cemetery (1846 - 1878), one of the most famous graveyards of Mexico City. All of the existing colonial buildings around the Doctores neighborhood disappeared through the years. Around 1880, the city development of the Doctores Neighborhood was boosted by the Mexican Electric Tramways Company, which land owned several lots that were been used as repair courtyards for trains and workshops. Sixty years after the properties were been dismantled. Nowadays, the facilities of the Attorney General's Office (PGJDF) and the Superior Court of Justice of Mexico City (TSJDF), and the Indianilla Station Museum are been settled in those land properties. Likewise, in the late nineteenth century the tram company built around the area the electric tram system (trolley), which subsequently became obsolete through the years, due to the population growth and the new urban infrastructure and city needs.

In the early days of the twentieth century, the plan of the lot division of the region was been held. Similarly, the construction of the Mexico General Hospital building inaugurated by the President José de la Cruz Porfirio Díaz Mori in 1905 and the Free School of Law founded July 14 of 1912.

During the 1910´s and 1960´s the Doctores neighborhood was one of the most popular and developed neighborhoods around Mexico City. Besides the Mexico General Hospital, the Children's Hospital of Mexico, which is nearby the Mexico General Hospital, had been also established around the neighborhood. Other important institutions and organizations established their headquarters and main offices in the Doctores neighborhood. Government offices, public and private universities, and other important corporations such as Televisa Group showed interest in the Doctores area[3)].

During 1969 to 1970 a decentralized public organism so-called Public Transport System of the City of Mexico and the infrastructure developer company Civil Engineers and Associates Ltd ., developed the earliest stages of the metro system of Mexico City. The first 3 lines consisted in 42.4 km with 48 stations which many of them passed through the Doctores Neighborhood, being one of the main stops the General Hospital Station.

The Doctores continued to develop through the years, in the area had settled different commercial properties, famous pulquerias, workshops and auto parts stores, housing, hospitals, churches, parks, markets and schools. It was been considered one of the most popular, working and centric neighborhoods of inner Mexico City because of its location, lifestyle and infrastructure development, but in September 19 of 1985 a magnitude 8.1 hit Mexico City[4)], one of the most devastating disasters occurred in Mexico surpassing the intensity, magnitude and damages registered in the 1957 seism[5)].

The Doctores Neighborhood was strongly affected due to its geographical soil characteristics, as well Mexico structures design were not calculated to resist earthquakes of such magnitude. The outcomes of the catastrophe were many human, economical, and material losses, among others damages. Around ten thousand demises reported in total and many important and iconic buildings were been harmed or collapsed during and after the tragic event. The Doctores Neighborhood lost the original Mexico General Hospital, Televicentro, several dwellings, multifamily residences and many buildings[6)].

After the 1985 earthquake, the Doctores Neighborhood was been repopulated with government offices, parking lots, housing and temporal infrastructure to support the victims of the disaster. Some of the temporal refugees for the affected population by the disaster remain as dwellings and neighbourships.

Since Mexico was passing through a moment of economic instability since 1982, the reconstruction of the city was slow, likewise, the quality of construction was been considered for a low-income population and was not enough to create a prosperous metropolitan area and bring further development to the city. On the contrary, the reconstruction of housing and buildings affected the neighborhood in a negative way, bringing consequently a bad name to the neighborhood and years of urban crisis with low public safety, prostitution, street vendors, indigence and poor infrastructure.

This Mexican neighborhood is trying to change its bad reputation through a process of transition in which various community development plans, private and public projects, and city planning plans are been intended. Likewise, due to the effort of several citizens, the area is full of urban contrasts.

An extraordinary case of citizen effort to recover and develop the Doctores region is the Antique Toy Museum that is an innovative contemporary museum and unique in its genre. This considered heritage of Mexico founded by the Architect Roberto Y. Shimizu Kaneko, as a museum in 2006 inside a structure built in 1950´s. The museum exhibits the history of Mexico represented in contemporary vintage objects, toys and documents dating from the 1910´s to the present-day. As well, the creativity and the ingenuity of the architect is shown on the display cases and exhibition halls, by revealing his collection through thematic display cases made from recycled vintage objects. The museum is not only a cultural institution, but also proposes several public activities to revitalize the neighborhood by developing projects that stimulate the neighbors and the community[7)].

(2) Neighborhood Morphology

a) Geographical Location

The Doctores is one of the 34 neighborhoods that shape the 3244 hectares of the Cuauhtemoc Delegation, which is one of the 16 delegations of Mexico City. As displayed in **Fig.4**, the delimited area is neighboring at the north with the City Center Neighborhood and in the northwest with the Juarez neighborhood, which the Chapultepec Avenue is its delimitation. At the south and southeast, the area bounds with the Eje 3 Sur Doctores Ignacio Morones Prieto Avenue dividing it from the Buenos Aires Neighborhood and the Algarin Neighborhood. Adjacent west is located the Roma Neighborhood, delimited by the Cuauhtemoc Avenue. To the east, the Eje Central Lazaro Cardenas Avenue separates the Obrera Neighborhood from the Doctores Neighborhood.

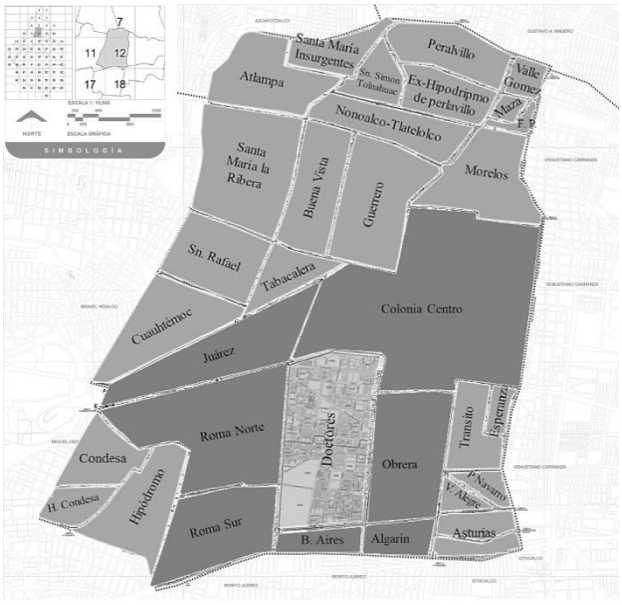

Fig.4 Political division by neighborhoods of Cuauhtemoc Delegation Map[8)]

b) Natural Physical Environment

The neighborhood is almost in the central part of the Mexico valley at approximately 2240 meters above the sea level with an average temperature of 17.9 º C and a precipitation of 618 milliliters. Its landform is significantly flat with less than 5% slopes, facilitating the urban development of the city.

Other important physical characteristic of the area as shown in **Fig.5** has been define by The Mexico National Seismological Service and the Construction Regulations of the Federal District, it locates the Doctores Neighborhood in the Lake Zone or Zone III of the Mexico Valley Zoning. It has the highest seismic risk rate due to the soil characteristics that augments the seismic wave amplification. Formerly it was a region of lakes but currently it is a soft and compressible soil formed by lacustrine deposits with high contents of water.

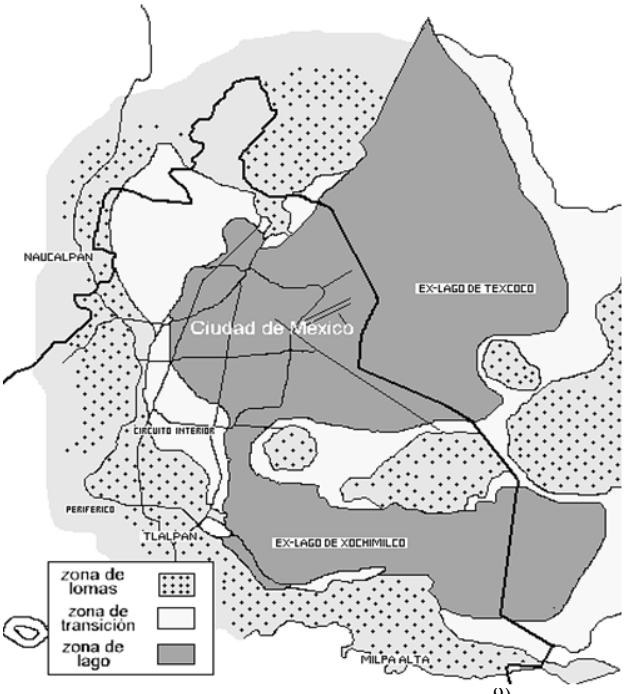

Fig.5 Natural Zoning of Mexico Valley[9)]

(3)Neighborhood Urban physical Characteristics

a) Neighborhood arrangement

Doctor Garcia Diego Street divides the neighborhood into north and south, as displayed in **Fig.6** and **Fig.7**. It has approximately a perimeter of 6.5 km and 226.24 hectares divided in 104 blocks connected by long streets and avenues that cross the orthogonal neighborhood layout from north to south and east to west, or vice versa.

Fig.6 Doctores Neighborhood North topographic survey with lot division, street distribution, and cadaster Map[10)]

Fig.7 Doctores Neighborhood South topographic survey with lot division, street distribution, and cadaster Map[11)]

b) Citizen committee partition

The citizen committees are responsible of representing the interests of the inhabitants of the neighborhood, to the local government authorities by integrating, analyzing and promoting the neighbors proposals. They must organize citizen's assemblies; supervise the government to carry out the development proposed plans and promises; evaluate the authorities performance related to the public services offered to the neighborhood; and inform to the citizens any kind of the relating information. The Committees and Territorial management directions are in constant communication, such as to the main authorities, other committees and councils.

There are six territorial management directions complementing the Cuauhtemoc delegation. The Obrera-Doctores territorial management direction is in charge of the Doctores neighborhood between nine other neighborhoods, which divide the region in areas represented by different citizens committees. As shown in **Fig.8**, there are five citizen committees representing neighborhood: Doctores I; Doctores II; Doctores III; Doctores IV; and Doctores V.

Fig.8 Citizen Committees of the Obrera-Doctores Territorial Management Direction[12)]

(4) Transportation Infrastructure

Currently, Mexico City offers five methods of massive public transportation, besides the city taxi service and the new cycling program "ECOBICI" of renting bicycles at different unit points of the inner city.

Furthermore, the area is equipped with the proper public transportation system, which connects the inner city with the outer suburbs and areas of Mexico City. The Subway, Metro-bus, Electric Trolley-bus System and other public bus systems transit the area, making it one of the top connected delegations of Mexico. This whole transportation and road system crosses through the Doctores Neighborhood.

a) Doctores Neighborhood Road System

The location, street usage and street arrangement of the Cuauhtemoc Delegation are one of the motives of the occurring city activity in the area. They are almost 100 km of streets a representing approximately 9% of Mexico City streets, and being one of the busiest and journeyed areas of Mexico City, the delegation transit circulation represents the 10% of the city circulation and is the fifth most circulated area. As shown in **Table 1**, in 2012, 368,950 registered drivers the transited the area, within the amount stands out the private vehicles with 95%. The passenger vehicles were only 1% and the cargo transportation vehicles represented almost a 4%.

Table 1 Registered Vehicles in circulation comparison between Delegations[13)].

Delegation	2007	2010	2012
Álvaro Obregón	181579	228738	267672
Azcapotzalco	184166	207311	227917
Benito Juárez	295849	335085	374865
Coyoacán	302055	332312	368522
Cuajimalpa de Morelos	66080	84118	99823
Cuauhtémoc	298547	337257	368950
Gustavo A. Madero	293000	350050	393418
Iztacalco	154093	169921	184990
Iztapalapa	337214	401469	452171
La Magdalena Contreras	68497	76927	87286
Miguel Hidalgo	268829	312825	353890
Milpa Alta	16545	18630	20683
Tláhuac	63560	71593	79321
Tlalpan	223602	253429	288537
Venustiano Carranza	166064	183375	200511
Xochimilco	96440	108501	119224
Total	3016120	3471541	3887780

As shown in **Table 2**, the Doctores Neighborhood is a well-connected and well-designed area, since

most of their access paths and driveways connect the inner city to the outer city via one Access Avenue, four metropolitan corridors and axes, and local roads.

Table 2 Doctores Neighborhood main Roads[14].

Road type	Road Name	Direction
Main Access Avenue	Viaducto Miguel Aleman Corridor	West-east East-West
Metropolitan corridors and axes	Avenida Chapultepec	West-east East-West
	Eje Central Lazaro Cardenas	South-North
	Eje 1 Poniente (Cuauhtémoc Avenue)	North-South
	Eje 2 Sur (Doctor Olvera street)	West-east
	Eje 2A Sur (Doctor Balmis Street)	West-east
	Eje 3 Sur (Doctor Morones Prieto street)	East to west

Besides its great road access, the Doctores neighborhood has a peculiar urban grid and design that shows uniformity on the trace and a considerably wide length of the streets and walkways with flattened corners in each crossing. Flattened corners are known as "Esquinas en Pancoupé" in Mexico. It is a functional urban streets design that contributes to the design of the neighborhood in several ways. They keep continuous the road traffic when there are possible public transportation stops flowing with an average speed; there is more visibility of the drivers in each crossing; and the urban design of the neighborhood is not a monotonous architectural design. This kind of design increases the green areas or other interesting urban elements at the end of each block.

The road system of the neighborhood consists in three main types of roads. The Primary roads around the area are one-way direction roads that have approximately a length average of 20 m, divided in two sideways of 4.5 m length and a 3-lane road of 11 m length. Usually the primary roads of the Doctores are Road Corridors, where one lane is bound for the Public Electric Bus Transport system (Trolley bus). Just a few primary road streets of the Neighborhood separate by a median such as the Dr. Jose Maria Vertiz Avenue, which is a two-way corridor road that runs from north to south across the entire area. The road design with a median is a peculiar style of trace that increases the green area of the street and gives a more architectural design to the road. Secondary or Local roads within the neighborhood, are one way or two way direction roads with a length of 20 m average, divided in one road of 11 m length with 4lanes and 2 sidewalks of 4.5 m each. On the roadway, two lanes assigned for parking spaces. Moreover, the tertiary roads are one-way streets of 10 m total length. The roadway length is about 6 m and the sideways length is 2 m each[15].

b) Subway System

The subway system coverage in the Doctores Neighborhood interconnects most of the area with 4 metro lines and 9 stations, as shown in **Table 3**, which run under the main roads that delineate the neighborhood from north to south, west to east and vice versa.

Table 3 Metro Lines and stations in the Doctores Neighborhood[16].

Station	Metro Line	Direction
Chapultepec Station	Line 1	West-east (vice versa)
Balderas	Line 1 Line 3	West-east (vice versa) North-south (vice versa)
Salto del Agua Station	Line 1 Line 8	West-east (vice versa) North-south (vice versa)
Hospital General Station	Line 3	North-south (vice versa)
Niños Heroes	Line 3	North-south (vice versa)
Centro Médico Nacional Siglo XXI Station	Line 3 Line 9	North-south (vice versa) West-east (vice versa)
Doctores Station	Line 8	North-south (vice versa)
Obrera Station	Line 8	North-south (vice versa)
Lázaro Cárdenas Station	Line 9	West-east (vice versa)

According to the census and surveys of the Administration Subway Office, the influx of passengers in the metro lines that go across through the Neighborhood, diminished in an 11.73% since 2005 to 2012, as displayed in **Table 4** and **Fig.9**. From 2002 to 2012, the passengers of the metro system increased almost in a 14%, as shown in **Fig. 10**. Although the Metro System users have an increasing tendency, the Metro subway lines 1, 3, 8, 9 that run down the Doctores Neighborhood and its neighboring areas have a decreasing tendency of annual passengers, yet

the Cuauhtemoc delegation is one of the busiest and centric areas of Mexico City.

Table 4 Statistics for ridership counting at stations near the Doctores Neighborhood[17)]

Station	Line	2,012	2005
Cuauhtémoc	Line1	11,173,183	8445596
Balderas		5,268,599	7853279
Salto del Agua		7,420,412	8692432
Balderas	Line 3	3,804,429	2878844
Niños Héroes		5,160,948	6958313
Hospital General		6,241,758	9632728
Centro Médico		5,735,409	6743507
Salto del Agua	Line 8	4,075,329	6133155
Doctores		3,458,912	3729126
Obrera		4,759,833	4591125
Lázaro Cárdenas	Line 9	4,266,461	3546767
Centro Médico		3,520,279	4305868
Total of users of Metro line 1,3,8,9		64,885,552	73,510,740

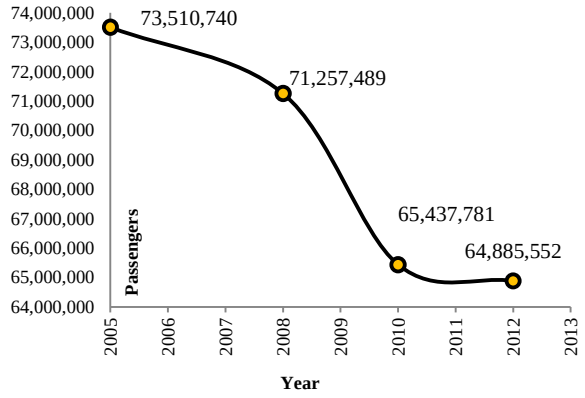

Fig.9 Total of users of Metro line 1,3,8,9 [18)]

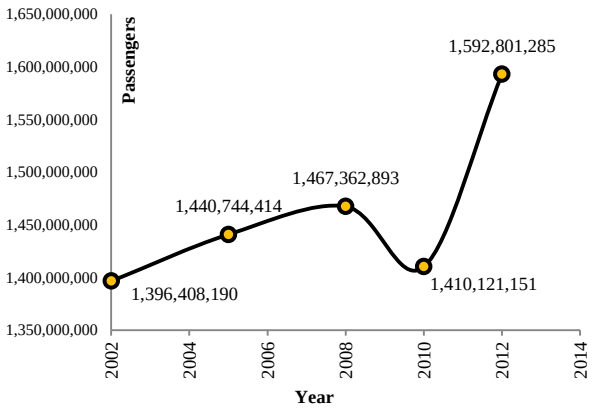

Fig.10 Total of passenger users of the Metro System[19)]

c) Metro-bus System

The Metro-bus is a relatively new mass transit system in Mexico City. The infrastructure consists in the circulation of articulated buses moving across the surface city level in confined lanes through various metropolitan corridors and avenues. The system has almost 9 years of antiquity and currently 5 lines and 171 stations give service to 855000 passengers.

The Cuauhtemoc Delegation is catered by the Metro-bus system lines 1, 2, 3 and 4, crossing from north to south, east to west and vice versa the entire area, as shown in **Table 5**. The metro-Bus line 3 circulates vertically from North to south and vice versa through the Doctores Neighborhood in a confined lane of the Cuauhtemoc Avenue. Six stations of the metro-bus line 3 belong to the neighborhood, and each station has an easy access to other means of transportation.

Table 5 Metro-Bus Stations and lines in the Doctores Neighborhood[20)]

Line	Metro-Bus Station	Total Passengers
Line 3	Hospital General Centro Medico Doctor Márquez Jardín Pushkin Cuauhtémoc Balderas	140000 p/day

d) Trolley-bus and the light Train System

The Trolley bus and the light Train are two types of massive transportation systems electrically empowered and operate as a single transportation system. The Trolley bus system infrastructure is based on electric cable buses, which transit the inner city area with a network of 8 main routes with a length of 200 km. It offers 380 buses in service to transport 220,000 passengers daily. The Light Rail system started in 1996 as a clean transportation infrastructure based on an electric transportation network operational system that functions with 20 light trains with a capacity of 374 passengers per cart that transit through 16 stations in a 13 km railway in the south region of Mexico City

The Electrical Transport System services with four lines of trolley buses a fraction of the transportation needs of the Cuauhtemoc delegation. Line A, Line D and Line S transit across the Doctores Neighborhood stopping at the General Hospital, Doctores, Obrera and Lazaro Cardenas stations, as shown in **Table 6**.

Table 6 Trolley-bus Stations and lines in the Doctores Neighborhood[21)]

Line	Delegation	Streets And Avenues In The Doctores Neighborhood
A	Benito Juárez Coyoacán Cuauhtémoc Gustavo A. Madero	Arcos De Belén, Dr. Río De La Loza, Dr. Olvera (Eje 2 Sur), Dr. Balmis (Eje 2 A), Baja California (Eje 3 Sur)
D	Benito Juárez Iztapalapa	Eje Central Lázaro Cárdenas, Cuauhtémoc (Eje 1 Poniente)
	Azcapotzalco Gustavo A. Madero	
	Gustavo A. Madero	
S	Cuauhtémoc Gustavo A. Madero	Eje Central Lázaro Cárdenas, Av. Cuauhtémoc (Eje 1 Poniente),
Totals	220,000 P/Day	380 Buses In Operation

e) RTP Bus transportation System

The RTP buses are in charge of transiting between metro stations to provide the lack of connectivity between areas of Mexico City.

The interconnectivity task of the RTP buses characterize by giving service of transportation to the areas where other massive public transportations are out of range. It gives a way of shifting between metro and metro-bus stations with residential areas that surround Mexico City.

The RTP bus system range in the Cuauhtemoc Delegation scarce, but the RTP bus system branch ECO-BUS circulates with the 34-A Route through the streets of the Cuauhtemoc Delegation stopping at 11 stops round the area. The 34-A Route initial or final destination is the Balderas Metro Station, which is located in the Doctores Neighborhood. From the 11 stops of the ECO-BUS in the Cuauhtemoc Delegation, two belong to the Doctores Neighborhood that is the Balderas bus stop and the Doctor Vertiz bus stop[22)].

f) Microbuses

This transportation network consists in the circulation of small buses through main streets and secondary streets. This kind of conveyance has many disadvantages by; breaking the driving laws; constant risk of accidents; pollution generator; and lack of supply, however, this is also an important means of transportation by complementing the massive transportation system network of Mexico City.

As shown in **Table 7**, the Microbus means of transportation circulates with five regular routes the Doctores Neighborhood, connecting the neighborhood metro stations with recurrent affluence with several outsider suburbs of the city.

Table 7 Microbus Doctores Neighborhood transit routes[23)]

Doctores Neighborhood Bus Stop	Destination
Hospital General	Santa Cruz
Salto del Agua	Villa Coapa
Doctor Andrade	Cafetales
Doctor Andrade	Espartaco
Doctor Andrade	Villa Coapa

g) Eco-Bici Program

The ECO-BICI is a new transportation means of service which assistance with bicycle the shift of the citizens transiting the inner city area of Mexico City. The infrastructure of this clean conveyance network consist in the rent of bicycles located in several Bicycle Rent Stations[24)]. These renting centers are mostly located in the Miguel Hidalgo and the Cuauhtemoc Delegations. Currently, the infrastructure of the ECO-BICI Program counts with 4000 bicycles, 277 Bicycle Rent Stations , bicycle parking spaces and 10 cycling routes in order to attend the demand of 25,000 daily users[25)].

The Doctores Neighborhood is a new boundary for the ECO-BICI Program satisfying the area with only five Bicycle Rent Stations, bicycle parking spaces and a stretch track of the 9.4 km Chapultepec cycling route[26)].

Lately, at the Antique Toy Museum Mexico a bicycle parking space was been inaugurated to start widen the range of the program and satisfied the transportation needs of the citizens that concur the area by a cycling mobility.

(5) Citizens Basic Services[27)]

a) Electrical Power System

The 98.8% of the Cuauhtemoc delegation private dwellings, commercial businesses ant locals count with the electrical power service. Around the area, the public lighting network is about 700 km of length with 27,470 installed lighting fixtures.

Currently, the Doctores, Obrera, Buenos Aires, Atlampa, Santa Maria Insurgentes and the Morelos Neighborhoods are lack of a full public lightning system.

b) Potable water system

Mexico City´s potable water system caters almost in a 100% the city region but only 90% of the lots are satisfied with the system. It is a pipework of almost 765.08 km, which 65.52 km belong to the primary network and 699.56 km belong to the secondary network.

The Cuauhtemoc Delegation due to its relief composition, the system lacks of pumping plants and storage tanks, originating low levels of water pres-

sure and a poor feeding of the primary pipe network. At the same time, the aging pipework has more than 2000leaks of potable water on the primary and secondary network. The focusing neighborhoods were leakage occurred were the Centro, Doctores, Roma Norte, Obrera, Cuauhtémoc, Guerrero, Juárez, Roma Sur, Santa María la Ribera, San Rafael and the Morelos Neighborhoods.

c) Drainage piping system

The coverage of the Drainage piping system is about 739.41 km in which 125.35 km belongs to the primary drainage pipework and the remaining 614.06 km belong to the secondary drainage pipework. It serves almost 100% of Mexico City by disposing the wastewater into the Great Canal of Drainage and the Deep Drainage System. The water collector system operates with a central water interceptor in charge of conducting the sewage to the corresponding outputs.

The Cuauhtemoc Delegation has being service with almost 25.66 km of Drainage pipework system and the Tlatelolco water treatment plant that has a capacity of 22 liters/second. During the rainy season, the system infrastructure is not able to contain the produced water volumes, triggering severe waterlogging and flooding adversities in the area.

(6) Land use

Over the years, the land use of Mexico City has changed due to the natural development of the city and the institutions law updates. The Urban development Law and Urban Development Programs of different Delegations establish the specifications and requirements of the land use, despite the established land use law; it has been modifications by individual needs of several citizens and, the natural growth and development of the city. Today, the in charge institutions have updated the law, and the borough urban development programs have been adapted to the actual morphology of the city to create new statutes in the law and perform the rearrangement of land use in Mexico City.

After the 1985 earthquake, Mexico City was affected causing changes in its city morphology and creating new annexes to the law of urban development. As shown in **Table 8** and **Table 9,** throughout the whole city, different places for earthquake assistance were been settled. In the case of the Cuauhtemoc Delegation, several temporary settlement residences and business were been established to meet the needs that were generated after the quake.

The urban regulated settlements weren´t all positive actions for the city because many of the temporal structures remain as deteriorated dwellings and local business. Another effect of the earthquake was the irregular settlements, and the invasions of several land properties and buildings.

In the Doctores Neighborhood, two premises enabled for interim Housing Camps, two irregular settlements, and five invaded buildings established after 1985. Over time, the deterioration of the neighborhood and the invasions by some other irregular settlements had been inevitable, but on the other hand, there are several proposed programs and plans to revitalize the area.

Table 8 Premises Enabled for Interim Housing Camps[28)]

Neighborhood	Properties
Atlampa	5
Buenos Aires	1
Buenavista	4
Centro	6
Doctores	2
Guerrero	10
Morelos	3
Roma Norte	2
San Simón Tolnáhuac	1
Total	34

Table 9 List of Invaded Properties, Invaded Buildings and Irregular Settlements[29)]

Neighborhood	Irregular Settlements	Invaded Buildings	Invaded Properties
Asturias		1	1
Buenavista		3	1
Centro	1	39	31
Doctores	2	5	
Guerrero		26	20
Juárez		1	1
Maza		1	1
Morelos		5	3
Obrera		3	2
Peralvillo		2	1
Roma Norte		4	3
Roma Sur		1	
San Simón Tolnáhuac		1	
San Rafael	1	3	1
Santa María La Ribera		6	1
Tabacalera		1	1
Total	4	102	67

Currently, the Urban Development Law and the Urban Development Program of the Cuauhtemoc Delegation reshuffle and define the land use of the Doctores neighborhood, suiting the existing land use of the area with proper judgment of the established law. The established requirements of the land use vary depending on the block.

The Doctores Neighborhood is an urban area with mostly a high-density ratio of dwellings per square

meter (m^2), which it is been indicated with the letter "A" in the Doctores Neighborhood land use-zoning Map, as shown in **Fig. 11**. The permitted maximum height is 16 story buildings. The area has an average of four stories. The average lot area is 500 m2, with a 30% of open space.

There are four main types of land use in the neighborhood. The main type of land use is the HC, which is Commerce with Housing. Secondly is E which is used for community infrastructure. The Neighborhood is one of the most populated areas with community infrastructure of Mexico City. It has many official government institutions headquarters, Hospitals and medical centers, and public and private schooling Institutes. In third place of occupancy and a very disperse type of land use around the area is the HO which is offices with Housing. At last is the EA that are the open and green spaces. The following map provided by the Ministry of Urban development and Housing and the Cuauhtémoc Delegation administration displays the established types of land use in the Doctores Neighborhood.

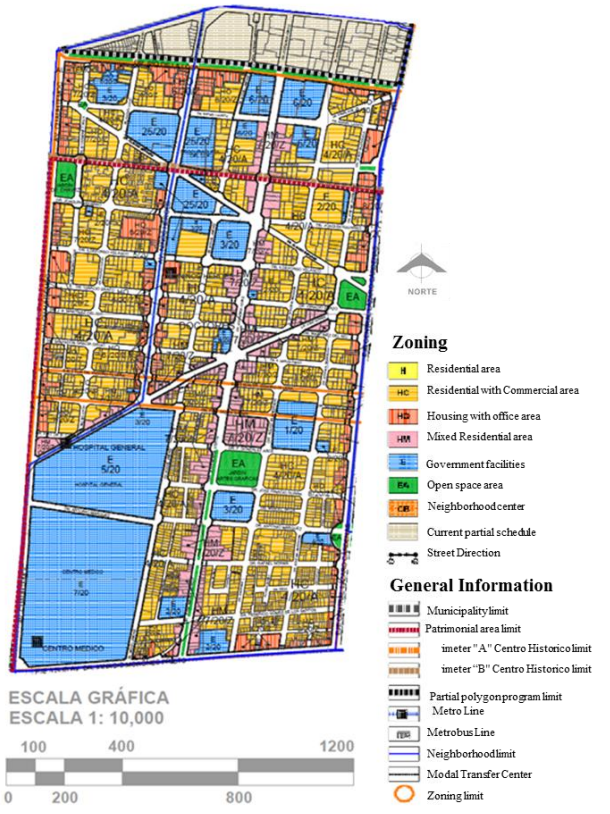

Fig.11 Doctores Neighborhood land use zoning Map[30)]

(7) Community infrastructure

The Cuauhtemoc delegation grants the maximum rate of community infrastructure within Mexico City. Approximately 11% (356 Ha) of the 3,244 Ha of the region is destined to community infrastructure. The area is a centered well-located region of the city, offering to the citizens a high concentration of urban activities services, and jobs.

The community infrastructure of the Cuauhtemoc Delegation destined to service, education, health, culture, recreation and sport, and communication belonging to the Doctores Neighborhood is about 60 Ha, which represents approximately a 17%. **Fig.12**, shown below visualizes the community infrastructure accommodation along the Doctores Neighborhood.

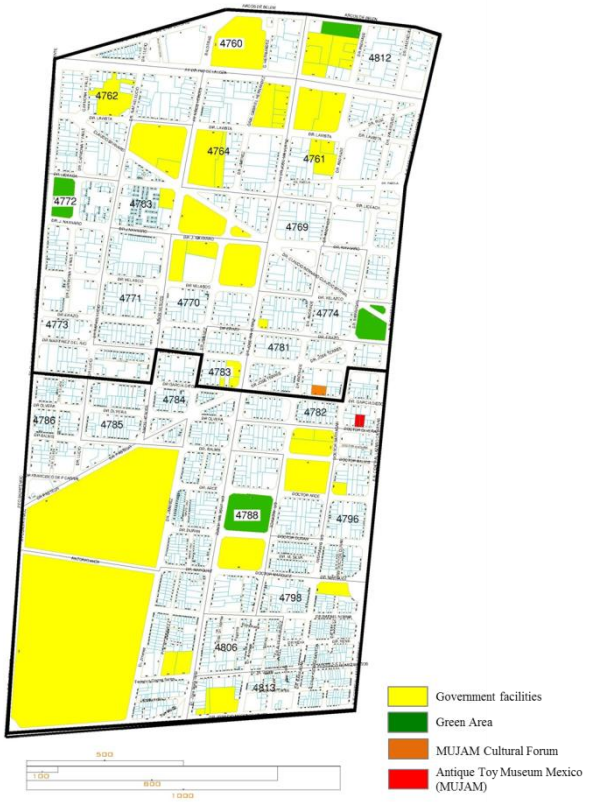

Fig.12 Doctores Neighborhood Community infrastructure[31)]

(8) Dwelling

a) Type of Dwelling

The single-family housing type is the predominant category of housing in the Mexico City, but on the contrary, in the Cuauhtemoc Delegation, only 14% of housing is single-family type, 80% of the property belongs to the multi-familiar type housing and the remaining 6% is not specific. There are approximately 1,340 residential apartment units in the range of multi-familiar housing within the delegation. A fraction of these housing units are equivalent to 205,816 residents and 37,764 social interest housing.

The Urban Development Programs, and the Building Code of Mexico city and its Complementary Technical Norms, establish the quantity, size of dwellings, outdoor area, stories and height per property, by specifying the land surface; the available public services provided in the area; the appropriate conditions of zoning; and the availability of land related to the density of dwellings. In

Cuauhtemoc, area has varied housing density due to its several land use zonings but in Doctores Neighborhood the predominant average density falls into the high-density category A. Thereby, the program categorizes the density of dwellings as in **Table 10**.

Table 10 Dwellings Density Category[32)]

Category	Density	Specification
A	High	Dwellings every 33 m^2 of land
M	Medium	Dwellings every 50 m^2 of land
B	Low	Dwellings every 100 m^2 of land
MB	Very Low	Dwellings every 500 m^2 of land
R	Restricted	Dwellings every 500 m^2 to 1000 m^2 of land
Z	Zoning	The Urban Development Program will define the condition case by case.

b) Dwelling situation

There are various problems around the housing matter in the Cuauhtémoc Delegation, it is a concerning social theme due to the several occurring situations. Foremost is the aging of the dwelling in which the construction materials and the building itself are deteriorating, and the existing lack of maintenance in its construction is causing a progressive loss in the housing value. Secondly, the outlaw alterations in the land use favoring its use to small businesses, warehouses workplaces and offices. Thirdly, several housing units and residences are vulnerable and in constant risk due to the public insecurity. Highly overcrowded residences are an additional problem, but in several areas mainly in the Centro, Santa Maria la Ribera and Guerrero neighborhoods there is a continuous loss of housing volume because a depopulation process is taking place.

Statistical censuses indicate that the issue of housing in the Cuauhtemoc delegation has demonstrated a variety of results in the existing type of dwelling and the number of existing units. In the period 1970 to 2000 the approximate loss of 150,000 dwellings occurred in the area, within the lost, 60% of these units were located in the Roma Norte, Guerrero, Doctores, Centro, Obrera, Santa Maria La Ribera, Morelos, Nonoalco and Tlatelolco Neighborhoods. In spite of the situation, in the period of 1990 to 2000, the homeownership rate of the previously mentioned neighborhoods augmented nearly 12%. In 2010, the Cuauhtémoc ranked as the sixth delegation with the highest amount if inhabited dwellings with 173,804 units but the whole delegation, specially the inner city part of the area has a tendency of reducing the dwelling volume except the Doctores Neighborhood that its housing volume has an increasing tendency for the next years. Between 1990 and 2000, the Neighborhood presented one of the largest housing growths, concentrating almost 70% of the new dwellings in the delegation, as shown in **Table 11** and **Fig.13**

Table 11 Inhabited Dwellings comparison between delegations[33)]

Delegation	1995	2005	2010	Rank
Milpa Alta	17327	26859	31820	16
Cuajimalpa de Morelos	29640	41948	47890	15
La Magdalena Contreras	48708	58505	63255	14
Tláhuac	55901	83707	91242	13
Xochimilco	73290	95896	102750	12
Iztacalco	96046	102658	104392	11
Azcapotzalco	107414	114074	117237	10
Miguel Hidalgo	95602	106005	120135	9
Venustiano Carranza	118363	120107	123317	8
Benito Juárez	113017	122176	141117	7
Cuauhtémoc	149904	160309	173804	6
Tlalpan	129606	154005	175983	5
Coyoacán	160567	173318	180862	4
Álvaro Obregón	156914	182119	197873	3
Gustavo A. Madero	287996	304169	320663	2
Iztapalapa	370504	441334	460691	1

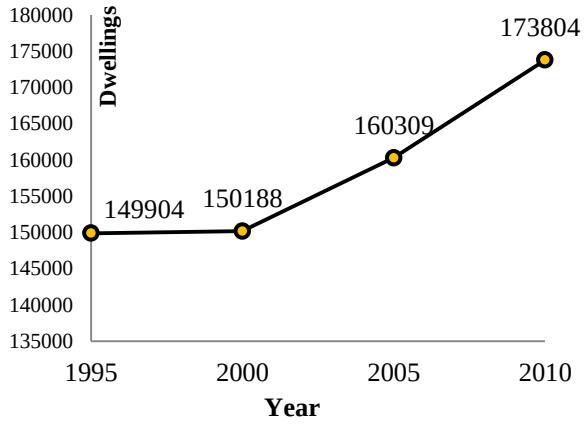

Fig.13 Inhabited Dwellings since 1995 of the Cuauhtemoc Delegation

Mexico City Government and the Housing Institute are making efforts to make advances in the dwelling matter by prioritizing development in Housing and Urban Development, through the General Urban Development Program, which boosts the repopulation and the re-densification of the Cuauhtemoc area. They implement programs and the

adequacy of rules for operation and credit granting, replace of housing and the generation of land for housing.

From 2001 to 2004, many actions to develop and improve the housing level in the Cuauhtemoc Delegation. The prior actions attend the type of housing with the highest rates of marginality, in order to attend the problematic housing situations. Around 500 actions of housing improvement had conducted in the Doctores, Santa Maria la Ribera and Obrera neighborhoods. The next table and graphic displays the Public Investment exerted in housing development in which comparing the 2009 to the 2010, it decreased 12.33%, but despite to this situation, since 2008 the Cuauhtémoc has averaged the third most benefited delegation regarding the public investment in housing development, as shown in **Fig 14.**

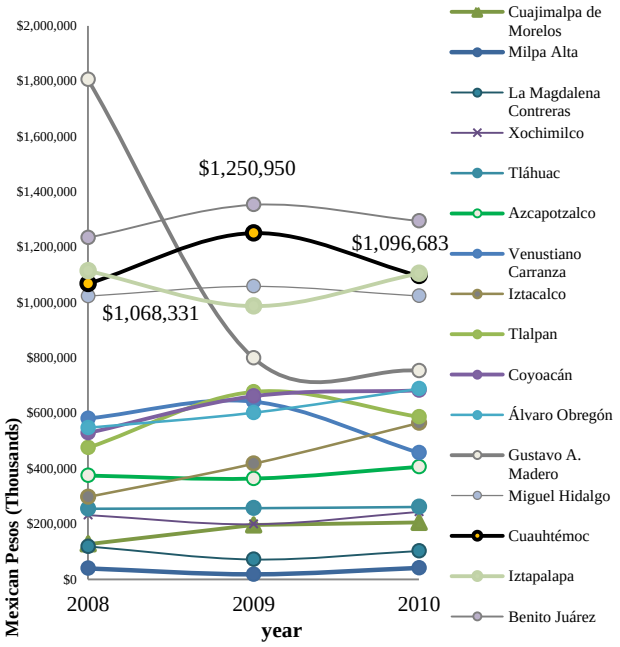

Fig.14 Public Investment exerted on housing development[34)]

(9) Neighborhood Socioeconomic and demographic characteristics

a) Marginality

Mexico City has the lowest level of marginality in the country. Within the 16 delegations of Mexico City, the Cuauhtemoc occupies the third less marginalized Delegation. In order to evaluate the marginalized areas the land has been divide into territorial units, in which 43 territorial units complement the Cuauhtémoc Delegation. The information used to grade the marginality of the territorial Units is the demographic characteristics such as health level, income, occupation, education, marital status, fertility, households, housing, overcrowding and availability of assets.

The scaling of marginality based on five levels of marginality, which are Very High; High; Medium; Low; and Very Low. As displayed in **Fig.15**, the Cuauhtemoc Delegation does not have a very high index of marginality but in six territorial units of the Cuauhtémoc area a 19% of the delegation population resides with a high level of marginality. Almost 41% of the population of Cuauhtemoc delegation is situate in 16 territorial units, which are in a medium level of marginality. Nearly 25% of the population is contained in 12 territorial units that are in a low level of marginality. The last 15% of the population live with very low marginality conditions that unfortunately represent only nine territorial units.

The Doctores Neighborhood is in a Medium Marginality level which in comparison to other neighborhoods and from other neighborhood delegations the life quality and life conditions are good.

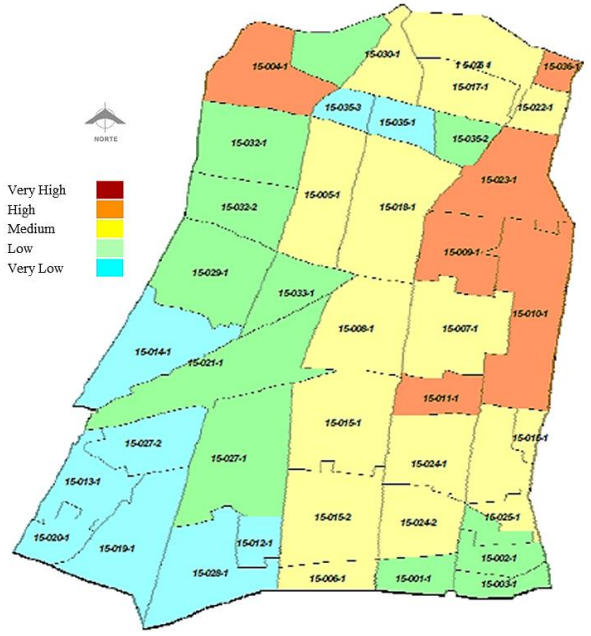

Fig.15 Cuauhtemoc Delegation territorial Units Marginality[35)]

(10)Neighborhood Public Security and Vulnerability

a) Neighborhood Public Security

The insecurity prevailing in Mexico is a social factor generator of a large fraction of the social vulnerability of the Mexican population. This situation has led Mexico to occupy the 133th place[36)] from 162 countries of peace and insecurity as reported by The Institute for Economics and Peace (IEP) in 2013.

Various statistics and censuses of the National Institute of Statistics and Geography and The National Public Security System completed in 2011, as shown in **Table 12**, Mexico City reported 185,476 crimes in a year. They placed the Cuauhtemoc area as the number one most insecure delegation of the 16 delegations of the city with the highest crime rate with 28,588 crimes, which represents the 15.41% of the

city total occurred crimes. From 2007 to 2011, the crimes in the area augmented in a 20.39%.

Table 12 Crimes Ratio between Mexico City and the Cuauhtemoc Municipality[37)]

Year	Mexico City	Cuauhtemoc		Variation (%)	
			(%)	Mexico	Cuauhtemoc
2001	171,469	24,819	14.47	-5.24	-11.22
2004	162,485	22,035	13.56		
2005	153 997	21 335	13.85	-3.03	1.94%
2006	149,328	21,749	14.56		
2007	162,548	23,747	14.60	14.11	20.39%
2011	185 476	28 588	15.41		

In 2009 from a selection of 25 neighborhoods in Mexico City 9 (36%) of those chosen neighborhoods are located in the Cuauhtémoc delegation. The area with the highest rate of crimes committed were in the Centro neighborhood (Mexico City Center), following in second place the Doctores Neighborhood. For example, in 2013, 976 bicycles stolen in Mexico City within those 141 cases occurred in the Cuauhtémoc Delegation. In 2011the ranking of insecurity rate varied, but still 70% of the crimes denunciations within the 2200 neighborhoods of Mexico City are in the Cuauhtémoc Delegation. The Centro Neighborhood still ranked in first place with the highest delinquency rate. The Doctores Neighborhood changed to the fourth position and the Roma to the fifth position. **Table 13** and **Table 14** show the ranking comparison between neighborhoods.

Table13 Mexico City Neighborhoods Ranking with the highest crime rates in 2009[38)]

Rank	Neighborhood	Delegation	Crimes
1	Centro	Cuauhtémoc	2989
2	Doctores	Cuauhtémoc	1509
3	Del Valle	Benito Juárez	1039
4	Roma	Cuauhtémoc	1039
5	Narvarte	Benito Juárez	975
6	Agricola Oriental	Iztacalco	885

Table14 Mexico City Neighborhoods Ranking with the highest crime rates in 2011[39)]

Rank	Neighborhood	Delegation
1	Centro	Cuauhtémoc
2	Del Valle	Benito Juárez
3	Narvarte	Benito Juárez
4	Doctores	Cuauhtémoc
5	Roma	Cuauhtémoc
6	Agrícola Oriental	Iztacalco

b) Vulnerability

Social vulnerability in Mexico varies depending on the delegation or region of evaluation, but it has had been classified as very low; low; average; high; and very high vulnerability in order to focus the weakest sectors that influence in a negative direction the population. This demographic and socioeconomic index assesses the impact of various sectors such as housing, public safety, poverty, education, pollution, among many others, that affect directly the development of the citizens by lowing its life quality and the capacities of a worth way of living. A vulnerable society is in constant instability and risk.

Fig.16 displays the evaluation of vulnerability in the Cuauhtemoc Delegation established by the Urban Development Program of the Cuauhtémoc delegation. It demonstrates the variation between regions, emphasizing the main vulnerable sectors in the area, which are the public security, crime rate and marginality.

The Doctores Neighborhoods is an area that approximately 70% is in an average rate of vulnerability. The following 20 % is between a low a very low level of vulnerability.

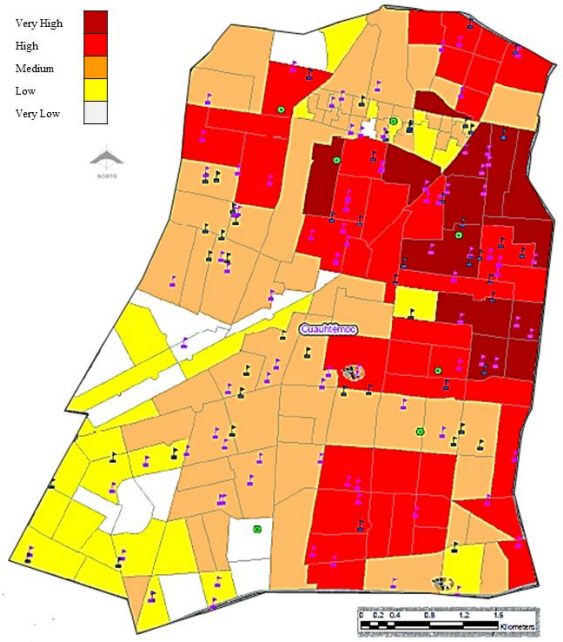

Fig. 16 Cuauhtemoc delegation Vulnerability index by area[40)]

(11) Population

In the decade of 1960´s, the population of the region range to 510,203 occupants, in that period, a demographic exploitation occurred in the area, increasing in an 82% its population. At the late 1970´s, the population augmented to 927,242 inhabitants, but from the 80's, the population began to decrease rapidly. In the late1980's the population diminished by 12% and in the year of 1990 it reduced in a 36% reaching down to 595,960 inhabitants, as shown in **Table 15**. The exact cause of the population reduction is uncertain but several statistical studies, soci-

oeconomic census and demographic census are able to explicate the demographic events. Other conditions such as the 1979 and the 1985 earthquakes outcome, city safety and urban development are possible conditions of the demographic changes in the Cuauhtémoc area.

Table 15 Cuauhtémoc Delegation Population since 1959 to 2010[41)]

Year	Cuauhtémoc Population	Cuauhtemoc Population density (Inhabitant/Ha)	Comparison to Mexico City total Population
1950	399,993	123	13.11%
1960	510,203	157	10.44%
1970	927,242	286	13.48%
1980	814,983	251	9.22%
1990	595,960	183	7.23%
1995	540382	-	6.37%
2000	516,255	159	6.00%
2005	521,348	161	5.97%
2010	531831	167	6.01%

In the Cuauhtemoc Delegation, there has been a loss of inhabitants and there is a low tendency of population growth in the area. As shown in **Table 16**, in the case of the Doctores Neighborhood, from 1990 decade, the Doctores neighborhood demography has had represented the second neighborhood with the largest population of the Delegation with almost a 7% in comparison with the rest of the neighborhoods that complement the whole Cuauhtémoc municipality.

Table 16 Doctores Neighborhood Population[42)]

Year	Doctores Neighborhood	Cuauhtemoc Delegation	Percentage
1995	39,558	540,382	7.32%
2000	37,310	516,255	7.23%
2010	48,080	531,831	9.04%

5. DISCUSSION

(1) Gentrification Process in the Doctores Neighborhood

a) Background and Social Mobility

From 1880, the Doctores Neighborhood started to be develop, since that epoch, the area outstand from the other neighboring because of its popularity and development. Many important buildings of the city established in region but the tipping point that led to decline the Doctores Neighborhood was the 1985 Mexico City earthquake, which damage and tore down a large portion of buildings and offices. Since that year, the depopulation of native inhabitants with a decent lifestyle and deterioration of the neighborhood occurred. Due to the inhabitant's migration, casualties caused by the earthquake, lack of resources, and precipitated decisions, caused the urban crisis that the neighborhood is experiencing today. After 1985, government offices, tremor refugees, mechanical workshops, irregular settlements and low-income population repopulated of the area. Currently the neighborhood has the highest level of community infrastructure in the country but the vulnerable sectors are delaying its development. Public security is the main problem in the Doctores neighborhood. Even it is one of the most valuable assets in the city; its crime rate reputation is avoiding part of its repopulation and peaceful revitalization.

b) Location, Infrastructure, Dwelling and Crime rate

Not only the community infrastructure is a quality of the neighborhood, its location is in a strategic position of inner Mexico City were adjacent neighborhoods such as the Centro, Condesa, Roma and Juarez being develop and revitalize. For example the Roma Neighborhood has almost the same urban morphology with the Doctores, and it also present a high crime ratio but from 3 years back from now, the Roma was gentrified by a trendy group of wealthy families and young moneyed people.

The Doctores has one of the top transportation and road connectivity in the city, making it and accessible area from every direction of Mexico City metropolitan area.

A curious phenomenon is occurring in the Metro system. It is the highest means of transportation within the city and year by year, its users are augmenting but in 8 years, the passengers that used to assist the Doctores neighborhood had decrease in an 11.37%, as shown in **Fig. 9**. One of the possibilities consist in the repopulation of the area due to the increasing rate of dwellings in the neighborhood, as shown in **Fig.13**, the amelioration of the crime rate, as shown in **Table 13** and **Table 14** and the public investment exerted in social development, as shown in **Fig.14**.

c) Population

As shown in **Fig.17**, the population tendency of Mexico City refers to a diminution in the proximate years. The Cuauhtemoc Delegation tendency signalizes a very low population increase, but the Doctores neighborhood population demonstrates a considerable increasing tendency. From 2000 to 2010, the demography increased 2%, ranging to 48,080 inhabitants as shown in and **Table 18** and **Fig 18**.

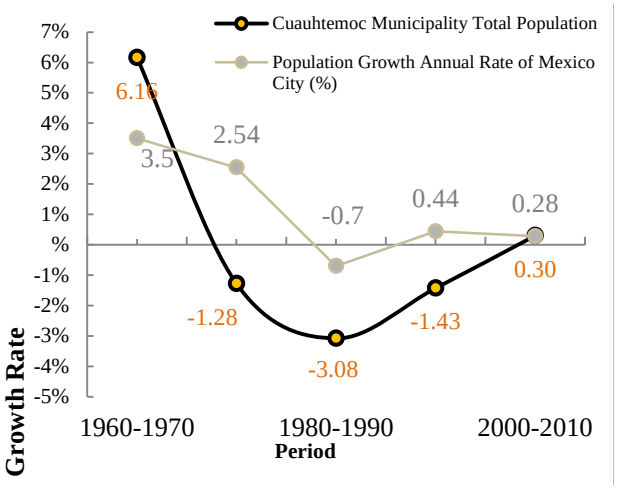

Fig. 17 Population Growth Annual Rates comparison between Mexico City and the Cuauhtémoc Municipality

Table 18 Population Growth Periodical Rates comparison between the Cuauhtémoc Municipality and the Doctores Neighborhood

Period	Population Growth Annual Rate of the Doctores (1a)[43)]	Population Growth Annual Rate of the Cuauhtemoc (1a)
1990-1995	-1.53%	-1.20%
1995-2000	-1.163%	-0.91%
2000-2010	2.568%	0.30%

$$PGAR = \left(\left(\frac{Population\ at\ end\ of\ period}{Population\ at\ initial\ period} \right)^{\left(\frac{1}{No.of\ years}\right)} - 1 \right) \times 100 \qquad (1a)$$

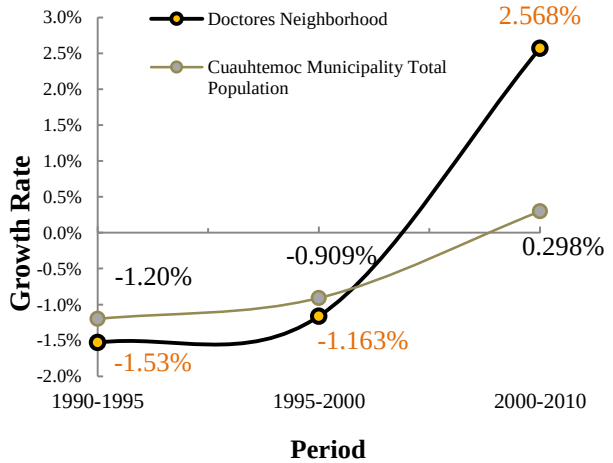

Fig.18 Population Growth Periodical Rates comparison between the Cuauhtémoc Municipality and the Doctores Neighborhood

The growth of the population in the Doctores Neighborhood in contrast to other neighborhoods in the city and peculiarly with the neighborhoods in the Cuauhtemoc Delegation represents an important breakthrough. Not only is the repopulation of the neighborhood a key circumstance of development. In addition, other demographic and socioeconomic factors evaluated in the Doctores demonstrate positive tendencies to urban develop and revitalize the area. This positive path of development can also have a severe conflict in which the goodwill of the area augments, causing in the inhabitants inequality and their city mobility because they are no longer available to afford the land prices and the living standard of the area. This situation brings into the scene, the interest of individuals and moral persons with higher economic standards, and a higher capacity of spending.

d) Marginality and Vulnerability

Day by day the inhabitants of the Doctores Neighborhood are becoming less vulnerable to the city adversities by incrementing their life quality, type of dwelling, education, health and income. The neighborhood is providing better condition for social development due to its strategic location and the sprawling development of the city.

(2) Improvement Proposal for the Urban Development Strategy, Preventing Negative Effects of Gentrification in the Doctores Neighborhood

Formulating an ideal and necessary urban strategy or program in the Doctores Neighborhood to mitigate the conflict sectors will be able to equilibrate the inequalities between inner city neighborhoods and its population by avoiding upcoming undesirable city conditions. Realizing the possible changes through urban planning of the Doctores neighborhood by maximizing the emblematic symbols of the city, infrastructure, development projects, cultural assets and community ties in the region will be a mechanism to avoid the negative aspects of a possible gentrification process occurring in the Doctores neighborhood.

Rising land prices and rising living standards are inevitable conditions for a neighborhood on urban development and revitalization track. In order to avoid one of the negative aspects of gentrification, which consists in the succession of low-income inhabitants, it is fundamental to take advantage of the existing community infrastructure, public income and the actual situation, by providing growth and development to the native inhabitants with tools and opportunities to keep pace with the evolution and progress of the city.

Currently the public security is the weakest sector that could increase the level of vulnerability of the region. This situation must improve to avoid the social development delay and decrease of the welfare of the inhabitants. On the other hand, the sprawling development and the increased goodwill of adjacent

neighborhoods (i.e., Centro, Roma, Condesa and Juarez Neighborhoods), are spreading its rapid growth to the Doctores Neighborhood by seeking spaces to develop new businesses and dwellings in order to stay inside the inner city boundaries. The location of the Doctores Neighborhood and fast growth are increasing the goodwill of the northwest and southwest side of the neighborhood.

6. CONCLUSION

(1)Urban Gentrification Process

The essence of the urban gentrification phenomena consists in a social mobility and the displacement of a several group of vulnerable inhabitants during a process of revitalizing and recovering a specific deteriorated neighborhood. Once, that specific region was a formidable area of the city that went into an Urban Crisis. **Fig. 19** is a diagram displaying the urban gentrification process of a neighborhood, since its developing origins, its zenith as a city, its decay and its revitalization. In addition, it relates the social mobility of inhabitants during the gentrification course.

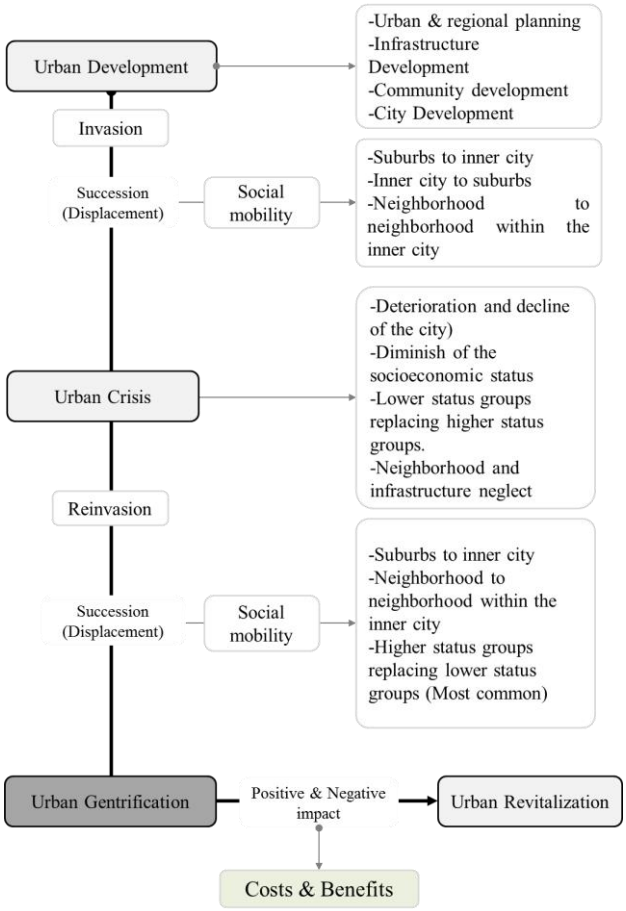

Fig. 19 City revitalization process through a Gentrification phenomenon

After an urban crisis, only a few neighborhoods with specific characteristics will suffer a revitalization development through the means of gentrification. In such case of revitalization, the area will be a "gentrified neighborhood". The neighborhood itself must have several circumstances and characteristics within the city neighborhoods such as existing infrastructure, a strategic location and several socioeconomic and demographic ratios.

The "gentrified neighborhood" must be have the potential to be revitalize after an urban crisis caused by the deterioration of infrastructure and the decay of the life quality of the inhabitants. In its inception, a gentrified neighborhood formerly built to house the elite with high quality features and constructions, but most importantly, it had to be a favorably situated neighborhood within the city with a good transportation system and access to the central business district of the city. In this kind of city change pattern of involuntary dislocation, potential costs and benefits must be consider profoundly, evaluating each one of them because they have different negative and positive reactions and interpretations depending on the perspective and interest of those involved in the process.

A neighborhood, in order to follow a gentrification process occurrence, several conditions and facts categorized. **Table 18** shows such specifications.

Table 18 Conditions for an occurrence of a gentrification process

Index	Characteristic
Population Dwelling Social Mobility	-Augment of the city inhabitants due to the repopulation of the area. -Migration to the inner city becomes fluent due to the improvement of the life quality and life conditions in the area. -The population growth has an increasing tendency for further years. -The population is returning to area.
Per Capita Income	-The average income of the neighborhood population is increasing year by year due to the improvement of markets, industries and business around the area. -Interest of investment of urban developers, institutions, corporations or establishment
Crime Rate Vulnerability	-The crime rate is diminishing due to the accessibility of the citizens to better services, wage and other conditions that improve the vulnerability of its inhabitants.
Taxation Public Investment	-The income, revenue and the taxes around the neighborhood rise due to the stability of businesses and the improvement of the "added value" of the area. -The government is injecting capital to improve the infrastructure of the area

	due to the city development, bringing consequently the rise of product prices.
Infrastructure	-The existing infrastructure meets the needs of the inhabitants and the neighborhood itself. -City planning and community development plans executed constantly in the area.
Social Development	-The public investment in development programs to improve services for the inhabitants take place. -New trends of social and community activities are origin in the area due to the economic, cultural, politic and financial interest in the area. -The area is in constant transition due to its new necessities occasioned by the lately changes
Location	-The area is located mostly in the inner city side of a sprawling city due to its development.
Land use	-The accessibility of the area stands out because of its city access, public transportation and connection means within the city and other urban or rural areas.

(2) City strategy

Surveying a specific neighborhood contributes in the analysis to understand its current situation by defining the strengths and weaknesses of the urbanity and addressing a proper City Strategy and urban solutions for the required needs. A city strategy functions as a planning and development mechanism, problem solver for a short medium or long term, and a key tool to guide further city conditions.

Before framing a city strategy, it is required to focus the occurring problems of the city and the upcoming tendencies of the city behavior. Each city, neighborhood or urban region has its own reality, problem and solution. In the case of the Doctores neighborhood, the area itself is an asset for the Cuauhtemoc Delegation and Mexico City due to the emblematic urban resources standing out from other neighborhoods of the City by concentrating infrastructure, cultural icons, historic buildings, government offices and other important institutions in the area. Moreover, the socioeconomic statistics and the demographic census that compare neighboring areas with the Doctores neighborhood provide an analytical evaluation of the region, recognizing the importance and improvement of the studied area.

(3)Improvement Proposal for the Urban Development Strategy, Preventing Negative Effects of Gentrification It is important to plan specific action lines to counterbalance the specific adversities of the region that could generate inhabitant's inequalities. As shown in **Fig.20**, the stakeholder's analysis related to gentrification in a Neighborhood is a key point evaluation in order to localize their role. Once decided their role, numerous strategies can be structured to prevent the negative effects of gentrification and fulfill their necessities.

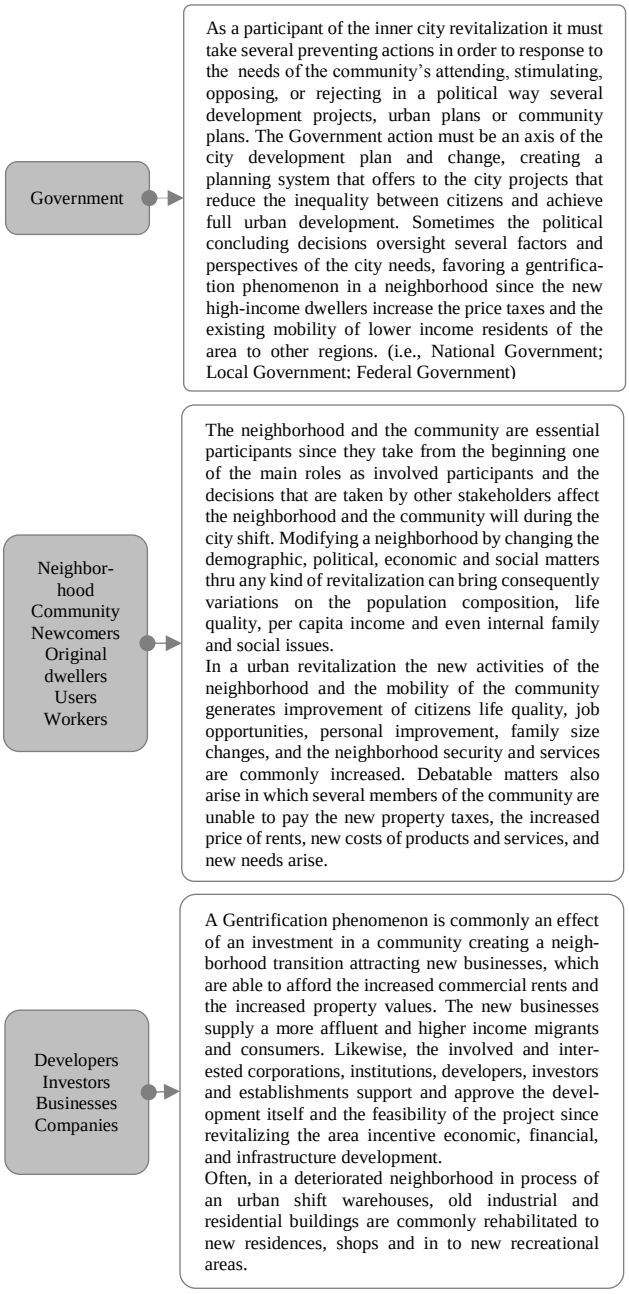

Fig.20 Stakeholders participation, activities and roles in a Gentrification process

7. FOLLOW UP

(1) Socio Economic indexes and governmental indexes in the Doctores neighborhood

The analysis of other socioeconomic indexes and governmental indexes such as social development, per capita income and tax rates in the Doctores

neighborhood are key point indexes that will define concretely if the Doctores neighborhood is being gentrify.

(2) Variation price rates in rent and sales of properties for dwellings, offices and businesses.

It is essential to assess the trend of property rent and sale prices, since they are useful indexes that show a ration of the payment capacity of the citizens by establishing in a way a certain lifestyle and a living standard. They can also indicate the tendency of rising prices around the neighborhood

(3) Gentrified Worldwide Neighborhoods

The General data compilation of urban gentrification process occurred worldwide and the Comparative situations between those areas with the Doctores neighborhood related to the gentrification phenomena.

Frame the data, facts, history and chronology of different neighborhoods in the world that were been revitalized passing through a gentrification process. Different neighborhoods or urban areas around the globe are city assets, and recognize its improvement by means of a gentrification process.

Comparison scenarios between neighborhoods around the world, with the Doctores neighborhood will strength the basis of the argument of this research.

(4) Improvement Proposal for the Urban Development Strategy, Preventing Negative Effects of Gentrification in the Doctores Neighborhood

Propose specific strategies and improvement strategies for the Urban Development that will attend the neighborhood problems avoiding the negative impacts of the gentrification phenomena

8. ACKNOWLEDGEMENT

I would like to express my very great appreciation to the Antique Toy Museum Mexico for the support and the provided information while I was researching in Mexico City. Without the guidance of this transcendental cultural institution, my Master thesis aims would not be accomplish.

I would like to acknowledge JICA (Japan International Cooperation Agency) for granting me their sustenance and a valuable scholarship, because it made possible my schooling as a master's degree student and this unforgettable experience in Japan.

My special thanks are extended to Professor Nakagawa Yoshihide of the Department of Civil and Environmental Engineering of Waseda University, who assessed me during my research and maling me accomplish my dissertation.

I wish to thank the members of the Nakagawa Laboratory in Waseda University, because without their help, partnership and friendship, these two years of researching would not worth it as student, friend, partner and human being.

In addition, I am particularly grateful for the support and care of my family members, which accompany me during these years of education and apprenticeship.

9. REFERENCES

1) Programa delegacional de desarrollo Cuauhtémoc, Zonificación y Norma de Ordenación E-3, *Secretaria de desarrollo Urbano y vivienda*, Cuauh-temoc_2008.pdf, p.1 2008.
2) Órgano de difusión del Distrito Federal, Programa Delegacional De Desarrollo En Cuauhtémoc 2013-2015, *Administración Pública del Distrito Federal*, No 1717, tomo II, p. 183, 2013.
3) Subdirección de difusión cultural de la delegación Cuauhtémoc, Monografía de la Cuauhtémoc, Gobierno de la ciudad de México, *Delegación Cuauhtémoc*, Corporación Mexicana de Impresión, Observatorio, México D.F., p. 74, 1996.
4) Corre la voz Chiapas, 19 de septiembre de 1985 una fecha de luto para todos los mexicanos, *Wordpress*, http://correlavozcomitan.com.mx/19-de-septiembre-de-1985-una-fecha-de-luto-para-todos-los-mexicanos, 01/07/2014, Consultation: 12/09/2014.
5) Apolinar Sandra, Nostalgia: Fotografías del Terremoto de 1985, *Swagger*, http://www.swagger.mx/radar/nostalgia-fotografias -del-terremoto-de-1985, 08/03/2013, Consultation: 01/07/2014.
6) Garza Gustavo, Revista de Información y análisis # 19, "Evolución de las ciudades mexicanas en el siglo XX, México, p.7–p.16, 2002.
7) Relaciones Publicas del MUJAM, Contacto, *Museo del juguete Antiguo México (MUJAM)*, http://museodeljuguete.mx/ubicacion/, TreeHouse Club, Consultation: 23/07/2014.
8) Administración Pública Del Distrito Federal, Programa Delegacional De Desarrollo Urbano Para La Delegación Cuauhtémoc, *Jefatura De Gobierno, Asamblea Legislativa del Distrito Federal, IV Legislatura*, México, PDDU_Cuauhtemoc.pdf, 2008.
9) Servicio Sismológico Nacional, Zonificación del Valle de México, *Universidad Nacional Autonoma de Mexico*, http://www2.ssn.unam.mx:8080/website/jsp/RSVM/zona-valle.jsp, Consultation: 08/07/2014.
10) Territorial Sub-Delegation management direction, North Cadaster of the Doctores Neighborhood, *Docotres-Obrera territorial Unit*, AutoCAD, Castro Doctores.dwg, 27/11/2012.
11) Territorial Sub-Delegation management direction, South Cadaster of the Doctores Neighborhood, *Docotres-Obrera territorial Unit*, AutoCAD, Castro Doctores.dwg, 27/11/2012.
12) Difusión del Instituto Electoral Del Distrito Federal, División de comités ciudadanos de la delegación Cuauhtémoc, *Instituto Electoral Del Distrito Federal (IEDF)*, Delegación Tlalpan, México D.F., www.iedf.org.mx, 10/07/2014, dele-15.jpg, 2010.
13) INEGI, Instituto Nacional de Estadística y Geografía,

Banco de información, *INEGI*, http://www3.inegi.org.mx/sistemas/biinegi/?ind=6200002238, México, 2012.
14) Programa delegacional de desarrollo Cuauhtémoc, Zonificación y Norma de Ordenación E-3, *Secretaria de desarrollo Urbano y vivienda (SEDUVI)*,p.1, 2008
15) Nieto Rodríguez, Leticia, La ciudad interior: El caso de la colonia doctores en la Ciudad de México, *Universidad Iberoamericana*, México D.F., p. 103,2002.
16) Metro de la ciudad de Mexico, Map System, *Sistema de Transporte Colectivo*, http://www.metro.df.gob.mx/operación/index.html, Consultation: 2014/06/24
17) Metro de la ciudad de Mexico, Map System, *Sistema de Transporte Colectivo*, http://www.metro.df.gob.mx/operación/index.html, Consultation: 2014/06/24
18) Metro de la ciudad de Mexico, Map System, *Sistema de Transporte Colectivo*, http://www.metro.df.gob.mx/operación/index.html, Consultation: 2014/06/24
19) Metro de la ciudad de Mexico, Map System, *Sistema de Transporte Colectivo*, http://www.metro.df.gob.mx/operación/index.html, Consultation: 2014/06/24
20) Transparencia del Sistema Metrobus, Fichas técnicas, *Sistema Metrobus, de Corredores de Transporte Público de Pasajeros del D.F*, http://www.metrobus.df.gob.mx/ fichas.html#uno, México, Del. Cuauhtémoc, D.F22/07/2014
21) Sistema Trole bus, Trolley-bus and the Light Train System Network map, *Servicios de Transporte Eléctrico del D.F*. http://www.ste.df.gob.mx/servicios/lineas.html, México, Consultation: 22/07/2014
22) Sistema de Rutas RTP, Plano general de la Red de Rutas de la RTP, Red de *Transporte de Pasajeros del D.F*, http://www.rtp.gob.mx /red _rutas.html, México, Consultation: 22/07/2014.
23) Administración Pública Del Distrito Federal, Programa Delegacional De Desarrollo Urbano Para La Delegación Cuauhtémoc, *Jefatura De Gobierno, Asamblea Legislativa del Distrito Federal, IV Legislatura*, México, PDDU_ Cuauhtemoc.pdf, 2008.
24) ECO-BICI, Mapa de Cicloestaciones, *Sistema de Transporte Individual* , https://www.ecobici.df.gob.mx/sites/ default/files/pdf/mapa.pdf, Mexico, Consultation: 22/07/2014
25) Torres, Jesús De León, Nuevas estaciones de Ecobici, *Km. Cero Noticias del Centro*, http://www.guiadelcentro historico.mx/kmcero/acciones-de-gobierno/nuevas-estaciones-de-ecobici, Mexico, 2014, Consultation: 22/07/2014.
26) Mora, Karla, Aumento en el número de usuarios de Ecobici, *El Universal*, http://www.eluniversal.com.mx/ciudad-metropoli/2013/ecobici-dfusuarios-record--949242.html, Mexico, 2013, Consultation: 22/07/2014
27) Administración Pública Del Distrito Federal, Programa Delegacional De Desarrollo Urbano Para La Delegación Cuauhtémoc, *Jefatura De Gobierno, Asamblea Legislativa del Distrito Federal, IV Legislatura*, México, PDDU_ Cuauhtemoc.pdf, 2008.
28) Administración Pública Del Distrito Federal, Programa Delegacional De Desarrollo Urbano Para La Delegación Cuauhtémoc, *Jefatura De Gobierno, Asamblea Legislativa del Distrito Federal, IV Legislatura*, México, PDDU_ Cuauhtemoc.pdf, 2008.
29) Administración Pública Del Distrito Federal, Programa Delegacional De Desarrollo Urbano Para La Delegación Cuauhtémoc, *Jefatura De Gobierno, Asamblea Legislativa del Distrito Federal, IV Legislatura*, México, PDDU_ Cuauhtemoc.pdf, 2008.
30) Programa delegacional de desarrollo Cuauhtémoc, Zonificación y Norma de Ordenación E-3, *Secretaria de desarrollo Urbano y vivienda*, Cuauh-temoc_2008.pdf, p.1 2008.
31) Territorial Sub-Delegation management direction, Cadaster of the Doctores Neighborhood, *Docotres-Obrera territorial Unit*, AutoCAD, Castro Doctores.dwg, 27/11/2012.
32) Administración Pública Del Distrito Federal, Programa Delegacional De Desarrollo Urbano Para La Delegación Cuauhtémoc, *Jefatura De Gobierno, Asamblea Legislativa del Distrito Federal, IV Legislatura*, México, PDDU_ Cuauhtemoc.pdf, 2008.
33) INEGI, Banco de información, *Instituto Nacional de Estadística y Geografía INEGI*, http://www3.inegi.org.mx/sistemas/biinegi/?ind=6200002238, México, 2012 Consultation: 22/07/2014..
34) INEGI, Banco de información, *Instituto Nacional de Estadística y Geografía INEGI*, http://www3.inegi.org.mx/sistemas/biinegi/?ind=6200002238, México, 2012, Consultation: 24/07/2014..
35) Órgano de difusión del Distrito Federal, Programa Delegacional De Desarrollo En Cuauhtémoc 2013-2015, *Administración Pública del Distrito Federal*, No 1717, tomo II, p. 187, 2013.
36) GPI Global Peace Index, measuring the state of global peace, *The Institute for Economics and Peace (IEP)*, 2013_Global_Peace_ Index_ Report.pdf, 2013.
37) INEGI, Banco de información, *Instituto Nacional de Estadística y Geografía INEGI*, http://www3.inegi.org.mx/sistemas/biinegi/?ind=6200002238, México, 2012, Consultation: 23/07/2014..
38) Notimex, Lista de las colonias más peligrosas del DF, *El Universal*, http://www.eluniversal.com.mx/notas/615728.html, México, D.F., 30/07/2009, Consultation: 25/07/2014
39) Reinah, Pablo, Las 10 colonias más peligrosas del DF, *Uno Noticias*, http://www.unonoticias.com/, Última actualización: 26/04/2011.
40) Órgano de difusión del Distrito Federal, Programa Delegacional De Desarrollo En Cuauhtémoc 2013-2015, *Administración Pública del Distrito Federal*, No 1717, tomo II, p. 188, 2013.
41) INEGI, Banco de información, *Instituto Nacional de Estadística y Geografía INEGI*, http://www3.inegi.org.mx/sistemas/biinegi/?ind=6200002238, México, 2012, Consultation: 23/07/2014.
42) Secretaria de desarrollo Urbano y Vivienda, Programa Delegacional De Desarrollo Urbano De Cuauhtémoc, *Administración Pública Del Distrito Federal* p. 20, cuauhte.pdf, 2008.
43) Torres-Degró, A. Tasas de crecimiento poblacional (r): Una mirada desde el modelo lineal, geométrico y exponencial. *CIDE digital*, 2(1),142-160. Recuperado de http://soph.md.rcm.upr.edu/demo/index.php/cide-digital/publicaciones , 2011, Consultation: 24/07/2014.

(Received August 1, 2014)