

Impact of Urbanization on Population Changes in Metropolitan Area of Tehran, Iran

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Abstract

Urbanization is a global phenomenon which is occurring rapidly in many less developed countries. It is expected that most urban growth occurs in Asian countries related to two main factors, unplanned rural to urban migrations and natural increase of population (excess of births over deaths). Rapid urban growth is responsible for many socio-economic and environmental changes. Its effects are strongly related to the global issues. Urbanization process has intensified sharply in the early of twenty century. In 1950 less than 30% of the world's population lived in cities. This number grew to 47% in 2000 (2.8 billion people), and is expected to grow to 60% by the year 2015. According to the national census report in 2011, Iran has 1,648,000 square kilometers area with 75.2 million population and 71.2 % percent of them live in cities. Composition of ethnic groups are Persian 53.4% Azeri 20.6 % Kurd 10% Arab 3.5 % Lur 8.9% Baluch 2.7% others 0.9%. Their religions are based on Islam, Muslim people 99.3 %, and Zoroastrian, Jewish, Christian 0.7 %. This paper concentrated on population changes of Tehran. The area of Tehran is 18,150 km² with 70.5 million populations is considered one of the most overpopulated city in Iran. It is the nineteenth largest city of the world. It has the highest rank of population comparing with five other largest cities of the country. Its population has reached from 1.5 million in 1956 to 8.2 million in 2011. The annual population growth-rate was 7.2% percent in 1956-1966. This growth-rate has been changed rapidly during fifty years. It dramatically declined to 1.3% percent in 2006. Thus, Tehran is one of unusual populous metropolitan city that achieved to a critical success experience in declining its population growth-rate. The total fertility rate (TFR) was over 4 child per woman during her childbearing years. Now, the fertility rate of Tehran has been dropped less than one and half child per woman. In 2006, the crude birth-rate was 15 births/1000 and the crude death-rate was 5 deaths /1000. Population of Tehran has been increased by mass-migration of people from country side after Islamic revolution also during the imposed war of Iraq and Iran in (1980-1988). A great number of people immigrated to Tehran during two decades between 1986-2006. Its population has reached from 6.1 million to 7.8 million.

This study is based on statistic data, library resources and researches of author. Briefly, the main factors that affected on increasing of population in Tehran are: Total fertility-rate at birth, life expectancy and immigration. It is predicted that population of Tehran will reach to 9.4 million in 2026. Rapid growth of Tehran population is resulted to many social and economic problems. Therefore, governmental authorities, urban planners and demographers are supposed to apply new strategies for controlling of population increase before it reaches to a critical stage.

Keywords: Demographic, Growth, Immigration, Urbanization, Population

Introduction

Population study of Tehran province based on statistic data of different years since 1554 to 2011. Tehran is the capital of Iran located on 35 degrees 30 minutes to 35 degrees 52 minutes N. Latitude in the west Asia. It was mentioned as a suburb of Rey about 2000 years B.C. However, the oldest Persian document on Iran shows that the city existed before the third century. This region has been among the main Routes connecting the east to the west. The city of Rey and its perimeter up to a radius about 100 km extended. It has been birth place of one of the most important human civilization which has been known as "Central Iranian Plateau Civilization" and dates back to more than 8000 years ago. Existence of the renowned Silk Road through this city, presence of permanent rivers like Darakeh, Kan, Karaj and Jaj Roud rivers and suitable climatic conditions have kept the region alive throughout the centuries. In Fig. 1 a map of Tehran in 1890 is shown.

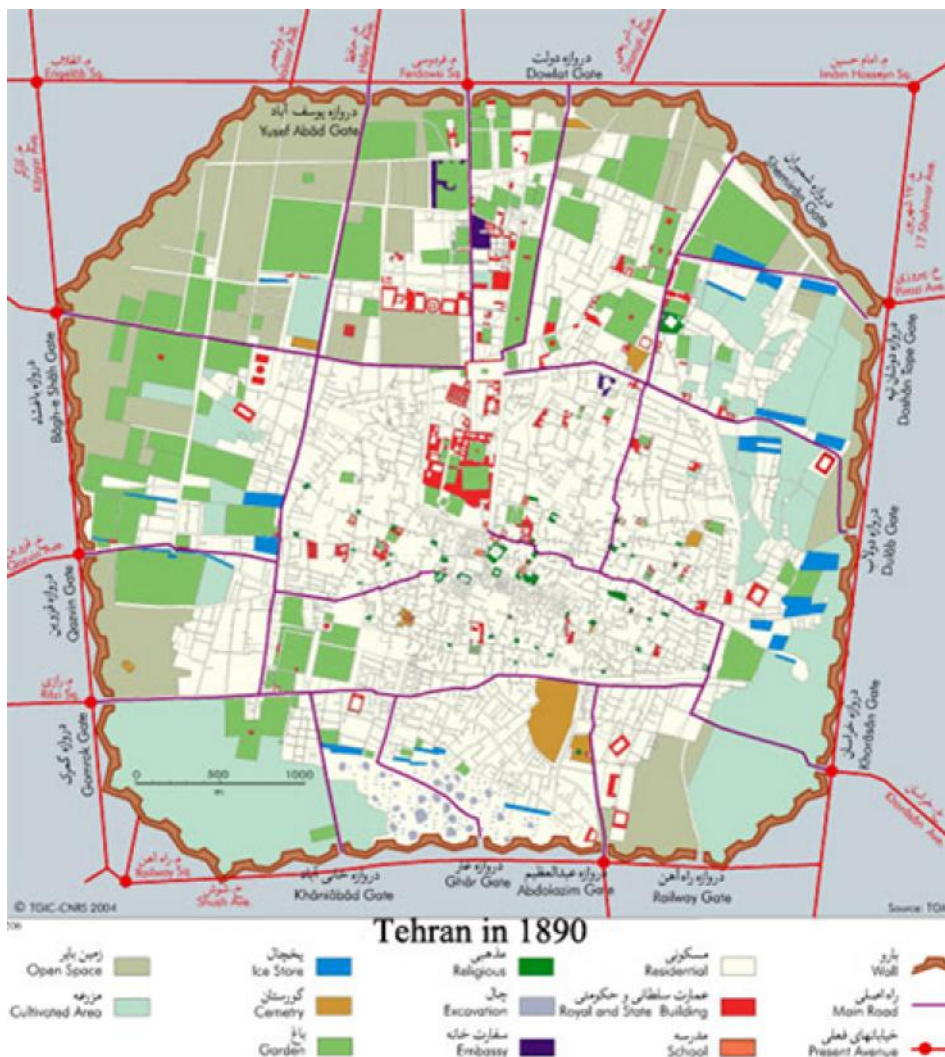


Fig. 1. Map of Tehran in 1890

The ancient city of Rey dates back to about 6000 years ago. Most historians noted that city of Rey was first built by Houshang of Pishdadi dynasty, the first Iranian king in 4000B.C. The city of Rey demolished by Moguls' attack in 1196. Although, the city became prosperous again under the Safavi rule in 1554. In that time, the city was controlled by six gates: Qazvin gate, Dowlat Shemiran gate, Doulab gate, Abdol Azim gate and Mohammadiyah gate.

In 1797, the city was chosen as a central rule of Ghajar government. It had 15000 populations. As table 1 shows the population growth rate since dynasty of Safavi era to the Islamic republic. The population of city has dramatically increased since 1961. It reached over 8 million in 2011. The urban facilities and improvement of socio-economic conditions were the main factors that resulted more people to be attracted to the city since 1956 to 2006. During fifty years, six million people have been added to the Tehran population. However in the past few years, the population growth rate in Tehran has been diminished again. At the present, population of central business district are being decreased, whereas, suburb population has been exceeded. Table 2 shows the population growth rate in 22 districts of Tehran. It is clear that there is a negative population growth rate is observed in districts of 6, 13, 14, and 20. Conversely, districts of 4 and 22 have shown the highest population growth rate. On the suburb area, population growth rate was 3% to 7% during 1976-1986. It should be mentioned that the speed of population growth in Tehran resulted the price of urban lands to be increased illogically comparing to the world metropolis cities.

Average size of family in Tehran is 3.2 person and the corresponding value in the country is 3.55 person. The size of family has become smaller because low fertility rate in Tehran related to the higher costly living conditions on the apartment, therefore birth rate has come down.

Tehran city is considered the most important urban agglomeration in the region. Its area is 18150 km². and had 14.6 inhabitants in 2011. From this number, 92.4 % percent of population was urbanized whereas 7.6% percent rural settlers.

Table 1. Tehran population and its growth-rate since Dynasty of Safavi government to the Islamic Republic of Iran

Year	Government	Population	Growth rate
1554	Shah Tahmaseb -e Safavi	1000	
1626	Shah Abbas Safavi	3000	1.4
1797	Agha Mohammad khane Ghajar	15000	5.2
1807	Fathali Shah- e Ghajar	50000	12.03
1812	Fathali Shah- e Ghajar	60000	3.6
1834	Fathali Shah- e Ghajar	80000	2.8
1867	Nasere-a-din Shah	147256	2.9
1930	First pahlavi	250000	2.4
1940	First pahlavi	540087	6.6
1956	Second Pahlavi	1560934	5.5
1966	Second Pahlavi	2719730	5.1
1976	Second Pahlavi	4530223	2.9
1986	Islamic republic of Iran	6058207	1.3
18991	Islamic republic of Iran	6497238	0.78
1996	Islamic republic of Iran	6758845	1.3
2006	Islamic republic of Iran	7711230	1.2
2011	Islamic republic of Iran	8200000	1.2

Table 2. population and its growth rate in 22 districts of Tehran in different years (1996-2006)

District	1996	2006	1996-2006
1	249676	375881	4.1
2	458089	607003	2.8
3	237301	290272	2.0
4	663166	810548	2.0
5	427995	675633	4.6
6	220231	236252	0.7
7	300212	309938	0.3
8	336474	378544	1.2
9	173482	169988	-0.2
10	282308	315225	1.1
11	223963	274650	2.0
12	189625	246874	2.6
13	266700	24312	-0.8
14	750160	482681	0.7
15	649370	641344	-0.1
16	303410	290348	-0.4
17	264300	259857	-0.2
18	298600	316517	0.6
19	227389	245003	0.7
20	379750	323716	-1.6
21	216970	154427	-3.4
22	67230	107130	4.7
Total	6,819,173	7,757,143	

According to Census data in 1996, there were 25 cities, in Tehran province. During 1996 to 2006 some villages were transformed into cities so, the numbers reached in to 51 cities and added to the regional cities.

Table 3 shows the population changes of region which separated by urban and rural area in the past three decades.

Table 3. Tehran population separated by urban and rural area in 1966, 1976, 1986 and 1996.

Year	Urban population	Rural population	Total
1966	3,166,410	289,106	3,455,516
1976	4,947,876	354,925	5,302,801
1986	7,222,190	706,746	7,928,936
1996	8,912,331	1,431,455	10,343,786
2006	12,252,517	1,160,785	13,431,302
2011	13,490,203	1,105,701	14,595,904

From this table we can conclude that population in Tehran has increased nearly triple during the three decades since 1966 to 1996. Tehran province is divided into 9 townships. They are: Tehran, Damavand, Tajrish, Islamshar, Karaj, varamin, shahre-Rey and Savejboolagh. But,

recently, Karaj and Savejboolagh has been separated from Tehran and have become as an independent region.

The ratio of urban population was nearly 86.2% in 1996. Totally, During 30 years, the population has been declined. First, this ratio had an increase from 91,6% in 1966 has reached to 93.3% percent in 1976. Then population was 91% percent in 1986 and 84.4% percent in 1991. Finally, it has decreased to 86.2% percent in 1996. And it reached to 92.4 percent in 2011. Table 4 shows the urban and rural population of Tehran county in 1991, 1996.

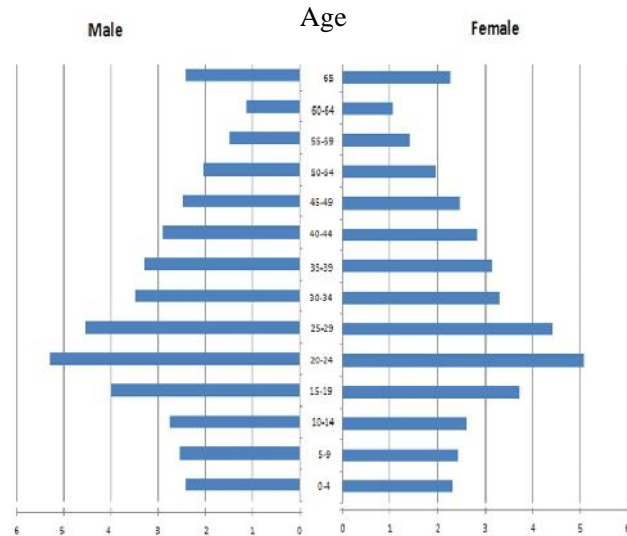
Table 4. Population of Tehran county separated by urban and rural area in 1991, 1996

Province	Urban / and rural population	1991	1996
Tehran	urban	6,486,982	6,758,845
	rural	21,519	35,356
	total	6,508,501	6,758,845
Damavand	urban	40852	53816
	rural	42339	45609
	total	83191	99425
Tajrish	urban	14168	17349
	rural	13807	13049
	total	27975	30398
Islam shahr	urban	257531	265450
	rural	60788	136649
	total	318319	402099
Shahre-Rey	urban	8162	11178
	rural	175224	201983
	total	183386	213161
Karaj	urban	480503	980228
	rural	138230	180933
	total	978733	1161161
Varamin	urban	265044	332863
	rural	157728	231765
	total	722772	564628
Shahreyyar	urban	244670	388066
	rural	261348	466576
	total	506018	854642
Savejboolagh	urban	83998	104536
	rural	104199	119535
	total	188197	224071
Total	<i>urban</i>	8241910	8912331
	<i>rural</i>	975182	1431455
	<i>total</i>	9217092	10343786

The population pyramid of Tehran city is shown in Fig. 2. The age distribution of national population reflects the past, records the present, and foretells the future. The number of men in all age cohort are more than the women also it indicates that there is a sharp decline in births-rate age 0-4 years, population is going to be elderly, the most mortality of male and female occurs between 60-64 age cohort.

Population Pyramid of Tehran city in 2006

Age	Male	Female
65	242,352	227,040
60-64	112,843	104,196
55-59	147,780	139,638
50-54	204,449	195,527
45-49	246,788	246,425
40-44	290,011	283,588
35-39	330,269	314,525
30-34	348,653	330,030
25-29	455,303	442,200
20-24	529,545	507,001
15-19	398,663	372,904
10-14	275,356	261,737
5-9	254,092	243,245
0-4	241,615	229,904



Source: National Statistic organization

Population in thousand

Fig. 2. The population pyramid of Tehran city in 2006.

Definition of Demographic Terms

- **Birth rate:** The number of births per year per 1000 population.
- **Crude birth rate (CBR):** often refers to the birth rate, is the annual number of live births per 1000 population.

$$\frac{\text{birth at one year}}{\text{total population}} = \text{per1000}$$

- **Death rate:** Also called the mortality rate is the annual number of deaths per year per 1000 population.
- **Migration:** Involves the long-distance movement of people from one residential area to another.
- **Natural increase:** The rate of natural increase of a population is derived by subtracting the crude death rate from the crud birth rate.
- **Overpopulation:** is a value judgment reflecting an observation or conviction that an environment or territory is unable to support its present population.
- **Population density:** A measurement of numbers of persons per unit area of land.
- **Population doubling time:** The time in years taken to double the numbers of people at a place by natural and migration changes.
- **Population momentum:** The tendency for population growth to continue despite stringent family planning programs be cause of a relatively high Concentration of people in the childbearing years.
- **Population projections:** Estimates of future population size, age, and sex composition based on current data.

- **Population pyramid:** A graphic device that represents a population's age and sex composition.
- **Suburb:** A functionally specialized segment of a large urban complex located outside the boundaries of the central city, usually relatively homogeneous residential Community.
- **Total fertility rate (TFR):** Indicates the average number of children that would be born each woman if during her childbearing years.
- **Under population:** Refers to the circumstance of too few people to sufficiently develop the resources of a country or region to improve the level of living of its inhabitants.
- **Urban:** Related to city or town, the opposite of rural an agglomerated settlement whose inhabitants are primarily engaged in non agricultural occupations.
- **Conurbation:** A Continuous, extended urban area formed by the growing together of several formerly separate expanding cities.
- **Urbanization:** Transformation of a population from rural to urban status; the process of city formation and expansion.
- **Urban hierarchy:** A ranking of cities based on their size and functional complexity.
- **Chain migration:** The process by which migration movements from a common home area to a specific destination are sustained by links of friendship or kinship between first movers and later followers.

Effect of climate on population attraction in Tehran

There are several factors that affect the climate conditions of Tehran which is located on a particular geographic region. e.g. the high Alborz Mt. in the north with 3950m height and Damavand Mt. in the east with 5787 m elevation. The southern part of city is ended to a vast plain. The altitude of Tehran is about 1200m in the south and 1700m in the north. The water source of city is provided by flowing two main rivers; Karaj in the west and Jaj Roud in the east. The effect of these rivers on climate conditions of Tehran should be considered. Semi-dry climate dominates on city having hot and dry summers and moderate winters. During 30years (-1976 2006), average annual rain fall of Tehran has been recorded 230 mm. Fig. 3 shows that during twenty years since 1987-2006 the highest rainfall was 400.5 mm in 1995 and the lowest rainfall was recorded 126.7 mm in 1996. Also the maximum amount of precipitation was 40.76 mm was occurred in March and the minimum precipitation 1.09 mm in September Fig. 4. Three synoptic weather stations were established in different area of Tehran. Each station deploys a number of instruments to obtain readings. The results are also depicted in Table 6.

These include thermometers, barometers, rain gauges, hygrometers and anemometers. Collected data from these stations indicate that the maximum temperature in Tehran was 30.24 centigrade in July the minimum temperature 3.74 centigrade in January within 45 years Fig. 5. Therefore, Tehran has hot summers and moderate winters. Some years it has colder winters, the temperature goes below -5 centigrade. The anticyclone (atmospheric high- pressure cell) plays an important role on the climate conditions of city. In winter season, Tehran is under influence of northern atmospheric high pressure cell of the Soviet Union. It brings cold weather to the city. Most of winter days, Tehran has a polluted air. In summer season, the atmospheric low-pressure cell dominates from the southern desert area.

The relative humidity was recorded 40 %. Wind direction is from west to the east, so western part of city has much more clean air than the eastern. The velocity of wind is recorded 5.5m per second. At night, a cool mountainous breeze blows toward the city from the northern mountains. It brings a pleasant weather for citizens, conversely, during the daytime, wind direction is changed. It blows from southern plains toward the northern mountains. Generally, it is associated

with hot weather in summer seasons. Fig. 6 shows the annual relative Humidity, Precipitation and Temperature in Tehran between the years (1951-2005).

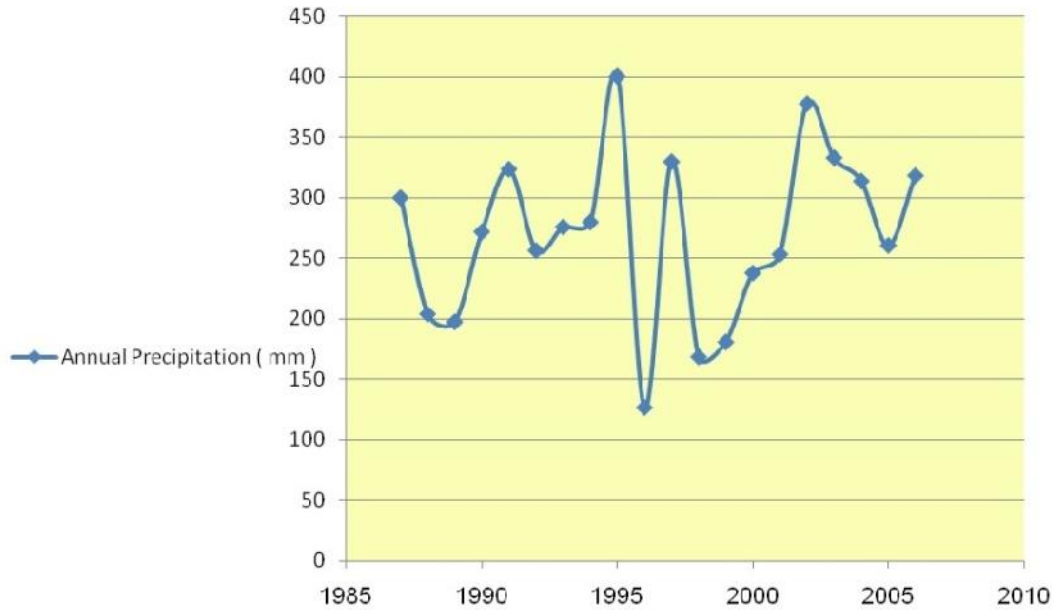


Fig. 3. Average Annual Precipitation of Tehran City (1987-2006)

Table 5. Annual Precipitation

Year	Annual Precipitation
1987	300.2
1988	204
1989	197.5
1990	272
1991	323.7
1992	256.5
1993	276
1994	280
1995	400.5
1996	126.7
1997	329.9
1998	168.6
1999	180.8
2000	237.9
2001	253.3
2002	377.9
2003	333.1
2004	313.9
2005	260.7
2006	318.4

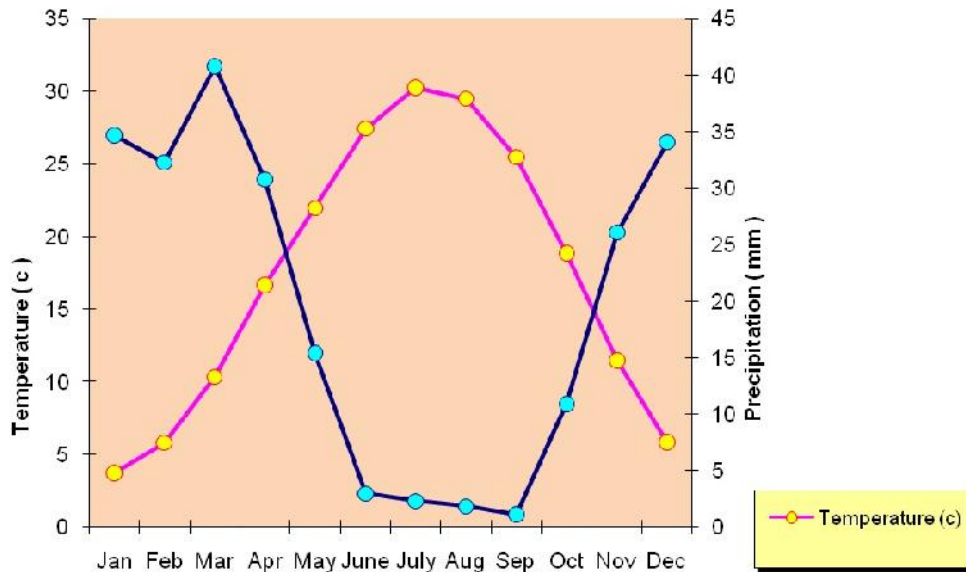


Fig. 4. Average Annual Precipitation and temperature in Tehran (2005)

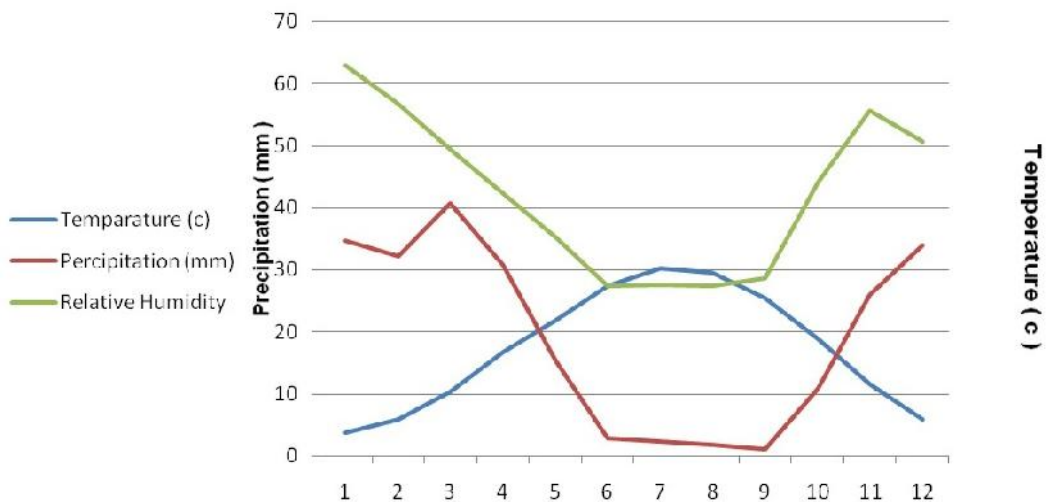


Fig. 5. Annual Relative Humidity, Precipitation and Temperature in Tehran (1951-2005)

Population density

Population density expresses the relationship between number of inhabitants and the area they occupy. Density figures are useful, it is the calculation of the number of people per unit area of land, usually within the boundaries of a political entity. Population density in 22 districts of Tehran has not been distributed on the same level. Population density in different districts of Tehran related to economic, social and cultural factors. The significant differences on population density are seen between northern and southern Tehran. Generally, high-income class of people

live in the northern city in relation to the land values which is impossible for low-income class. Southern part is occupied by low-income class where the land is not too expensive. consequently, population density is higher in the south comparing to the north. Theoretically, there is a direct interrelation between land values and population density. As distance increases away from the C.B.D. population density decreases. According to the report of census bureau, in 2006 high-densely populated areas of Tehran are 10,14 and 17. The average population density is 300 persons per hectare. District 10 has the highest population density among the other districts 434 persons per hectare. Medium population density related to districts of 1,7 and 8, 350 persons per hectare. Recently, new districts which are created in the west of Tehran has the lowest population density. Here, we can point out district 22 which has the lowest density 2 persons per hectare. Fig. 7, shows the population density in 22 districts of Tehran in 2006.

Table 6. Relative humidity, precipitation and temperature for a year and their mean value.

Temperature	Precipitation	Relative Humidity	Month
3.74	34.64	63.01	Jan
5.82	32.24	56.79	Feb
10.35	40.76	49.48	Mar
16.67	30.72	42.3	Apr
21.96	15.39	35.31	May
27.41	2.95	27.4	June
30.24	2.28	27.56	July
29.46	1.82	27.41	Aug
25.45	1.09	28.58	Sep
18.86	10.88	44.22	Oct
11.48	26.03	55.76	Nov
5.85	34.03	50.68	Dec
207.29	232.83	508.5	Mean

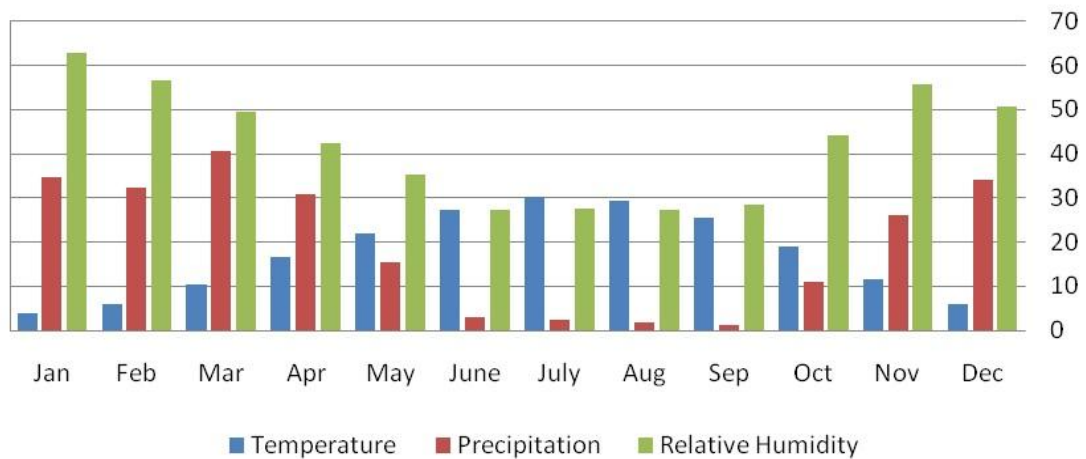


Fig. 6. Relative humidity, precipitation and temperature for a year and their mean value.

Generally, population density in some districts of Tehran is declined, and peripheral areas are increased in population concentration. The progressive depopulation of the central core and flattening of density to the city margin is related to high-speed transportation arteries.

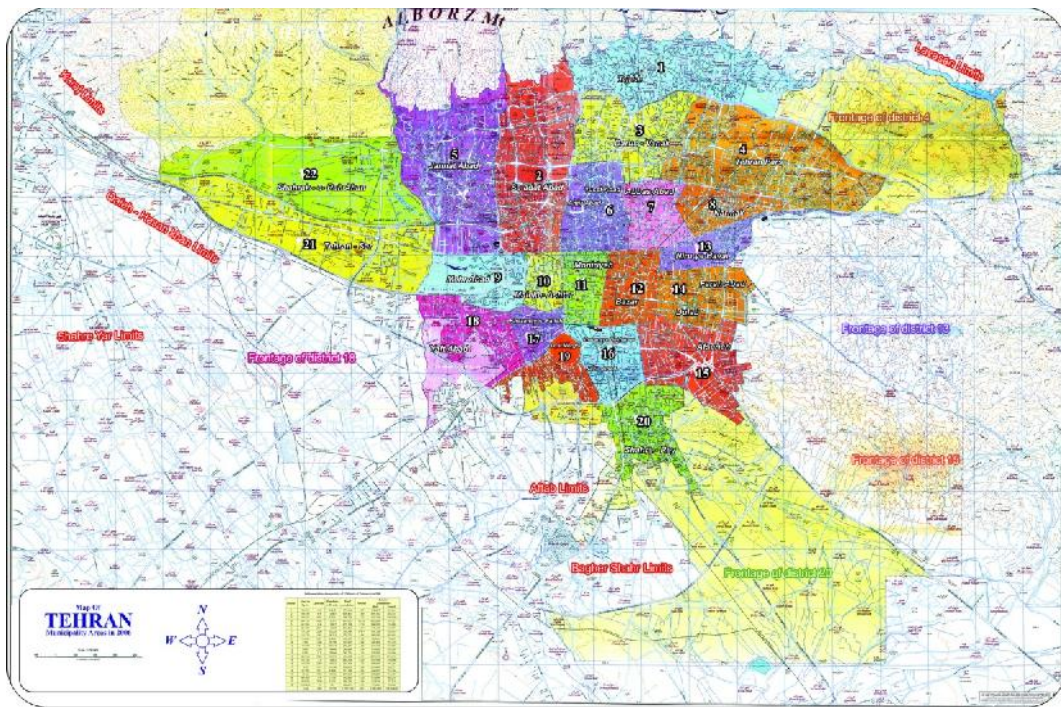


Fig. 7. Population density in 22 districts of Tehran in 2006.

Immigration to Tehran

The public relations of General Office of national registration organization has reported that during ten years since 1986-1996. Five hundred sixty eight thousand people have migrated to Tehran from different provinces of the country. The most migrants who came to Tehran were either looking for job or continuing their education. Generally, immigration stream began in Iran after land reformations in 1961 and during imposed war by Iraq in 1980-88. According to the national statistic data in 1966, the number of migrants reached three million and two hundred thousand persons. Tehran city was considered the main migrant-receptive province comparing with other provinces. It is said that over 67% of total migrants of country were attracted to this city and known as the main magnetic pole for migrants. According to the national population census in 2006 population changes were high. The number of migrants was reported 12 million for the whole country. The highest rate of migrants were recorded for Tehran about 38.9% whereas, the lowest rate of migrants for Chahar Mehaleh Bakhteyari province.

Study on the provinces of Iran in 1996 indicated that Tehran, Isfahan Khozestan, Qom, Semnan and Yazd were respectively the most receptive –migrants provinces in Iran. In 2006, Tehran province was the first rank among migration receptive provinces. 31 percent of migrants were attracted to this province. The migrant-receptive provinces with the greatest number of migrants include: Central province 21.9% Tehran province 7.15% Isfahan province 5.7% Eastern Azarbaijan 5.4%. Tehran as a metropolitan area was divided into 22 districts and each has its own characteristics. For example, in district 1, 13 and 17, the residents are mainly governmental employees. District 6 is a university area, dominated by the people who migrated for education. Military barracks are established in district 17, 21, and 22. The people living there are mainly army forces. According to statistical center of Iran, the main causes of migration during 1996-2006 are as follow: Family dependence 46% employment 13.8% military service 10.2% education 9.9% and job transfer 5.1%.

The general trend of migration occurred from village to town, then to the city, finally to the metropolitan area. The lack of job opportunities in the rural areas made them to migrate to Tehran in search of job and better life. Many migrants think that Tehran is an ideal city, Utopia that they can access all urban amenities and services without considering the high cost of living conditions. So, their expectations fail. They have to live on marginal areas. The expansion of marginal areas of Tehran is result of unrestrained and illegal migrations that must be controlled by governmental authorities. Concentration of investments in Tehran has attracted the large numbers of migrants looking for employment. The migration of sending and receiving areas also play a key role.

Table 7. Average population age structure of Tehran province comparing with the whole country

Difference	Country	Tehran province	Year
2.53	17.4	19.93	1976
2.97	17.01	19.98	1986
3.07	19.42	22.49	1996
2.40	24.91	27.31	2006

As the table shows that the fertility and mortality rate are two indicators that affect on the population age structure, also it is mentioned that immigrations have different effect on the population structure. The effect of indicators is decreased as the population age structure becomes younger. Vice versa, the effect of indicators is increased as the population age structure becomes the elder. In comparison, the average population age structure of Tehran province is higher than the whole country.

Table 8: Average population age structure of Tehran province separated by urban and rural area in 1986,1996 and 2006.

Rural	urban	Tehran province	Year
17.09	20.41	19.96	1986
19.03	23.19	22.49	1996
24.39	27.58	27.31	2006

The population age structure of Tehran province with its conurbations during in the past twenty years since 1986-2006 shows that the basic changes occurred on the structure of younger ages. So the young people have become older during these periods it seems that seven years were added on population age structure of younger people. The most increase that happened on the urban level, first related to Karaj 8.06 years then to Tehran 7.58 years respectively. These two Cities are considered the major receiving center for immigrants. Whereas, the least increase related to Damavand City in the east part of Tehran which could not attract more immigrants?

Effect of immigration on population growth rate and urbanization in Tehran province

In respect of little differences are observed on natural growth rate of population in Tehran, it is clear that immigration plays an effective role on population growth- rate and urbanization development. Also, there is a close relation between urbanization and population increase in Tehran provinces.

Table 9: Population and its average annual growth rate in Tehran and its provinces separated by urban and rural area.

The increase in population growth-rate during 1976 to1986 in Tehran province is explained as follow:

1. Immigration has been increased dramatically after Islamic revolution of Iran in 1976.

2. The occurrence of war between Iran and Iraq occurred in 1980 and lasted for eight years. that time, western and central parts of Iran were bombarding by Iraq's airplanes, these events caused the immigration stream began to Tehran province.
3. Afghani, and Iraqi immigrants were entered to Tehran, and most of them settled in Tehran region.
4. The fertility-rate was increased. Also, the policies on family-planning were not succeeded during 1976-1990. at the end of this period, the second policies on birth-control were begun again.
5. Some differences were observed on the census reports, especially on group-family members (soldiers, prisoners and etc...). Also, different definitions were stated for urban population after Islamic revolution. In other words, previous and post censuses that performed in the past three decades, was not the same validity.
6. Some restrictions were exerted for immigrants who move into Tehran. They are based on food rationing system, registration of unauthorized immigrant student at the school. buying or renting houses were forbidden to the illegal immigrants. Therefore, they have to settle on the suburb area or marginal places.

The population of these areas was increased drastically. The suburb became a densely populated area. So, the characteristics of rural areas of Tehran changed into the urban. The combination and coalescence of these villages or rural areas made the population growth –rate diminished in the area during 1966-2006.

As a result, 70 villages collectively or individually are joined to the urban area. The number of these cities reached from 25 to 51 cities in 2006. These are some of the main factors that affected on urban development and population changes in Tehran province.

Analyzing the population growth-rate in cities of Tehran and trend of its changes in relation to urbanization and migration. Some main points are as follow:

1. The annual population growth-rate of urban and rural areas in Tehran province during 1976-1986 was higher than the average annual growth-rate in two subsequent decades, (1986-2006). This process mainly was affected by high fertility-rate and immigration.
2. The annual population growth-rate in cities of Tehran during 10 years 1996-2006 was higher than its province. The population of Karaj, Varamin, Shahre-Yar, Robat-Karim, Pak-Dasht was dramatically increased in comparing to the province population. All of these cities were more affected by immigration. The effect of these factors were resulted to not only urban population of Tehran, Rey, Savej-Boolagh and Robat-Karim to be increased but also the population of their rural areas were exceeded.
3. The highest annual population growth-rate was concerning to Shahre-Yar 6.96% Robat-Karim 5.52 % and Rey 5.26%. The mentioned cities are important in receiving migrants, vice-versa, the least annual-growth-rate with 1.39% concerned to Firooz-Kooh city which located in 90 Km distance of east Tehran. It has less capability in attracting migrants.
4. The highest annual population growth-rate of Tehran province concerned to Shahre-Yar 7.65%, Robat-Karim 5.70%, Savej-Boolagh 5.51%, Pak-Dasht 5.27% respectively. The cities of Tehran province have been the significant receptive-center for immigrants. So, the immigration has more effects on urban population and urbanization rather than natural population growth-rate.
5. On rural areas of Tehran county, annual population growth-rate for rural areas were stated 12.71%. Rey with 6.71% was considered the second population growth-rate after Tehran. 60 thousand people were added to rural population of Rey. Also, the annual population growth-rate for Savej-Boolagh was 5.53% and for Karaj's rural 5.32%.

6. The population of Tehran county in the past 30 years since 1976-2006 has been increased a little over 2.54. This proportion for urbanized area 2.43 and for rural area 4.03 time. As a result, significant differences are seen in population of Tehran county. It is clear that immigration has effectively increased urban population. But in some cases, it caused rural population to be increased rapidly too.

Table 10: Multi-fold population increase of Tehran city and its provinces in the past three decades 1970-2006.

Rural Population	Urban Population	Total Population	Province
4.03	2.43	2.54	County
4.79	7.35	6.94	Islam-Shahr
11.17	1.72	1.75	Tehran
1.53	3.65	2.68	Damavand
8.38	10.85	8.95	Rey
2.27	8.03	3.58	Savej-Boolagh
0.98	3.08	1.63	Shemiranat
6.05	20.32	14.66	Shahre-Yar
2.99	7.39	7.00	Karaj
2.84	6.62	5.18	Varamin
5.02	14.41	7.90	Pak-dasht
1.29	2.86	1.75	Firooz kooh
9.87	53.05	30.27	Robat-Karim
1.84	6.53	3.55	Nazar-Abad

The population density in Tehran province according to township in 2006

The most densely populated area in Tehran province belongs to Karaj and the south and west part of Tehran. It should be mentioned that Karaj was recently separated from Tehran and became an independent province was called Elburz province.

Urbanizing and immigration in Tehran province

The present scope of Tehran because of its location as a capital city has always accepted so many immigrants from inside and outside of the country. However, This city was not called as a province before national census on 1976. That time, it was a part of central province of Iran but in that province, Tehran had the main role in attracting migrants and about 2,437 million people immigrated to central province till 1976, more than 2,285 million person had been settled in Tehran and Karaj. It is equal to 93.7 percent of total number of migrants who had resided in central province. 6.3 percent of migrants settled in Qum, Qazvin and Arak. In that year, Tehran held about 2,035 million person from total migrants of central province. That numbers was equal to 83.5 percent of the total number of migrants of that province. It was mentioned that the number of migrants who settled in urban area of central province was than 95.3 percent and just 4.7 percent rural settlers. It is clear that urban development and merge of suburb population in Tehran province are being expanded. The immigration stream to Tehran between 1976-1986 was intensified, in this period, There was not any policy and rules to prevent immigration movements to Tehran. But, later, some regulations were provided for immigrants, such as: buying and renting house, school registration, receiving daily and necessary services in this city caused the population to be attracted on suburb and marginal area of Tehran. All this points led to more complexity of population settlements problems in this area during the mentioned decade.

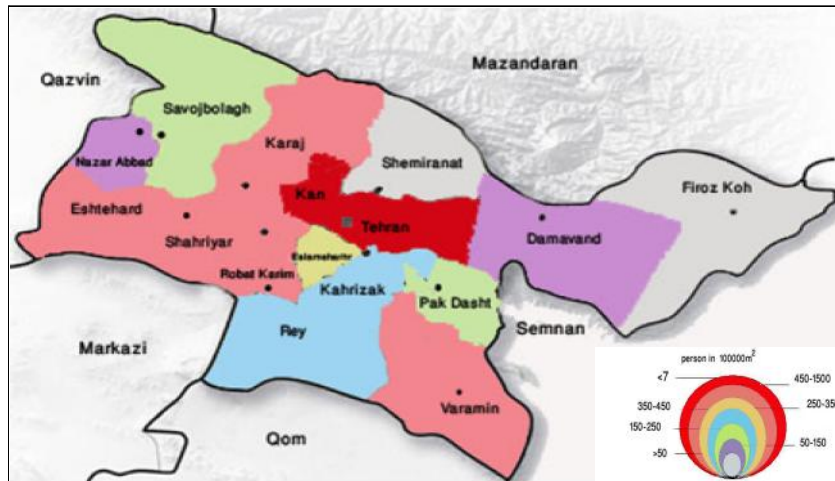


Fig. 8: Cities of Tehran Province

At least, 741,940 people came in Tehran and 265,944 people left the city in this period. The equilibrium migratory of population was 475,996 person. In a short time, Tehran was known as the first rank in accepting migrants in the country. From this number, 362,725 people live in urban area, and the rest 113,271 person in rural area. The growth rate of rural population in Tehran province was about 10.15 percent in year and its population was increased from 419,277 to 1,101,973 people, at least 456,000 people was exceeded because of immigration. In this decade, the rural population growth-rate of Tehran was reached to 8.47 percent, Rey 14.57 percent, Karaj and Shahre-Rey 11.49 percent, Varamin 7.04 percent in year. It indicates that migrants inhabitation have been accelerated on rural area of this province.

However, according to national census reports in 1996, immigration streams to Tehran province was not increased so much. But during 1986-1996 year 916,883 person came in this province, in contrast, 486,987 person left. based on this data, 429,896 person were added. In comparing to the previous decade that migrants were (475,996 person) so, immigration movement has been slightly decreased for two reasons, firstly, war refugees were returned to their lands. Secondly, those immigrants who left Tehran in the past periods and settled in other provinces. Although there is not accurate statistic data for war refugees who have left Tehran city for their origin areas but their share among the immigrants who left Tehran, were very high. Without considering effects of these two factors, immigration to Tehran city has dramatically been increased. In the next years, immigration trends to Tehran city can be a remarkable factor for population increase. According to U.N. some 97% of all world population increase by 2025 will be in urban areas.

Projection of the population increase and urbanization in Tehran province

A study on demography of Tehran province suggests that population has increased in this province comparing to the previous years. It is cleared that the population quota of this province comparing to the country has been increased in the past five decades table 9.

This table indicates that population has rapidly increased since 1956 to 2006. It based on population data, the latest prediction of population increase in the country and provinces were confirmed. The following data was accepted as operational assumes.

Based on population projection, population increase of Tehran province will reach to 20.76 percent in 2026. So, its urban population at the same year, will reach to 88.4 percent and can be considered the most densely populated area of the country.

Table 11: comparing the relative quota of population in Tehran province with the population of the country in the following years.

Comparing with population country by percent	Year
10.50	1956
13.46	1966
15.79	1976
16.37	1986
17.22	1996
19.04	2006

Table 12. Projection of population increase in Tehran province and its annual growth-rate since 2006

Average annual growth rate by percent		Population number		
With migration	With natural growth	With migration	With natural growth	Year
		13,422,320	13,422,320	2006
1.76	1.13	14,649,159	14,201,195	2011
1.75	1.02	15,977,480	14,938,081	2016
1.58	0.74	17,277,738	15,495,927	2021
1.41	0.46	18,532,205	15,857,397	2026

Results

- The problem of increasing great number of motor vehicles, overspreading taller buildings with 20-30 stories in height which prevent air current in city space also using nonstandard gasoline fuel that resulted to air pollution, should be solved by governmental authorities.
- The present scope of Tehran for its location as a capital city has always accepted so many immigrants from inside and outside of the country. It seems that over 67% of total immigrants were attracted to this city.
- Tehran is located in the main routes of the Middle East countries connecting the east to the west, existence of Silk Road, and suitable climate, selection for capital has made many people to be attracted to this city.
- Population of Tehran has grown since dynasty of Safavi era in 1554 and Ghajar government in 1797. It reached 8 million in 2011.
- The population of C.B.D. are being decreased whereas suburb population has been increased.
- Negative population growth-rate is seen in districts 6, 13, and 14, conversely, district of 4 and 22 show the highest population growth-rate.
- Average size of family in Tehran is 3.2 person comparing with country 3.55 person.
- Population of Tehran has rapidly increased by mass-immigration from countryside after Islamic revolution in 1978 and during imposed Iraq war (1980-1988).
- The main causes of immigration during 1996-2006 are family dependence 46% job opportunities 13.8% military service 10.2% education 9.9% and job transfer 5.1%.
- The highest annual population growth-rate concerned to Shahre-Yar 7.65% Robat Karim 5.70% and Rey 5.26%.
- Expansion of informal settlements, marginal settlements and shantytowns area in Tehran is results of unrestrained and illegal migration.

- The rapid growth of Tehran city is based on two factors: natural increase in population (excess of births over deaths) and migration.
- A comprehensive urban plan for Tehran is needed to solve Transportation system, air pollution, mass-migration and unnatural urban growth.

References

- [1] Amani, S. M. (1995). Basic demography, Samt publication, Tehran pp.120.
- [2] Bradshaw, M., White, G., Dymond, J., Chacko, E. World Regional Geography Second edition published by McGraw-Hill book companies. pp 348-354.
- [3] Blij, H.J., Muller P.O. (2002). Geography Realms, Regions and Concepts, 10th Edition by John Wiley & Sons. pp.324.
- [4] Center of Civil architecture studies and researches in Iran. Population of cities and villages in Tehran county since 1967-1987.
- [5] Center of Iran Statistic issues, Issues of Iran census of Tehran province, Central County and country in 1957-2012.
- [6] Center for studies and researches on civil architecture, population studies on national physical planning in 2004.
- [7] Distribution of population in Tehran urbanization and its revision based on statistic data in 2007. Ministry of house and civil architecture.
- [8] Governing of Tehran county, population studies for organization of Tehran county in 2010.
- [9] Projection of urban and rural population of Iran. Faculty of statistic researching in 2006-2026.
- [10] Scientific and research quarterly for population No 2, Fall 1992, Office for civil registration of Iran in 1993.