A geographical analysis of the indicators of the age and gender structure of the population of Babylon Province (1987 - 2021)

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Abstract

The research aims to study the age and gender composition of the population of BabilProvince in the years 1987 and 2021 through some indicators through which indisputable numerical values can be obtained on which decision makers, development project planners and infrastructure engineers rely so that they can make the right decisions after identifying the age structure indicators. The qualitative study of the population of the study area and the study of the needs of the age groups such as schools, hospitals, homes for the elderly, and other infrastructure and services provided to the population 49.8 in 1987, offset by a decrease in the percentage of the young age category and the elderly category, which indicates that the Province's society is close to reaching the demographic gift if the indicators of the percentages of the aforementioned groups continue in the same direction. As for the dependency ratio, it decreased in 2021 from what it was in 1987 This indicates the development of the size of the population of the family supporting the population and the shrinking of the size of the other groups, in addition to the young age of the study area's society, since the median age of the population of the Province, its urban and rural areas did not exceed 20 years in 1987 and in 2021 it may exceed G 20, but with a slight difference in the study area community and its urban population, in addition to that the presumption of old age for the residents of the Province, its urban and rural areas did not exceed 0.11, and this is evidence of the youth of the study area community, since the presumption of old age is less than 0.40.

Keywords: Indicators of age structure, Age structure, Gender structure, BabilProvince

1. Introduction

The demographic reality of the population of BabilProvince for the period (1987-2021) was linked to the size of the population and the change in their age and gender composition and their environmental distribution (urban, rural) to the Province authorities and the distribution of members of the population according to their natural characteristics, which are characteristics related to sex or gender (male and female) and age. The study of the age and gender structure is one of the important studies that affect the lives of the population in various groups from many demographic, social and economic aspects, as well as its importance in the field of planning and future development. And the consequent economic, social, cultural or demographic changes.The research took the characteristics of the age and gender structure of the population of BabilProvince for the period (1987-2021) and compared them as a research study to find out the change in the age structure and its indicators

represented in the dependency ratio, age, median, and the presumption of old age, as well as the change in the qualitative structure and its indicators represented in the sex ratio and the ratio of males and females during The aforementioned period, to clarify the images of the mentioned indicators for planners and decision-makers in order to make correct decisions related to the future of the Province in terms of providing industry, providing job opportunities, and planning scientific, health and service institutions. The manifested of the study are three major questions. Question one was 'What is the extent of the discrepancy and difference in the percentages of the age groups of the population of BabilProvince for the period (1987-2021)? And why?". The second question was "Is there a discrepancy in the values of the indicators of the age structure of the population of the Province according to the environmental distribution? And during the study period?. And the third question was "What is the extent of the discrepancy in the numbers of males and females according to the environmental distribution of the population? What is the extent of the discrepancy in the sex ratio in the Province?"

The hypothesis of the current research is that (1)There is a discrepancy in the size of the age groups of the population of Babylon Province for the period (1987-2021); (2) There is a variation in the values of the indicators of the age and gender structure of the population of the Province and at the level of the environment and during the study period; (3) There is a large discrepancy in the number of males and females according to the environment and during the study period, which is reflected in the sex ratio in the Province.

The research aims to clarify the change in the age structure and its indicators represented in the dependency ratio, the median age, and the presumption of old age, as well as the change in the gender structure and its indicators represented in the sex ratio and the ratio of males and females, which enables specialists in the field of planning to make correct decisions to provide the necessary services to the population of the Province, and to know the reasons That change is so that they can develop solutions and proposals that are compatible with those structures in the Province, leading to a state of stability and prosperity in all aspects of life.

2. Materials and methods

The research adopted the analytical approach to compare the results of the indicators of the age and gender structure of the population of the Province during the study period, relying on the data provided by the relevant official departments.

2.1 Study design

The study was conducted in the period 1987-2021. The spatial bordersrepresented by the province of Babil, which is geographically located to the south of Baghdad by about 100 km. It is bordered to the east by the province of Wasit, to the west by the provinces of Karbala and Anbar, to the north by the province of Baghdad, and to the south by the provinces of Najaf and Qadisiyah. With this spatial definition, it is one of the provinces of the Middle Euphrates, as it is the northern province of the Euphrates. Middle, and astronomically it extends between latitudes (31.55 and 33.00) degrees north of the equator and between longitudes (43.45 and 45.05) degrees east of Kering.There are a number of land roads that link the districts and sub-districts of the Province, as they consist of 5 districts viz. Hilla, Al-Mahaweel, Al-Musayyib, Al-Hashimiyya, Al-Hamza Al-Gharbi followed by 11 sub-districts

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with an area of 5119 km^2, constituting a rate of 1.176% of the area of Iraq amounting to 435052 km^2. It is depicted in the Figure 1.

Figure 1. Location of Babylon Province, Iraq

Source: Republic of Iraq, Ministry of Water Resources, General Authority for Survey, Baghdad, Map Production Department, Iraq Administrative Map, 2020, scale 1/1,000,000.

2.2 Research Structure

The research included two sections preceded by an introduction. The first section focused on studying the age structure and its indicators. The second section focused on the qualitative structure and its indicators, and finally the results, proposals and sources.

2.3 Statistical analysis

The total dependency ratio is calculated according to the following mathematical formula-:

Total dependency ratio = Total population _____ X 100

The median can be calculated according to the following mathematical formula:

$$Med=L+((\sum F)/2- F)/Fm*C$$

Where: L = the lower limit of the intermediate class F = the previous ascending cumulative iteration of the intermediate class

Fm = original frequency of the intermediate class C = length of the intermediate class

3. Results

3.1 The first topic: the age structure and its indicators for the population of Babylon Province for the period (1987-2021)

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3.1.1 The age structure

It means the distribution of members of the population according to age, as they are often distributed into five-year age groups, and they may be distributed into (decimal) age groups, and they can be distributed into three age groups called broad age groups, as follows: Age group 0-14 years, the middle-aged group 15-64years and the elderly category 65 years and over. The age structure is affected by three overlapping factors that cannot be separated: births, deaths, and migration (Ismail, 1984; Al-Khatawi, 2004).

The young age group from 0-14 years: It represents the base of the population pyramid for each society, as the numbers of other age groups are based on it. This group is characterized as mostly consuming and economically unproductive. Their percentage rises in developing countries (Al-Gohary and Muhammad, 1971), while it decreases in advanced industrial countries. And a high percentage is always accompanied by a low level of services and a shortage of services. Food and medicine, not to mention the difficulty that impedes and obstructs the population studied in order to reach the demographic gift, and that the individuals of this group have not yet entered the labor market, although circumstances may push some individuals of this group to enter the labor market, depending on the state of the country.

Middle age group 15-64 years: It is the category of adults, and this category may be divided into the category of young adults (15-34) years and adults (35-64) years 3, and it is the productive category that bears the burdens of defending the country and work and production to support the population, including the breadwinner category, and in it lies the fertility of society (Ismail, 1984). Through it, development and development takes place, and it is noticeable that its percentage in developing countries decreases due to the high percentage of young people, migration and wars compared to industrialized countries.

The elderly category i.e. 65 years and over: It represents an extension of the previous category, as part of the population of this category continues to work and be productive, especially in the field of education, administration and other works that do not require great effort, and they represent the top of the pyramid and this category is considered unproductive and may include large numbers of widows and be more susceptible to death.

It is noted from Table 1 and Figures 1and 2 that the population ofBabilProvince in 1987 was 1,106,033 people, of whom 516,489 were in urban areas and 589,544 in rural areas. Their number increased in 2021 to 2,293,295 people in the Province. In urban areas, 1,142,826 people and in rural areas 1,150,469 people. As for the broad age groups, in 1987 the number of people in the young age group 0-14 years reached 503,120 people, constituting 45.5% of the population. The total population of BabilProvince for the aforementioned year, including urban 221903 people, at a rate of 43% of the total urban population in the Province, and in rural areas 281217 people, at a rate of 47.7%, their number increased in 2021 to 888896 people, equivalent to 38.8% of the total population of the study area for the aforementioned year, as we note the increase in population size, which is offset by a decrease in the percentage of the aforementioned year, and the reason for this is due to the increase in the proportions of other broad age groups in the Province, and the size of the urban population reached 400216 people, by 35% of the total urban population in the Province for the

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aforementioned year. In the countryside, the population size of this group swallowed 488,680 people, at a rate of 42.5%. As for the middle-aged group (15- 64) years old in the Province in 1987, their number reached 550508 people, constituting (49.8%) of the Province's population, the share of the urban population was (271521) people, at a rate of (52.5%), and in the countryside (278987) people, at a rate of (47.5%). 3%), but in 2021, the population of this group in the Province reached (1,328,235) people, which is equivalent to (57.9%) distributed over urban and rural areas, as their number in urban areas reached (700148) people, at a rate of (61.3%). This is what the researchers constantly confirm about the increase in the percentage of this group in urban areas (5) as an indication of the migration of the population of this group from the countryside to the urban areas in search of job opportunities, and their number in the countryside reached 628087 people, at a rate of 54.6%. Population in the age group 65 and over, We see that the population of BabilProvince within this category in 1987 amounted to 52405 people, which corresponds to 4.7% of them 23065 urban people, or the equivalent of 4.5% out of the total urban population in the province for the aforementioned year, and 29340 people in the countryside, at a rate of 5% of the province's rural population. In 2021, the size of the population of this category in BabilProvince reached 76164 people, which is equivalent to (3, 3% of the Province's population are urban 42,462 with a rate of 3.7% and in the countryside 33702 people, with a ratio of 2.9, and the importance of studying this category lies in estimating their needs for social care, health requirements, and their need for food, housing, and other social and economic services (6)This discrepancy in the number of inhabitants and their percentages between urban and rural areas is due to the influence of the factors that attract urban and expel from the countryside. It is also due to the increase in the percentage of births in the countryside compared to its counterpart in urban areas. The reason is the low level of education in the countryside, women's lack of awareness, their lack of scientific level, their lack of connection to job work, and therefore they are not They use birth control.

**Table 1.Percentages of the broad age groups of the population of BabilProvince in 1987 and 2021***

Age group	1987			2021		
	Urban (%)	Countryside (%)	Province (%)	Urban (%)	Countryside (%)	Province (%)
0–14	221903 (43.0)	281217 (47.7)	503120 (45.5)	400216 (35.0)	488,680 (42.5)	888896 (38.8)
15- 64	271521 (52.5)	278,987 (47.3)	550508 (49.8)	700148 (61.3)	628087 (54.6)	1328235 (57.9)
65 andover	23065 (4.5)	29340 (5.0)	52405 (4.7)	42462 (3.7)	33702 (2.9)	76164 (3.3)
Total	516489 (100)	589,544(100)	1106033(100)	1,142,826 (100)	1,150,469 (100)	2,293,295 (100)

*Adopted from Republic of Iraq report 1987 and 2021

Figure 1. The broad age groups of the population of Babylon province in 1987
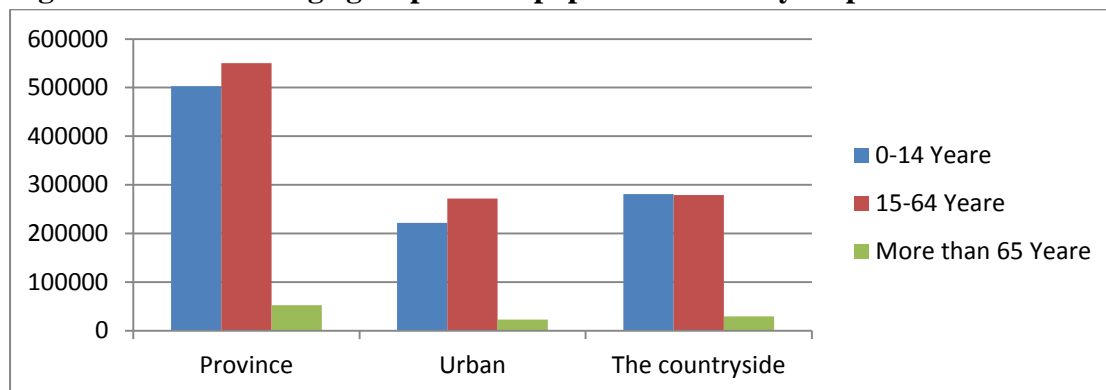
Figure 2. The broad age groups of the population of BabilProvince 2021
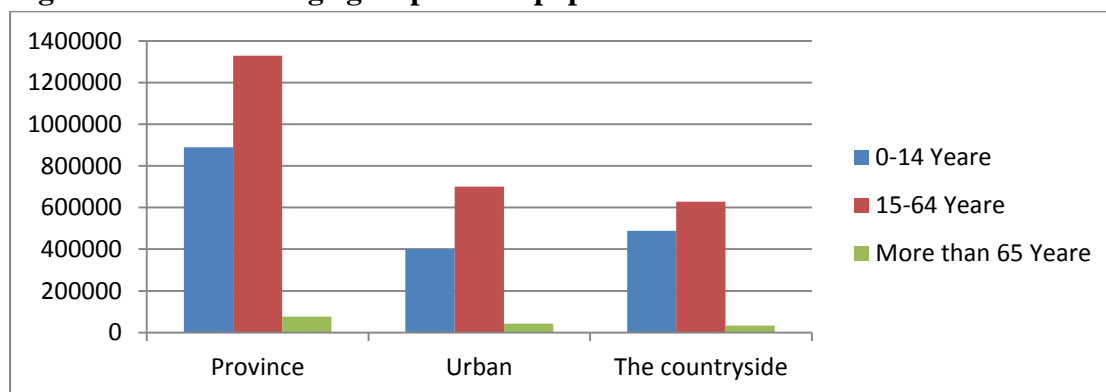
3.1.2 Age structure indicators

The identification of these indicators will help to further clarify and know the dimensions of the age structure of the population of BabilProvince, and among these indicators are:

The dependency ratio: Dependency is defined as a population phenomenon, reflecting the relationship between the three age groups, in the sense of the relationship between the population outside the working age (children under 15 years and the elderly 65 years and over) and the population of working age (15-64) years. This percentage takes a fixed basis, which is That every individual in society is a consumer, including the producers, and that the producers are only some of its members, and this percentage is directly related to the age of the population.The dependency ratio is one of the most important indicators that reveal the ability of the economically active population to bear the burdens of supporting members of society. Including Iraq, they have been working since the age of eight, in addition to the fact that there are a number of individuals who continue to work after the age of 65 years, in addition to the presence of a number of individuals in the category (15-64) years who are not actually working, such as students, housewives, patients, the disabled, students in secondary and university education, and those who Performing military service as well as those who do not wish to work and prisoners. Therefore, what is known as the real dependency ratio appeared, which means the number of people who are not included in the labor force for every 100 members of this force. However, it is difficult to measure the real dependency ratio due to the difficulty of obtaining accurate data about the labor force and population, the output of the labor force.

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It is noted from Table 2 that the total dependency ratio of the population of Babylon Province amounted to (200.9) in 1987. It was (190.2) in urban areas, while it increased in rural areas to form a value of (211.3). The age dependency amounted to (100.9) for the total portfolio, and (90.2) in urban areas, while in the countryside it amounted to (111.3). The study area was (81.7) in urban areas and (100.8) in rural areas. As for the dependency ratio for the elderly, it reached (9.5) in the Province, (8.5) in urban areas, and (10.5) in rural areas. In 2021, the total dependency ratio for the population of Babylon Province reached (172.7), and it was in urban areas (163.2), while it increased in rural areas to form a value of (183.2). As for the age dependency ratio, it reached (72.7) for the total portfolio. It was in urban areas (63.2) and in rural areas (83.2), while the dependency ratio for young people was (66.9) for the total population of the study area, and it was in urban areas (57.2) and in rural areas (77.8). The dependency ratio for the elderly in the Province amounted to (5.7), and in urban areas (6.1), while in the countryside it amounted to (5.4)

Table 2. Dependency (support) ratios for the population of BabilProvince in 1987 and 2021

	1987				2021			
	Age	**Young**	**Elderly**	**Total**	**Age**	**Young**	**Elderly**	**Total**
Urban	90.2	81.7	8.5	190.2	63.2	57.2	6.1	163.2
Countryside	111.3	100.8	10.5	211.3	83.2	77.8	5.4	183.2
Province	100.9	91.4	9.5	200.9	72.7	66.9	5.7	172.7

Second: the median age

The median is the age that divides the population into two equal parts, one above it and the other below it (7). It measures the progress of countries when compared with successive censuses. The youthfulness of society is measured on the basis of the median age, according to the following:

- Less than (20) years old, young people.
- From (20) years old to (29) years old, medium bully
- 30or more long-lived people

It is noted from Table 3that the province of Babylon, according to the 1987 census, is considered one of the young peoples, as the median age in the province reached (15.4 years). And it varied according to the environment, in urban areas it reached (15.6 years), and the reason for its increase compared to the Province is due to the low number of births in urban areas, but in rural areas they are more youthful than urban ones, as the median age reached (15.2 years) due to the high number of births. As for the 2021 estimates, the median age of the Province's population has increased to (20.1 years), and it has also increased in urban areas compared to the Province, reaching (20.4 years), and in the countryside, as it reached (15.7 years), and in the countryside, which is more youthful than the Province and urban areas.

**Table 3.The median age of the population of BabilProvince in 1987 and 2021**

	1987	**2021**
Province	15.4	20.1
countryside	15.2	15.7
Attended	15.6	20.4

*Adopted from Republic of Iraq report 1987 and 2021

Third: the presumption of old age (the rate of longevity)

It is calculated by dividing the population in the age group (65 years and over) by the number of the population who are in the age group (0-14) years (8). It is intended to move ages toward aging and change in their overall age structures. The measure of old age is very important through its social implications. The value of the old age presumption ranges between (0.1 - 0.65). Whenever the value of the old age presumption is less than 0.40, this indicates the youth of the society under study. If it is higher than the mentioned value, it indicates that the population under study has lost its youth (9).It is noted from Figure 3 that the presumption of old age in BabilProvincein the year (1987) amounted to 0.10 in urban, rural, and total Province. Compared to the year 1987, when it reached 0.09, this means that the population is moving towards fatwa, and it increased in urban areas to reach 0.11 due to the low percentage of young people. The reason is due to the small number of births in the urban Province, while we notice a decrease in the value The presumption of old age in the countryside is 0.07 due to the large number of births in the countryside of the study area.

Figure 3: Consortium of old age in BabilProvince, according to the 1987 census and 2021 estimates, according to the environment*
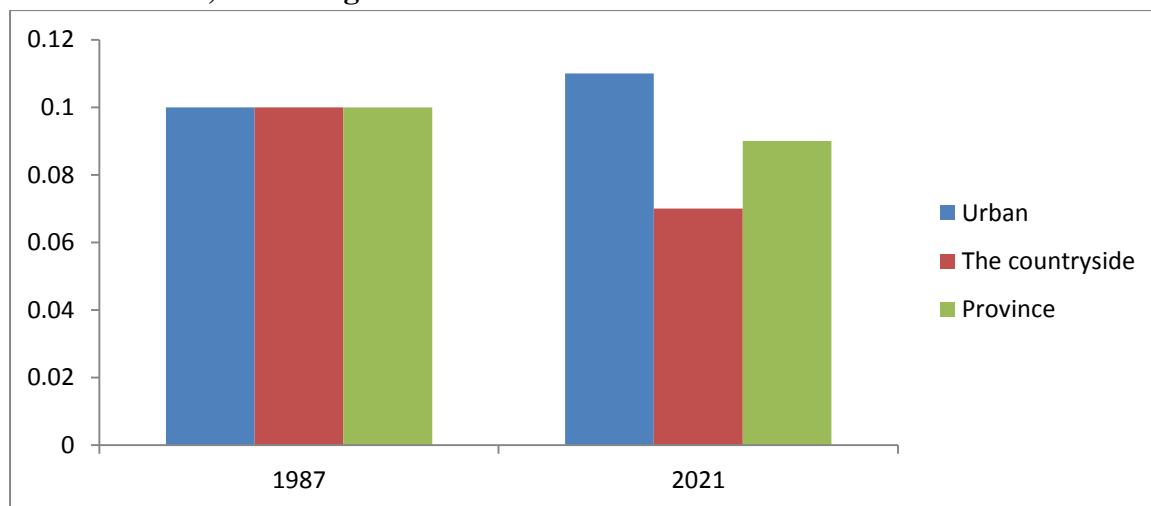
*Adopted from Republic of Iraq report 1987 and 2021

3.2 The second topic: the qualitative composition and its indicators of the population of Babylon Province for the period (1987-2021)

3.2.1 The qualitative composition of the population

There is no doubt that each of the males and females in any society had a social role to play, so it became necessary to study the qualitative composition of the population in order to

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know the needs of each of them (10), and that the number of males and females in any society and their percentage played a major role in shaping the shape of society and the speed of its movement, through The number of births, the number of deaths, marriage and immigration. A decrease in either of the two percentages in the age of marriage will lead to a decrease in the marriage rates, which will negatively affect the total birth rate, which will decrease.

Gender ratio (sex ratio :) The gender ratio is affected by biological and social factors, as well as the health status of women and the level of fertility (11), so male births and the differences in deaths of the two sexes, wars and migration are reflected negatively or positively on the gender ratio, which is calculated by dividing the total number of males by the total number of females and multiplying the result by (100). (12), and that the study of the gender ratio is useful in knowing the labor force and dependency ratios, especially in societies in which male labor is superior to female labor, as well as it is useful in knowing the number of females of childbearing age, and thus it is possible to predict the future size of the population (13).

This ratio is clearly disturbed if there is an influence that leads to that, such as massive migrations of either sex or deaths due to epidemics, famines or wars.

It is noted from Tables 4 and 5 that the gender ratio in the province of Babil in 1987 amounted to (105.6) males per 100 females, for the total population of the province. It rose to (109.3) in urban areas and decreased to (102) in rural areas. 6), in 2021 this percentage reached (99.7) for the total population of BabilProvince, and this means that the difference between the number of males and females decreased in 2021 compared to what it was in 1987, this percentage decreased in the urban areas of the Province to reach (87) and increased in its countryside to (114.2), and this indicates a large increase for males in the countryside of the Province and a severe decrease for them in urban areas.

When talking about this ratio according to the broad age groups of the population of BabilProvince, it is clear that in 1987 the gender ratio for the young age group was (104.1) to the total population of the province, urban (103.4), and in rural areas (104.4), it decreased in 2021 to reach (102.1) for the total population of the Province, and it also decreased in urban areas to (86.4) while it increased in rural areas to (117), and this explains the large increase in the number of males in the rural areas of the Province compared to urban areas.

As for the middle-aged group, in 1987 this percentage reached (108.5) for the total population of the Province, it increased in urban areas to (116) and decreased in rural areas to (101.6). (99.6) for the total population of the Province, it decreased in urban areas to (88), while it increased in rural areas to (114.4).

With regard to the elderly category, in 1987 this percentage reached (105.6) for the total population of the Province. It decreased in urban areas to (88.9) and increased slightly in rural areas to reach (93.9). In 2021, this percentage recorded its lowest value ((77.5) for the total population of the Province and in urban areas (77.2), while it increased slightly among the rural population to reach(77.9).

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Table 4: The gender ratio of the population of Babylon province in 1987[#]

	Urban			Countryside			Province		
	Males	**Females**	**Ratio***	**Males**	**Females**	**Ratio***	**Males**	**Females**	**Ratio***
0-14	113017	108886	1.03	143,640	137577	1.04	256,657	246,463	1.04
15-64	145,831	125690	1.16	140589	138,398	1.01	286420	264088	1.08
> 65	10853	12212	0.89	14208	15132	0.94	25061	27344	0.92
Total	269701	246,788	1.09	298,437	291107	1.03	568138	537895	1.06

*Ratio of male:female

[#]Adopted from Republic of Iraq report 1987

Table 5: The sex ratio of the population of BabilProvince in 2021[#]

	Urban			Countryside			Province		
	Males	**Females**	**Ratio***	**Males**	**Females**	**Ratio***	**Males**	**Females**	**Ratio***
0-14	185,546	214670	0.86	263486	225194	117.0	449032	439,864	102.1
15-64	327720	372428	0.88	335090	292,997	114.4	662810	665425	99.6
> 65	18504	23958	0.77	14756	18946	77.9	33260	42904	77.5
Total	531,770	611056	0.87	613332	537137	114.	1145102	1,148,193	99.7

*Ratio of male:female

[#]Adopted from Republic of Iraq report 2021

Male and female percentage

By it, we mean the percentage of males out of the total population of the Province, and this percentage has a significant impact on the shape of population groups and the speed of their movement. It is calculated by dividing the number of males by the total population, and then multiplying the result by (100), as it is noted from Table 6 that in In 1987, the percentage of males reached (51.4%) of the total population of BabilProvince for the aforementioned year. It decreased in both urban and rural areas to reach (52.2 and 50.6%) for them, respectively. In 2021, the percentage of males in the population of BabilProvince reached (49.9%) decreased in urban areas to reach (46.5%) and increased in rural areas to (53.3%).

As we indicated when we talked about the percentage of males, as this percentage is a percentage, but here is the number of females divided by the total population of the province, and then the result is multiplied by (100), as it is noted from Table 6 that the percentage of females to the population of BabilProvince In 1987, it amounted to (48.6%) of the total population of BabilProvince for the aforementioned year, it increased in urban and rural areas to (47.8, 49.4)% for them, respectively, but in 2021 this percentage reached (50.1%) Of the total population of the Province for the aforementioned year, it increased in urban areas to reach (53.5%), but decreased in rural areas to (46.7%).

Table6: The percentage of males and the percentage of females in BabilProvince in 1987 and 2021

Ratio	1987			2021		
	Urban	**countryside**	**Province**	**Urban**	**countryside**	**Province**
% Male	52.2	50.6	41.5	46.5	53.3	49.9
% female	47.8	49.4	64.8	53.5	46.7	50.1

[#]Adopted from Republic of Iraq report 1987 and 2021

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Conclusions

The percentage of yolks (0-14) years old recorded (45.5%) of the total population of BabilProvince in 2018. It decreased in 2021 to (38.8%), and the percentage of the elderly decreased to (3.3%) in 2021. after it was (4.7%) in 1987, while the average life expectancy increased from (49.8) in 1987 to (57.9%) in 2021, which caused the total dependency ratio to decrease in 2021 to reach (172.7).) after it was (200.9) in 1987.It is noted that most of the dependency ratios of the urban population of the study area are lower than their counterparts in the countryside, which explains the high proportions of the population of the breadwinner group among the urban population compared to their counterparts in the countryside.The community of the study area is a young community in 1987, with a median age of (15.4), moved to a community of average youth in 2021, and swallowed the median age of (20.1), and the population of the study area also attended, changing from (15.6) to (20.4). even if the values are more than (20) with a small difference, while the rural community of BabilProvince maintained its youth, so the median age reached (15.2, 15.7) for the two years of the study, respectively.The value of the presumption of old age was proven for the population of the study area in 1987 and in its urban and rural areas as well, and it reached (0.10), which indicates the youthfulness of the population of the study area, while it varied in 2021 to reach (0.09) for the population of the Province, while in urban areas it reached (0,0 11) and in the countryside (0.07). The gender ratio decreased for the broad age groups of the urban population of the study area and the total of the Province in 2021, reaching (86.4, 88, 77.2, 87), respectively, after it was in 1987 (103.8, 116, 88.9, 109). 3), which indicates that the growth rate of urban females in the study area is greater than the growth rate of urban males in the study area during the study period, and our evidence for that is the decrease in the percentage of urban males in the study area to (46.5%) in 2021 after it (52.2%) in 1987, and the percentage of females attending the study area increased to (53.5%) in 2021 from (47.8%) in 1987.

Suggestions

The research suggests the following

Emphasizing the need to conduct a general census of the population, since the current population estimates are based on mathematical equations that do not reflect the correct population growth, whether in the study area or in other Provinces of Iraq.Because the study community is a young society, so the planners and decision makers must take effective steps to provide the infrastructure for the study area community, such as building schools, kindergartens, hospitals, homes for the elderly, and other social services that can be provided to the residents of the Province.The need to provide accurate population data to help researchers in the field of population or fields that are based on population data in the completion of their research accurately.

References

1. Ismail A.A., Foundations of Population Science and Its Geographical Applications, fifth edition, Dar Al-Fikr Al-Arabi, Cairo, 1984, p. 86

3444

Eur. Chem. Bull. 2023, 12 (Si6), 3434 – 3447

2. Al-Khatawi DMBA , Population Change in DiyalaProvince for the Period (1977-1997), Master Thesis (unpublished), University of Baghdad, College of Education, IbnRushd, 2004, p. 178

3. Al-GoharyYAA and Muhammad HM, Population Geography, 1st edition, University Books House, Alexandria, 1971, p. 279

4. Ismail AA, Foundations of Population Science and Its Geographical Applications, fifth edition, Dar Al-Fikr Al-Arabi, Cairo, 1984, p. 86.

5. Al-GoharyYAA and Muhammad HM, Population Geography, 1st edition, University Books House, Alexandria, 1971, p. 279.

6. John Clarke, Population Geography, 2nd Edition, Pergamun press ltd., Oxford, 1972, p. 67

7. Abd Ali Al-Khafaf, Abd Mukhor Al-Rayhani, Population Geography, University of Basra, 1986, pg. 328.

8. Fathi Muhammad Abu Ayana, Alexandria Population Geography, University Culture Foundation, Alexandria, 1980, p. 153.

9. YounisHammadi Ali, Principles of Demography, Mosul University Press, Mosul, 1985, p. 282.

10. Makki Muhammad Aziz and Riyadh Ibrahim Al-Saadi, Population Geography, Baghdad University Press, Baghdad, 1984, p. 338**.**

11. Abbas Fadel Al-Saadi, Population Geography, Part Two, Dar Al-Kutub and Documents, Baghdad, 2001, p. 749**.**

12. Abdel-Jalil Abdel-Wahhab Abdel-Razzaq, Applications in Population Statistics, first edition, New Amal House, Damascus, 2019, p. 127

13. Abd al-JalilAbd al-Wahhab Abd al-Razzaq, Simplified Geographical Statistics, 1st edition, Al-Alamiya Press, Al-Muthanna, 2016, p. 16

14. Daniel Muhsin Bashar Abd al-Khatawi, Population Change in Diyala Province for the Period (1977-1997), Master Thesis (unpublished), University of Baghdad, College of Education, IbnRushd, 2004, p. 178.

15. Nada Najeeb Salman, Spatial Analysis of the Population Composition of the Greater City of Baghdad for the Period 1987-1997, PhD thesis (unpublished), University of Baghdad, College of Education, IbnRushd, 2006, p. 9.

16. Abdul Karim Al-Baqi, Arab Society and Population Measures, Al-Jilawi Press, Cairo, 1963, p. 72.

17. Muhammad Safouh al-Akhras, Population Science, Development Issues and Planning, Damascus, 1979, p. 133.

18. Fathi Muhammad Abu Ayana, Population Geography, House of Arab Universities, Alexandria, 1977, p. 388.

19. Ali Salem Humaidan, Mahmoud Al-Habis, Population Geography, Introduction to Population Science, 1st edition, 2001, p. 118.

20. Riyad Ibrahim Al-Saadi, Internal Migration of the Population of Iraq 1947-1959, 1st edition, Baghdad, 1976, pp. 267-268.

21. Abu Ayana, Fathi Muhammad, Population Geography, House of Arab Universities, Alexandria, 1977.

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Eur. Chem. Bull. 2023, 12 (Si6), 3434 – 3447

22. Abu Ayana, Fathi Muhammad, Population Geography, Alexandria, University Culture Foundation, Alexandria, 1980.

23. Al-Akhras, Muhammad Safouh, Demographics, Development Issues and Planning, Damascus, 1979.

24. Ismail, Ahmed Ali, Foundations of Population Science and its Geographical Applications, fifth edition, Dar Al-Fikr Al-Arabi, Cairo, 1984.

25. Al-Baqi, Abdel-Karim, Arab Society and Population Measures, Al-Jilawi Press, Cairo, 1963.

26. El-Gohary, Yousry Abdel-Razzaq and Hafez Mustafa Mohamed, Population Geography, 1st Edition, University Books House, Alexandria, 1971.

27. Humaidan, Ali Salem and Mahmoud Al-Habis, Population Geography, Introduction to Population Science, 1st Edition, 2001 118.

28. Al-Khafaf, Abd Ali, AbdMakhur Al-Rayhani, Population Geography, Basra University, 1986.

29. Al-Saadi, Riyad Ibrahim, Internal Migration of the Population of Iraq 1947-1959, 1st Edition, Baghdad, 1976.

30. Al-Saadi, Abbas Fadel, Population Geography, Part Two, House of Books and Documents, Baghdad, 2001.

31. Abdel-Razzaq, Abdel-Jalil Abdel-Wahhab, Simplified Geographical Statistics, 1st Edition, Al-Alamiya Press, Al-Muthanna, 2016.

32. Abdel-Razzaq, Abdel-Jalil Abdel-Wahhab, Applications in Population Statistics, First Edition, New Amal House, Damascus, 2019.

33. Aziz, Makki Muhammad and Riyadh Ibrahim Al-Saadi, Population Geography, Baghdad University Press, Baghdad, 1984.

34. Ali, YounisHammadi, Principles of Demography, Mosul University Press, Mosul, 1985.

35. Republic of Iraq, Central Statistical Organization, Population Statistics Directorate, Population Estimate 2021, BabilProvince (unpublished data), 2021.

36. Republic of Iraq, Ministry of Water Resources, General Authority for Survey, Department of Map Production, Map of DhiQar Administrative Province, Baghdad, 2020, scale 1/250000.

37. Khatawi, Daniel Mohsen Bashar Abd, the change in the population of DiyalaProvince for the period (1977-1997), Master's thesis (unpublished), University of Baghdad, College of Education, Ibn Rushd, 2004.

38. Salman, Nada Najeeb, Spatial analysis of the structure of the population of Greater Baghdad for the period 1987-1997, PhD thesis (unpublished), University of Baghdad, College of Education, Ibn Rushd, 2006.

39. John Clarke, population Geography, 2nd Edition, pergamon press ltd., Oxford, 1972, p. 67

40. Al-Shadidi, Hussein Ahmed Saad, Optimal Employment of the Opportunity for Demographic Transformation (The Demographic Gift) Website http://www.google.iq/url?url=http://www.iasj.net/iasj

41. Al-Mubarqa, Ali Abdel-Rahman, (The Demographic Gift) and the Future of the Homeland Website: http://www.alsabaah.iq/ArticleShow.aspx?

3447

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