Volumetric Hierarchy and Urban Dominance of the Urban System Centers in Al-Muthanna Governorate

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Abstract

The research aims to identify the problem of imbalance and hierarchical arrangement of urban centers in Muthanna Governorate , and it was found that there is a high population concentration in the city of Samawah, followed by the city of Al-Rumaitha and then Al-Khidr , and the possibility of a dominant city was examined through the law of the first city of Jefferson and the rule of rank and size for falseness and evidence of dominance , .and the application of the balance indicator of urban to see the size of the imbalance equilibrium in urban cities network , and it became clear from the analysis of the results do not apply base grade and size and the presence of the so - called city 's dominant (Samawa) as a result of social and administrative economic reasons , and for the purpose of finding a balance in the distribution of the population The population distribution and future direction for the year 2030 were verified, and the research ended with a set of proposals.

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Introduction

The size of the Center for Urban one of the important standards in urban geography , and intended size of the population of the urban center rather than the urban scale capacity , is important because the scale factor in the possibility of taking a measure to estimate the importance of the urban center based on the general rule and that the large - size urban centers varied functions and multiple , and inflation is located linked to the urban centers of the situation of commercial and industrial that attracts them prepared large population surplus in environments other , and the growing role of this city as a result of inflation population and the multiplicity of functions to become dominant for the rest of the cities , the city and other a rate greater than the total population of those cities , and is affected by the size of Those cities have many controls that make them take the size they are and develop or negatively affect it and lack it if the conditions are not conducive to its growth and development, which calls for the migration of a number of its residents to from or other areas.

Most of the Iraqi governorates, including Muthanna governorate, suffer from the dominance of the center at the expense of other urban centers , and as a result of the lack of knowledge in studying the reality of settlement in the urban centers of Muthanna governorate and by analyzing the spatial structure of urban centers and using some planning methods, the problem can be diagnosed through the process of analyzing the area and laying foundations To address them and formulate sustainable population policies.

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Research problem : The problem is represented by several questions and an attempt to answer them (Is there a spatial imbalance in the structure of urban centers in Al-Muthanna Governorate , and is there a dominant city on these centers , and is it possible to achieve a balance for these centers through volumetric adjustment?

Research hypothesis : There is a spatial imbalance in the structure of urban centers , and the city of Samawah is the dominant of these centers , a state of balance can be achieved for urban centers through volumetric adjustment.

Research objective : The research aims to use planning methods to analyze the spatial structure of urban centers in Al-Muthanna Governorate and to reveal the presence of a dominant city on these centers and how to plan them to achieve a state of balance and justice in the distribution of investments as well as drawing future policies for the year. 2030

Research Methodology : The researcher used the descriptive and analytical approach by conducting an analysis on the data of urban centers as well as using some planning methods such as the rule of rank and size (Zeff's rule) and the first city (Jefferson ,) as well as the urban balance index ,analysis of the causes of the phenomenon of dominance and drawing up a sustainable policy for population distribution.

Research Limits

Spatial Limits: It represents urban centers in the Muthanna border province of spatial study as T. has been replaced to maintain the southern part of the region of the Middle Euphrates, as it limits the province from the east provinces of Dhi Qar and Basra and from the east of Qadisiyah province and the west of Najaf province and the south and south - west Saudi Arabia , either cosmically located at the intersection of latitudes (05 29 ° and 42 31 °) north with my bow length (50 43 ° and 32 46 °) to the east.

Temporal Limits : The time (period) 2019 - 1997 as a result of population data availability depending on which year among the population for the year 1997 and population estimates for the years 2007 2019 ,according to census data Directorate of Muthanna province.

Map (1) The Location Geographic for The Province of Muthanna and Administrative Units

Source: Republic of Iraq, Ministry of Water Resources, General Authority for Survey, Map

Production Department, Al-Muthanna Administrative Map, Baghdad, 2010, scale, 1: 250000

First. The numerical and relative distribution of the urban population in Al-Muthanna Governorate for the years (1999-2007-2019).

The distribution of the population is linked to economic, social, natural, urban and planning variables that differ in their relative importance from one place to another , as these variables overlap in a coherent manner so that the population of each city appears to be a product of the interaction of a group of civilized, social and economic systems and a reflection of the level of social and economic development achieved in it , it is clear through the table)1 (The total population of Al-Muthanna Governorate has taken a forced increase during the successive time period , as the population reached in the year) 195869 (1997 to continue to increase to reach

) 273644 (in the year , 2007 then rose to reach)398334 (in the year 2019, due to the migration factor in the degree basis as well as natural increase, either at the level of urban centers was the city of Samawa captured first place in the domination of the population and an area of over three periods of time amounting to)528 233 , 170501 , 349 123 (and by)%59 , 62.3 ,63 (respectively being the administrative center of the province, while the occupied city of Rumaitha , ranked second with a population reached) 90638 , 60432 , 43784 ,(people ie (22.3 22.1 , and)%22.7 of the total population of the province, while the third place in The city

of Khidr had a population of 53,944 , 29537 , 19,033 (people   )and a rate of ,10.8 ,9.7(
.)%13.5

Table)1(The numerical and relative distribution of the urban population in Al-Muthanna Governorate for the years(1997 -2007 -2019)
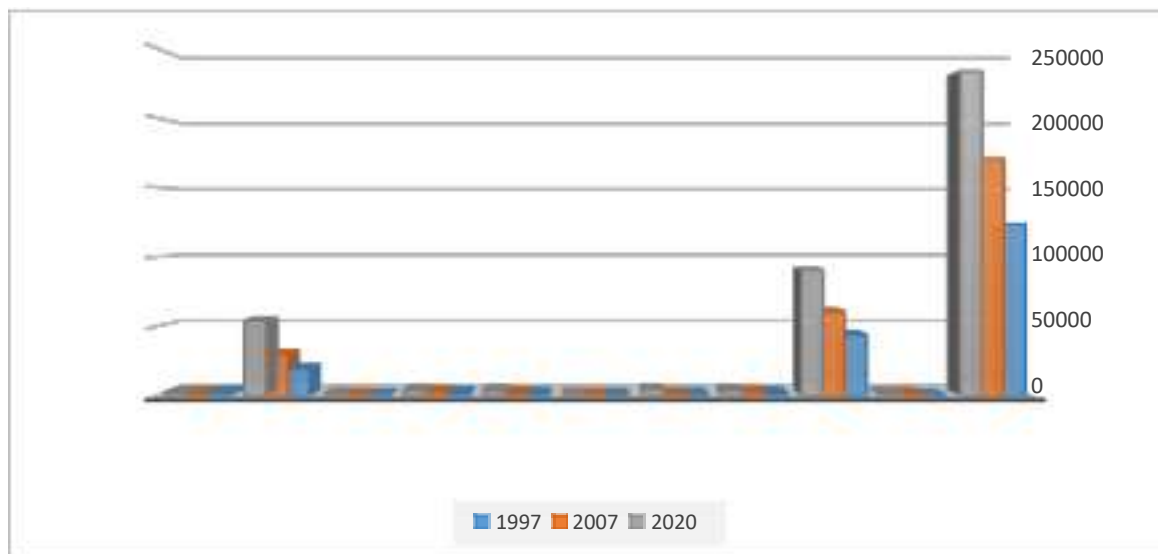
2019		2007		1997		the cities
%	Population	%	Population	%	Population	
59	233528	62,3	170501	63	123349	Samawa
0,4	1592	0,46	1260	0.06	126	Sueir
22,7	90638	1 , 22	60432	22,3	43784	Rumaitha
0,9	3465	0,9	2526	0,9	1830	AL Majis
1	4000	0,5	1241	0,4	899	Warka
0.2	962	0,3	774	0.2	561	Astral
0,8	3383	0.7	2021	0.7	1465	Crescent moon
0,8	3435	1	2808	1,03	2033	Salman
0.2	1155	0.2	584	0.2	422	Insight
13,5	53944	10,8	29537	9,7	19033	Kudhir
0,5	2232	8 ,0	1960	1,2	2367	Daraji
100	398334	100	273644	100	195869	Province totoal

Source : researcher based on:

1. Republic of Iraq , Ministry of Planning, Central Statistical Organization, Population Statistics Directorate, General Population Census Results, Muthanna Governorate, 1987(22), pp. 75 and.167 .
2. Republic of Iraq ,the Ministry of Planning, the Central Bureau of Statistics, Directorate of population statistics and labor force ,unpublished data 2019.

The form of)1(Numerical distribution for urban residents in the province of Muthanna for the years

) 2019 - 2007 - 1997 (

Source : data table)1(

Second .Population Concentration Ratio

The population concentration ratio measures the extent to which the population tends to be concentrated or dispersed in a particular area. Its importance lies in knowing the extent of the relationship between the numerical distribution and the inhabited area.

Illustrated by the table) 2 (that there is variation in the ratio of concentration of population during the period)2019 - 2007-1997 (in the system of urban cities , and the highest rate of population concentration recorded in the debit of Rumaitha stood at rate of)% 4.31 (in the year ,1997 in the year 2007 it amounted to)%4,30(and then fell to)% 91 , 2 (in the year ,2019 while the second place was the city of Samawa , amounting to increase) %1.16 (in 1997 and then rose to) %03.85 in the year , 2019 while the city of Al-Khudhir ranked third, with a percentage.)% 1.45 , 1.9 , 1.86 (.

Table (2).The percentage of population concentration in the cities of the urban system in Al-Muthanna Governorate for the years (1997 - 2007 - 2019)

2019				2007				1997				City
concentration ratio	o - y	area y %	Population x%	concentration ratio	o - y	area y%	Population x%	concentration ratio	o - y	area y %	Population x%	
3,85	4,7	63,7	59	0.91	1,82	, 64 12	62,3	1,16	2,32	64,52	62,2	Sama wa
0.71	0.38	0,78	0,4	0,89	1,78	2 ,24	0,46	1,06	2,13	2,23	0,1	سلا
2,91	12.1	10,60	22,7	4,30	8,61	,13 49	22.1	4.31	8,63	13,47	22.1	Rumai tha
0.38	0.32	1,22	0,9	0.51	1,03	1,93	0,9	0.51	1,02	1,92	0,9	glory

0,79	0.09	0.95	1	1,46	2,93	9,23	0,5	1,25	2,5	3	0,5	warka
0.52	0.65	0.75	0.2	0,60	1,21	1,51	0,3	0,6	1,2	1,50	0,3	astral
0.75	0.32	0.48	0,8	0.65	1,3	2	0.7	0.65	1,3	2	0.7	Crescent moon
0.29	1,1	1,9	0,8	0.34	0,68	1,68	1	0.36	0.73	1,73	1	Salman
0.81	0.22	0,42	0.2	0,46	0,92	1,12	0.2	0.23	0.47	0,67	0.2	Insight
1,45	3,8	17,3	13,5	1,9	3,8	7	10,8	1,86	3,73	7,07	10,8	vegetables
1,04	1,4	1,90	0,5	0.55	1,1	1,9	0,8	0.35	0.7	1,9	1,2	cyclist
6.75	25,08	100	100	12,57	25,18		100	12,34	24,73	100	100	Total

Source: Researcher dependent on 1- Republic of Iraq, Ministry of Planning, Central Statistical Organization, Muthanna Statistics Directorate, Census results for the years, 1997, and population estimates for the years 2007 2019 ,. -2Republic of Iraq , Ministry of Municipalities and Public Works , Directorate of Municipalities of Muthanna Governorate , Urban Planning Department , unpublished data.

Third. The Size and Density Categories of The Urban Population

The population was distributed into (6) different size categories ,table ,)3(according to the following:

3- A first volumetric category (more than 100,000 people)

The distribution of this category was limited to the city of Samawa for the years , 2007 , 1997 ( )2019and with a population balance of)233528 , 170,501 , 123,349 (people and a percentage of)%59 , 62.3 , 63 (of the urban population, with an area of ,)%63.7 , 12 .)64,52,64 (which indicates that the city of Samawa has maintained its voluminous leadership, as it is considered a center of population attraction compared to the rest of the urban centers.

-The second size group (50001- 100000) people

This category included one urban center in ,2007 the city of Al-Rumaitha, with a population of **,)** 60432 (but in the year 2019, it included two centers, Al-Rumaitha and Al-Khader, with a population of (90,638, 53944), and a rate of (22.7, 13.5%) of the total population Urban in the province .

- The third size category (2000 - 50000) people

Included this class urban center and one in the year 1997 is (Rumaitha) and the rate of population reached 784 43 (inhabitants), and by)% 3 , 22 (of the total urban population, either in ,2007 included an urban center (Greens) and the number of population reached 29 (537inhabitants) and by)% 8 , 10 (.

- Fourth size group (10001-20000) people

This category included one urban center in 1997, which is (Al-Khidr), with a population of 19,033 (people) at a rate of ,)%9.7 (and in the year 2019, no center appeared in this category..

- Fifth size category (4000-10000) people

This category included one urban center, which is (Warka) with a population of (4000) and (1%) of the total urban population.

- Sixth size category (less than 4000 people)

This category is the smallest in the governorate and includes the largest number of centers, as it included 8 centers for the year 1997 ,namely (Al-Salman, Al-Warka, Al-Suwer, Al-Majd, Al-Hilal, Al-Najmi, Busayyah, Al-Daraji) with a population ratio of the total of these centers amounted to) 9703(and a percentage of)%)5(of the total population of the governorate, but in 2007 it also included) 8 (urban centers, and the population of this category reached (13,174 people) and included (Al-Suwayr, Al-Majd, Al-Warka, Al-Najmi, Al-Hilal, Al-Salman, Busayyah, Al-Daraji) and formed a percentage (4.8%), but in the year 2019, the number of urban centers reached (7) after excluding the center of Warka, and the number of the population of these centers reached (24,224 people), with a rate of (3.8%) of the total governorate.

Table) 3 (Volumetric Categories of Urban Centers in Al-Muthanna Governorate for the Years) 1997 , 2019 , 2007 (

The ratio%	population	The ratio%	urban centers	the number	Size classes
Volumetric categories of urban centers in Al-Muthanna Governorate for the year1997					
63	123349	9,1	Samawa	1	more than 100,000
-	-	-	-	-	100000-50001
22,3	43784	1 , 9	Rumaitha	1	50000-20001
9,7	19033	9,1	vegetables	1	20000-10001
-	-	-	-	-	10000-4000
5	9703	72.7	Al-Suwer, Al-Najmi, Al-Hilal, Al-Majd, Busayyah, Al-Daraji, Al-Salman, Al-Warka	8	less than 4000
100	195869	100	11	11	Total
Volumetric categories of urban centers in Al-Muthanna Governorate for the year 2007					
62,3	170501	9,1	Samawa	1	more than 100,000
22.1	60432	9,1	Rumaitha	1	100000-50001
10,8	29537	9,1	vegetables	1	50000-20001
-	-	-	-	-	20000-10001
-	-	-	-	-	10000-4000
4,8	13174	72.7	Al-Suwer, Al-Majd, Al-Warka, Al-Najmi, Al-Hilal, Al-Salman, Busayyah, Al-Daraji	8	less than 4000
100	273644	100	11	11	Total
Size categories of urban centers in Al-Muthanna Governorate for the year 2019					
59	233528	9,1	Samawa	1	more than 100,000
36.2	144582	18,2	Al-Rumaitha - Al-Khidr	2	100000-50001
-	-	-	-	-	50000-20001

-	-	-	-	-	20000-10001
1	4000	9,1	warka	1	10000-4000
3,8	24224	63,6	Al-Suwer, Al-Najmi, Al-Hilal, Al-Majd, Busayyah, Al-Daraji, Al-Salman	7	less than 4000
100	398334	100	11	11	Total

Source: The researcher is based on 1- Republic of Iraq, Ministry of Planning, Central Statistical Organization ,Muthanna Statistics Directorate , census results for the year 1997 and population estimates for the years 2007, 2019 .

Fourth .The hierarchy of the size of cities (Zeff's theory)

Invented the American researcher (**George Ziv)** way to find the relationship between the preparation of cities and its failure in the region known as base rank - size , and summed up this rule arranged cities by population of the order of the scheme descending to him , the size of the city number **(n)** will be **/ 1** (**n)** From the size of the first city , this arrangement is subject to the following sequence.

If the serial number is multiplied by the order of any city by its size , the result will be the same value for all the cities of the region and equal at the same time to the size of the first major city in the following:

$$\_ \_ \_ \_ \_$$

Ziv mentioned that if the cities of a region are arranged according to the size of the population , we will find a regularity in the ratio between the status of each one and its size , with respect to the first city , the second city in the series of volumetric arrangement reaches half the size of the first city , and the fourth city is a quarter of the size of the first city And the eighth is the price of the first city, and so on. [1] In order to detect the presence of a dominant city and measure the urban balance index and the extent of the applicability of the rule of rank and size, the population size of each city is arranged in descending order as shown in Tables) 4 (and by applying the Zeff rule the size of the first city, which is Samawah, agreed with that rule , as for the rest of the cities We note the difference in results between years, and according to this rule , the sum of the ratios of the five ranks after the first city must equal . [2]) 1.45 (However , the figure was mixed as was in)% 55.7 (1997

and then increased to)%56.8(in the year , 2007 and continued to rise for up to) % 3 , 66 (in , 2019 there is a relative improvement for mattresses volumetric ,but it Far from the percentage mentioned in the Ziv rule , as for the last five volumetric centers , the percentage reached) %2.6 (in ,1997 then it rose to)%32(in ,2007 and the rise continued to reach) %3.7 (in the year ,2019 and this is evidence the lack of improvement and gives a negative indication of the failure to reduce the gap between the mattress upper volumetric and lower in the province , and this indicates to the relationship between the sizes of cities and arranged irregular , in the year 1997 at an annual growth rate of urban ,)%1.9(a very low growth rate Compared to the previous rates of population growth in the city of Samawa, and the reason for this is due to the American war on Iraq and the accompanying

siege that touched all life in Iraqi cities, including   the city of Samawa, which led to the migration of large numbers of its residents and high mortality rates, especially the deaths of children and the elderly . In the year ,2007 the population of the city of Samawa increased significantly to reach **) 17,501** (people ,and this increase is due to To the attraction that the city possessed due to the presence of the centers of administrative in Ha and secure urban services , while the number of the population in 2019 has risen to) **528 233** (for several reasons , including the return of many migrants from outside Iraq to their city because of the stability and security improvement in the level of economic and displacement of the population As a result of the deterioration of the security situation in some governorates of Iraq , and it is clear from the above that the population of the city of Samawa is constantly increasing and that the city is attractive to residents from the rest of the governorate and that it represents the main urban center within the urban centers in the governorate, and it has a great and direct impact on regional interactions, which created a type Of the regional relations that

necessarily reflect on the consolidation of its centrality as a first city   .

Table) 4 (Sizes and ranks of urban centers in Al-Muthanna Governorate for the years)2019 , 2007 , 1997 (

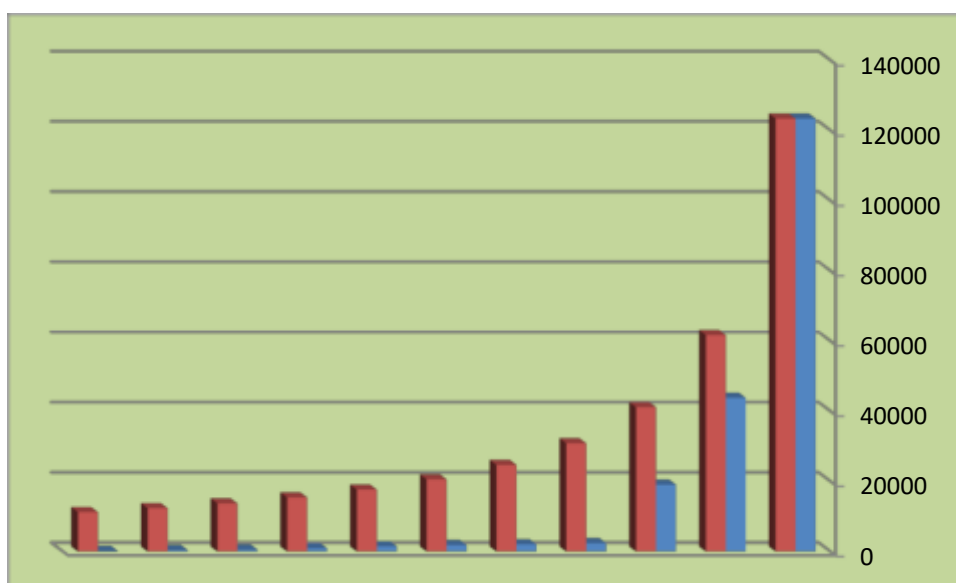| Sizes and ranks of urban centers in Al-Muthanna Governorate for the year1997								
deviation)5-1(	The expected size of the population)5(	Gap)4-1(	Population size according to Ziv's rule)4(	Rank according to the Zeff rule)3(	Rank by size)2(	Actual population)1(	City Rank	the city name
58492	64857	0	123349	1	1	123349	1	Samawa
11356	32428	8971 -0	61674	0,50	0,354	43784	2	Rumaitha
-2586	21619	-22083	41116	0,333	0,154	19033	3	vegetables
-13847	16214	28,470 -	30837	0.25	0.019	2367	4	cyclist
-10938	12971	-22636	24669	0.2	0.016	2033	5	Salman
-8979	10809	-18728	20558	0,167	0.014	1830	6	glory

-7800	9265	-16156	17621	0.143	0.011	1465	7	Crescent moon
-7208	8107	-14519	15418	0.125	0,007	899	8	warka
-6645	7206	-13054	13705	0.111	0,004	561	9	astral
-6063	6485	-11912	12334	0,1	0.0003	422	10	Insight
-5770	5896	-11087	11213	0.091	0.001	126	11	سلا
139,684				3,02		195869		Total
Sizes and ranks of urban centers in Al-Muthanna Governorate for the year2007								
79,891	90610	0	170501	1	1	170501	1	Samawa
15127	45305	-24818	85250	0,50	0,354	60432	2	Rumaitha
-666	30203	-27296	56833	0,333	0.173	29537	3	vegetables
-19844	22652	-39817	42625	0.25	0.016	2808	4	Salman
15596	18122	-31574	34100	0.2	0.014	2526	5	glory
-13080	15101	-26395	28416	0,167	0.011	2021	6	Crescent moon
-10984	12944	-22397	24357	0.143	0.011	1960	7	cyclist
-10066	11326	-20052	21312	0.125	0,007	1260	8	سلا
-8826	10067	17703	18944	0.111	0,007	1241	9	warka
-8287	9061	-16276	17050	0,1	0,004	774	10	astral
-7653	8237	-14916	15500	0.091	0.0003	584	11	Insight
190020				3,02		273644		Total
Sizes and ranks of urban centers in Al-Muthanna Governorate for the year2019								
101630	131898	0	233528	1	1	233528	1	Samawa

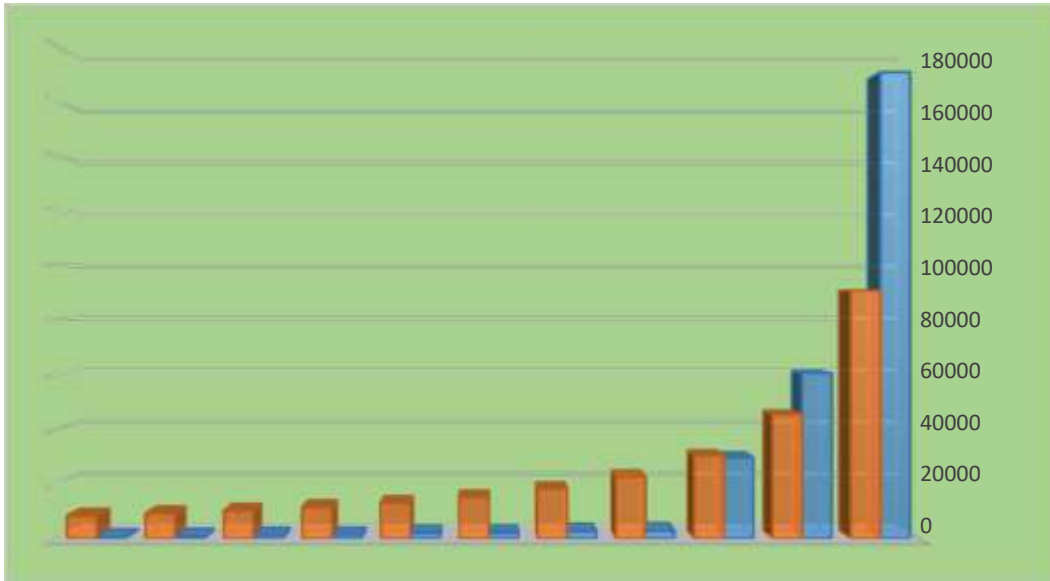|								
24689	65949	-26126	116764	0,50	0,388	90638	2	Rumaith a
9978	43966	-23898	77842	0,333	0,230	53944	3	Khudhir
-28974	32974	-54382	58382	0.25	0.017	4000	4	warka
-22914	26379	-43240	46705	0.2	0.014	3465	5	glory
-18548	21983	-35486	38921	0,167	0.014	3435	6	Salman
15459	18842	-29978	33361	0.143	0.014	3383	7	Crescent moon
-14255	16487	-26959	29191	0.125	0,009	2232	8	cyclist
-13063	14655	-24355	25947	0.111	0.006	1592	9	Suwair
-12034	13189	-22197	23352	0,1	0,004	1155	10	Insight
-11028	11990	-20267	21229	0.091	0,004	962	11	starburst
272572				3,02		398334		Total

Source : From the work of the researcher based on:

1. Republic of Iraq, Ministry of Planning, Central Statistical Organization, Muthanna Statistics Directorate, Census Results for the Year 1997 and Population Estimates for the Years 2007, 2019.
2. Thaer Aayasrh , the geographical features of the urban system , research publication , Humanities and Social Studies , Volume ,41 Issue ,2014 ,2 p.427 .

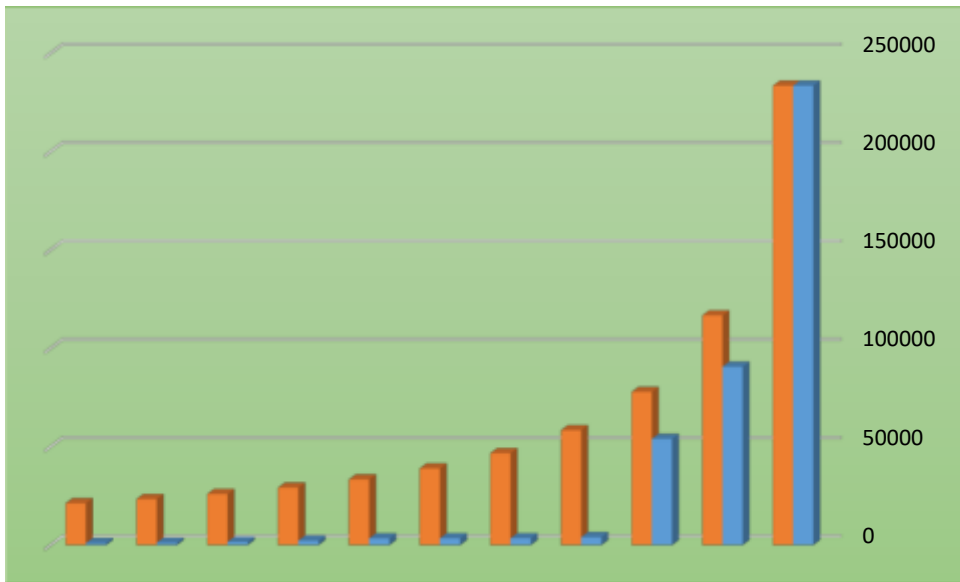**Figure .) 2 (Sizes and ranks of urban centers in Al-Muthanna Governorate for the year1997**

Source : Data Table) 4 (

Figure)3(: Sizes And Ranks Of Urban Centers In Al-Muthanna Governorate For The Year2007

Source : Data Table) 4 (

Figure .) 4 (: Sizes and ranks of urban centers in Al-Muthanna Governorate for the year2019

Source : Data Table)4(

Fifth .First City Law(Jefferson)

In ,1939 Mark Jefferson used the concept of the first city as a distinct phenomenon for the sizes of major cities . Jefferson noted that in every country in the world there is a primary city that is the largest city in the state , and often the capital, which is the largest city in size, most populated and activities, the most important location and the greatest influence in The life of

the state and its residents , and this city is characterized as devouring most of the investment and spending in the state and absorbing most of the labor and productive forces , as well as the dominating cultural and economic life. $)\,3\,($

It is possible to reach a statistical conception of the size of the first city in relation to the rest of the cities of the region or the dominant city if we follow a method that takes into account the ratio of the first city to the second city on the one hand , and its ratio to the third and fourth combined on the other hand. $)\,4\,($

This ratio shows the extent of the size of the largest cities in the region to the second city , and from it it is possible to know the extent of population concentration in it and the degree of its centralization and sovereignty in the region. If we attribute the population of the first city to the population of the following three cities, we obtain a scale known as the scale of the four cities Four City Index It is as follows. $)5($

Four Cities Scale = $\qquad (\qquad\qquad)/(\quad +\quad +\qquad)$

This measure gives a better picture of the first measure , and that it does not take into account the following three cities the size of , not only the second city size , and thus can be compared to more than one country , and judging the degree of sovereignty of the first city in a better. $)6($

According to Jefferson's law to examine the possibility of a dominant city, it is clear from table) 5 (that the city of Samawah is dominant during the years ,) 2019 - 1997 (while the second city, which is Al-Rumaitha, notes that the proportion of its population increased by) %5 (for the years 2007 ,1997 and also rose to) % 9 (in the year , 2019 while the city of Al-Khidr is less than the percentage of Jefferson City by) %5 (in the year ,1997 and)%2(in the year ,2007 and an increase of) % 3 (in the year. 2019

When applying the evidence of dominance to urban centers in the governorate through the ratio of the first city to the total sizes of the three cities and for the years ,2019 - 1997 it became clear that there is a strong indicator of the dominance of the city of Samawa over the rest of the other three cities (Al-Rumaitha , Al-Khidr , Al-Daraji) in the year , 1997 as the indicator was population has reached ,) %1.89 (and then declined to reach the total of the three cities (Rumaitha - Greens - Warka) in 2019 to ,) % 57 ,1 (ie the number of people in the city of Samawa , has become the largest of the population of the cities of the province all of this It indicates that there is no other city competing with the city of Samawah and the existence of an irregular distribution of city networks and the indicator away from the ratio of one true ,which indicates the balance whenever the ratio approaches the one true , and this is an indication of the extent of the dominance of this city over the rest of the other cities , as it is dominant over cultural life And it accounts for a range of services such as educational, health and recreational, and it may devour most of the investments in the governorate and absorb most of the labor and productive forces , and thus leave harmful effects on the rest of the life of other cities and create a state of spatial imbalance and this
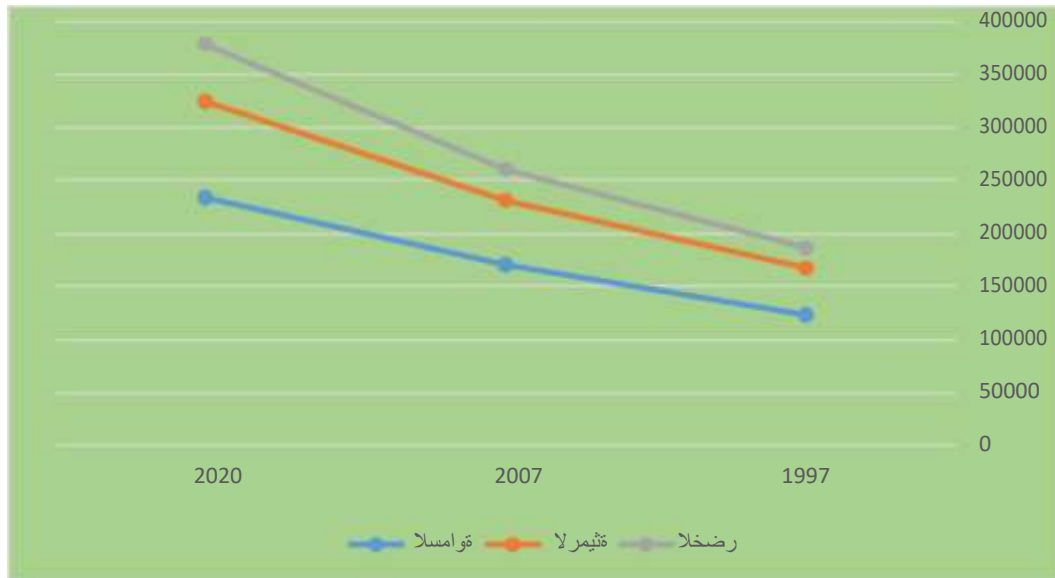
results in overcrowding in the area .The city of Samawa, poor services, environmental pollution, as well as the consumption of infrastructure, as well as the slow growth of other cities in the province because of their dependence on the first city.

Table) 5 (The application   of   the first city   law to   urban centers in   Al-Muthanna Governorate for the years)2019-1997-1987(

Assumed rank according to Jefferson's law	Implementation of the First City Law on urban centers for the year2019		Implementation of the First City Law on Urban Centers for the year2007		Application of the First City Law on Urban Centers for the year1997		
	%of city size	population	%of city size	population	%of city size	population	City
%100	%100	233528	%100	170501	%100	123349	Samawa
%30	%39	90638	%35	60432	%35	43784	Rumaitha
%20	%23	53944	%17	29537	15th%	19033	vegetables

Source : From the researcher's work based on the data of Table .)4(

Figure (5) The application of the law of the first city to urban centers in Al-Muthanna Governorate for
 the years (1997-2007-2019)

Source : Data Table)5(

In order to measure this imbalance balance the network in urban centers in the province of Muthanna will be calculated **urban balance index** through:)6(

1. Arrange the cities in descending order according to their population size in the required census.
2. Calculating the reciprocal of the actual ranks of cities in the census by dividing the rank of the first city by the rank of the city whose reciprocal is required to be known.
3. The inverted collects figures ranks , according to this rule where it reached)3.02 (for the period 2019 - 1997 due to the survival of a number of urban centers 11 centers.
4. Obtaining the first optimal size of the city by dividing the total population of urban inverted - ranking figures , reaching the size of the first city reached 64( )857o NH 1997 stood at)610 90(in 2007 reached) 898 131 (in. 2019 .

5. Obtaining the optimal sizes of the cities following the first city by dividing the optimal size of the first city by the rank of each city.
6. To ensure the correctness of the previous measurements, the expected and real population of the cities must be the same.
7. Obtaining the differences between the real population size of cities and the ideal population size, and then finding the total of the negative and positive differences . In ,1997 it amounted to)139,684(people, and it amounted to)19,020(people in ,2007 while in the year 2019 it reached) 272572 (people.
8. Calculating **the urban balance index** for the governorate's cities network by dividing the total of differences by the total urban population . The value of the index was in 1997 after dividing the total of differences) 139,684 (by the number of population) 195869 (equal to ,) 0.71 (meaning that the ratio of surpluses and deficits ,) %71) and decreased valuable Meh index as it reached) % 69 (in , 2007 then fell also the index value

   of the year 2019 to) 68. (which means that the proportion of the surplus and deficit ,) %68 (a positive indicator is the closer to zero and be a network Urban cities are perfectly balanced ,but if the index is more than zero, the urban network will be unbalanced .

The Future Orientation Of The Balanced Spatial Structure Of Al-Muthanna Governorate

After the problem has been diagnosed and it turned out the dominance of the center on the rest of the cities account other in the province , so must get the balance of the spatial structure and achieve planning control over the development of the center and the rest of the cities other through the development of a future plan for the target year , 2030 and the stages of a five - year , because the longer the duration of the estimate The higher the probability of error , when applying Zeff's theory to the population of the target year 2030 based on the growth equation , the population was obtained distributed in a balanced manner as planned , Table) 8 (Figure) 5 (
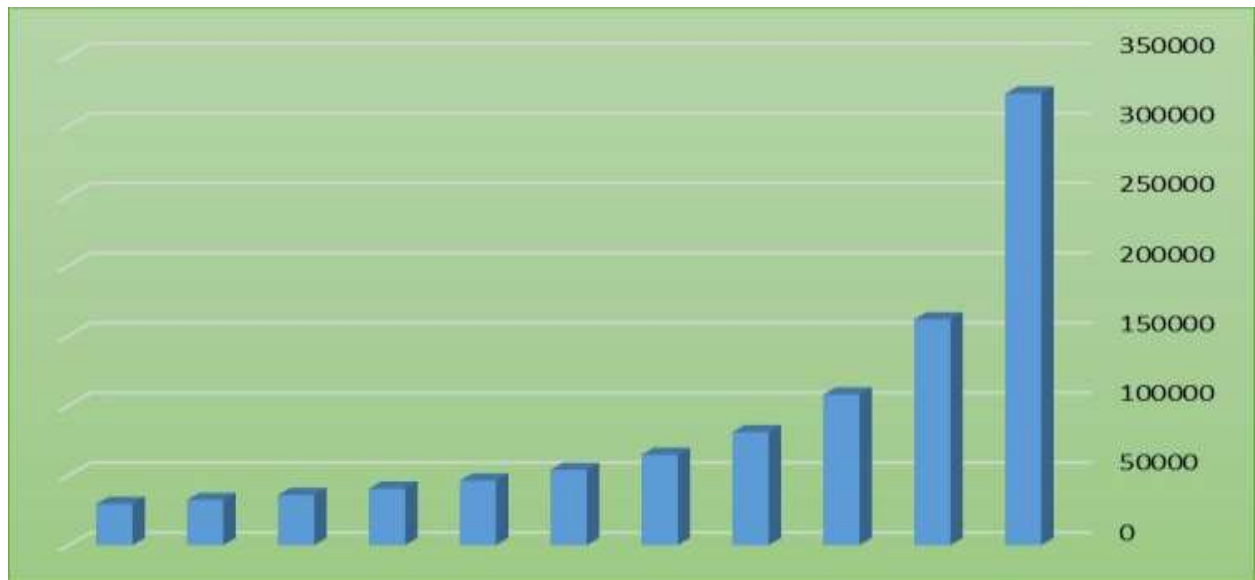
Table) 6 (Population hierarchy for the year ,2030 according to Ziv's theory

The magnitude of the imbalance in the population	The ideal population for the year 2030 according to Zeff's theory	Projected population for the year2030	Population size2019	Rank	the city name
0	323103	323103	233528	1	Samawa
-70913	161551	125404	90638	2	Rumaitha
-53757	107701	74635	53944	3	vegetables
76775 -	80,775	5534	4000	4	warka
-61155	64620	4794	3465	5	glory

-50415	53850	4752	3435	6	Salman
42774	46157	4680	3383	7	Crescent moon
-38155	40387	3088	2232	8	cyclist
34308	35900	2202	1592	9	سلا
-31155	32310	1598	1155	10	Insight
-28411	29373	1331	962	11	starburst

Source :From the researcher's work based on the data of Table)4(

Figure) 6 (Population hierarchy for the year ,2030 according to the theory (ZIF)

Source : Data Table) 8 (

-After the population increase has been predicted for the target year, this increase is distributed according to Ziv's theory with a five-year plan , base year , 2030 - 2025 - 2019 Table) 7 (

Table) 7 (Population distributed according to a five-year plan for the year2030

Population size2030	Population size2025	Population size2019	Rank	the city name
323103	274688	233528	1	Samawa
125404	106613	90638	2	Rumaitha

74635	63451	53944	3	vegetables
5534	4705	4000	4	warka
4794	4075	3465	5	glory
4752	4040	3435	6	Salman
4680	3979	3383	7	Crescent moon
3088	2625	2232	8	cyclist
2202	1872	1592	9	سلا
1598	1358	1155	10	Insight
1331	1131	962	11	starburst

Source : the work of the researcher

Conclusions

1. The emergence of the phenomenon of the city 's dominant because of the concentration of population in the city of Samawa , as a result of migration is the first stage towards a single city , and it turned out through the application of evidence of domination , and p blood of the applicability of the base grade and size to the urban centers in the province of Muthanna .

2. Constitute the urban population of more than %60 of the total population of urban areas in the province.

3. An imbalance in the urban network occurred as a result of urban growth in the governorate, which did not take its way in a balanced way ,which led to the concentration of population in a few cities

4.   Through the application of the rules and methods of the size hierarchy, none of them apply to the pyramid of sizes in the urban centers of the governorate, except for the city of Samawa, which was the first throughout the study period.

5. The dominance of the center over the rest of the urban centers is a result of the concentration of investments, which created many job opportunities and increased the size of the population at the expense of other cities .

Recommendations

1- Adopting an urban policy to limit urban growth and achieve a kind of balance in urban centers by encouraging development and a balanced distribution of investments in economic sectors ,especially in the industrial sector.

2- Working to provide pivotal structures in urban centers to establish development areas to attract residents and to provide integrated residential areas to limit encroachments on state lands.

3- Attempting to achieve social, cultural, health and educational development in rural areas by creating development projects to reduce their exodus to urban areas.

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