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Research Article

Geographic analysis of deaths due to Corona disease in Iraq using SPSS

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Abstract

Through scientific analysis, the research aims to reveal the demographic characteristics of the Iraqi population that play a role in the variation in mortality rates. The research used the descriptive analytical method through the use of some mathematical equations and the SPSS program. The most important tools used to collect research data are Ministry of Health data, Ministry of Planning data, books, scientific research, university dissertations, and dissertations.

As for the structure of the research, it has been divided into parts. The first section included a study of the geographical distribution of the death rate due to the Corona virus in Iraq by governorate for the year 2020. The second section included population characteristics represented by numerical distribution, population density, age structure and nationality of the population and their relationship to the studied phenomenon, while the third section included analysis. Statistics using SPSS to correlate demographic characteristics and the phenomenon studied

Keywords: The death rate, Population distribution, Density population The age structure ,Qualitative composition

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التحليل الجغرافي للوفيات بسبب مرض كورونا في العراق باستخدام برنامج SPSS

الملخص:

يهدف البحث من التحليل العلمي إلى الكشف عن الخصائص الديموغرافية لسكان العراق والتي لها دور في تباين معدل الوفيات بسبب فيروس كورونا. استخدم البحث المنهج الوصفي والتحليلي من خلال استخدام بعض المعادلات الرياضية وبرنامج SPSS ، اما اهم الادوات المستخدمة لجمع بيانات البحث فتمثلت ببيانات وزارة الصحة وبيانات وزارة التخطيط والكتب والبحوث العلمية والرسائل والاطاريح الجامعية ، اما هيكلية البحث فتمثلت بتقسم البحث الى فقرت تضمنت الفقرة الاولى دراسة التوزيع الجغرافي لمعدل الوفيات بسبب فايروس كورونا في العراق حسب المحافظات لسنة ٢٠٢٠، اما الفقرة الثانية فقذ تضمنت الخصائص السكانية المتمثلة بالتوزيع العددي والكثافي للسكان والتركيب العمري والنوعي للسكان وارتباطها بالظاهرة المدروسة بينما تضمن القسم الثالث من البحث التحليل الاحصائي باستخدام برنامجSPSS .

Introduction: Mortality is one of the demographic and geographical phenomena that affects the distribution, growth and composition of the population. It is an inevitable fact for all living organisms, but its occurrence varies and varies as a result of many characteristics, including social, economic, and environmental characteristics, as well as the characteristics of gender and age. The level of death is an important indicator of the extent of social and economic development of any society, and as long as the spatial variation in deaths represents a problem, it needs to be addressed. The starting point was to define Iraq geographically and then determine the basic steps on which scientific research depends, which is one of the basic principles to which it adheres. By the researcher**.**

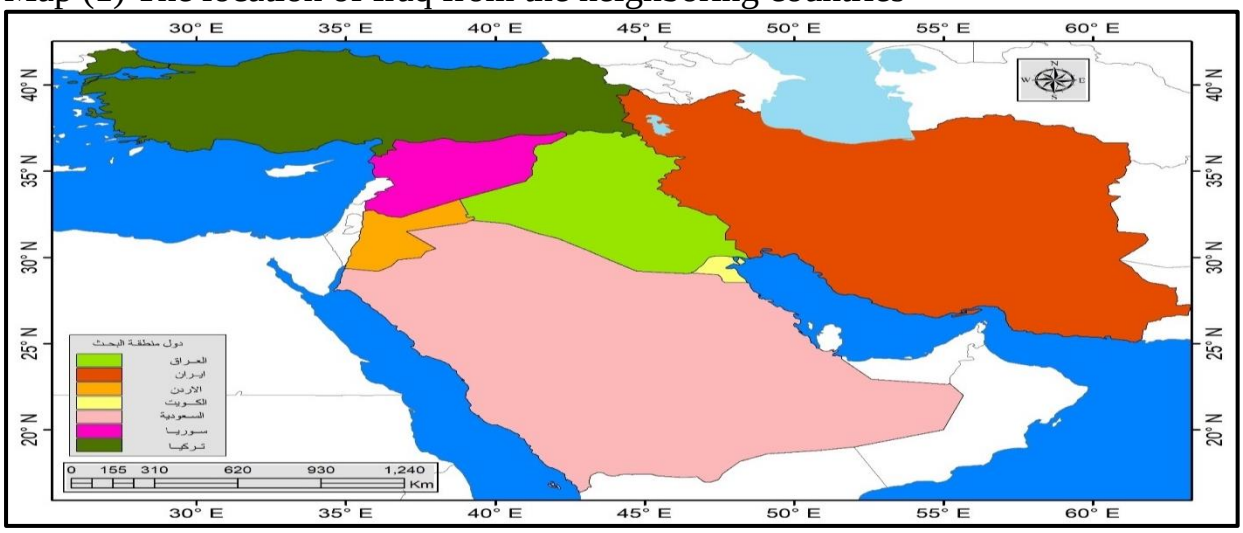
Research problem: - The research problem is a question: What is the relationship between the causes and factors explaining the spatial variation in the death rate due to Corona disease in Iraq? This question raises other questions, namely: What are the influential demographic characteristics? What are the demographic characteristics that have a positive correlation with an increase in the death rate due to this virus? What demographic characteristics have a negative correlation with the death rate due to this virus?

Research hypothesis: The study assumes that there is a set of population characteristics available in one governorate rather than another that led to a higher death rate due to this virus in one governorate alone.

The spatial and temporal framework of the research: - Iraq is located in the northeastern part of the Arab homeland to the southwest of the Asian continent between two circles of latitude (29.6 ° - 37.27 °) north, and between longitudes (38.39 ° - 48.36) to the east. The north is Turkey and the south is the Arab Gulf, Kuwait and Saudi Arabia, Iran is on the east and the west is Syria, Jordan and Saudi Arabia. The length of the borders is 3462 km, of which 1,300 km are with Iran, 812 km with Saudi Arabia, 600 km with Syria, 377 km with Turkey, 195 km with Kuwait, 178 km with Jordan, plus 60 km With the Arabian Gulf.

As for an area, it is 435052 km2. Either it is located in relation to the seas from the north, the Black Sea, the Northeast, the Caspian Sea, the West, the Mediterranean, the southwest, the Red Sea, and the South, the Persian Gulf. These seas have no direct connection to Iraq, only the Arabian Gulf has its ruins on the Gulf for a distance of 60 km.

Map (1) The location of Iraq from the neighboring countries



Source / Researcher: Based on Arc Map 10.6.1.

The first topic

the spatial distribution of the death rate in Iraq due to the Corona virus

The death rate according to the cause is the ratio of deaths in a given year due to a cause to the total population in the middle of the year multiplied by 100,000 and we get this rate by the following equation (Abdel-Jabbar، 2011 ، P.97)

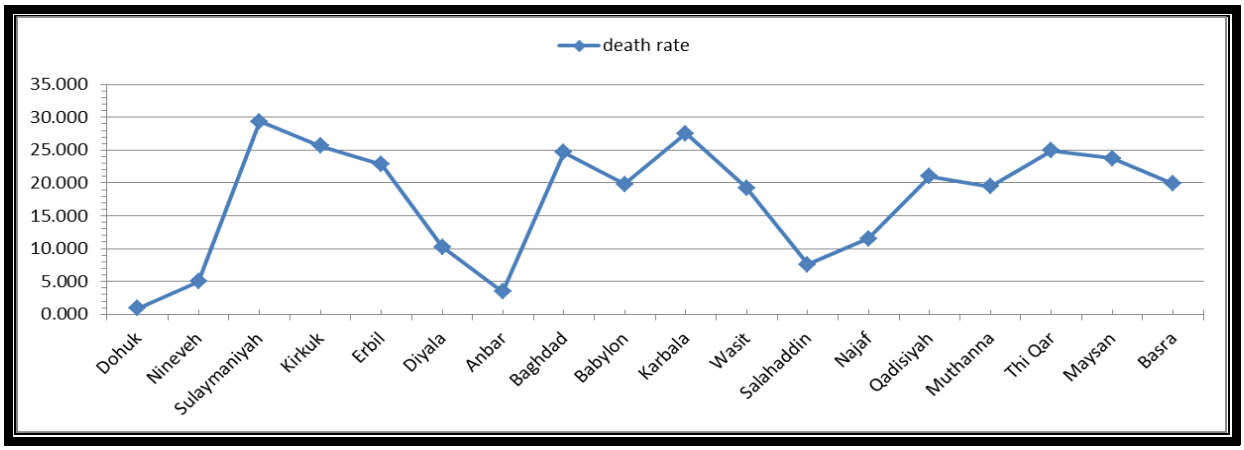
$$\text{Death rate by cause} = \frac{\text{The number of deaths due to disease}}{\text{Total population in the middle of the year}} \times ١٠٠٠٠٠$$

The study of deaths at the level of Iraq is of great importance because it is an important entry point to show the discrepancy between administrative units in terms of natural and human characteristics, and this disparity leads to another variation, which is the difference in the work of the causes (diseases and accidents) that lead to death (Al-Rikabi ، 2009 ، p 174).

To know these discrepancies, it is necessary to study the geographical distribution of the death rate due to the Coronavirus, as the phenomenon of deaths is spreading in most governorates of the study area, but there is a variation in the rate of its presence. And as shown in Figure (1)

Figure (1)

The death rate due to Corona virus, according to the governorates of Iraq, in 2020



Source: The researcher relying on Appendix (1) data

It is concluded from the foregoing that the distribution of the death rate due to the Corona virus was varied in the various governorates of Iraq and that this differential distribution was not a result of chance, but was due to the influence of natural factors and human factors.

The second topic
The demographic characteristics of the population
First: Population distribution

These characteristics include the study of population distribution and structure in Iraq, as preliminary indicators of the level of death rate due to the Coronavirus, as follows:

1: Density population distribution in Iraq:

Population density means the degree of crowding or saturation of a spot with its inhabitants, or a measure of a person's response to the environment in which he lives and the amount of interaction between them (Al-Khafaf 1987 ، ،p. 33).

It differs between the administrative units that form Iraq, that it is difficult to analyze the spatial distributions of the variation in the size of the population in the administrative units in light of the geographical movement of the population and the difference in their age, occupational and gender composition. The use of maps of the absolute and relative distributions of the population to determine the size of the population and the percentage of their increase or decrease in specific areas and compare it to each other ,There are several measures to determine the relationship of the population to the land numerically, the most prominent of which is the mathematical density or general density.

Table (2) shows the correlation matrix between the ten variables and the Sig value of the correlation. Through it, it is clear that the strongest inverse correlation coefficient was recorded between the death rate due to Coronavirus and the proportion of the population aged (65) years and over, which reached (0.634), which is a strong correlation with a significant level of (0.002) and statistically significant, while the weakest correlation coefficient was recorded for the proportion of population density, which reached (0.261) with a significant level of ability (0.014). As for the strongest direct correlation coefficient recorded between the death rate due to Corona disease and the specific composition of the population, which amounted to (-0.450), it is correlated with a significant level of (0.030) and statistically significant.

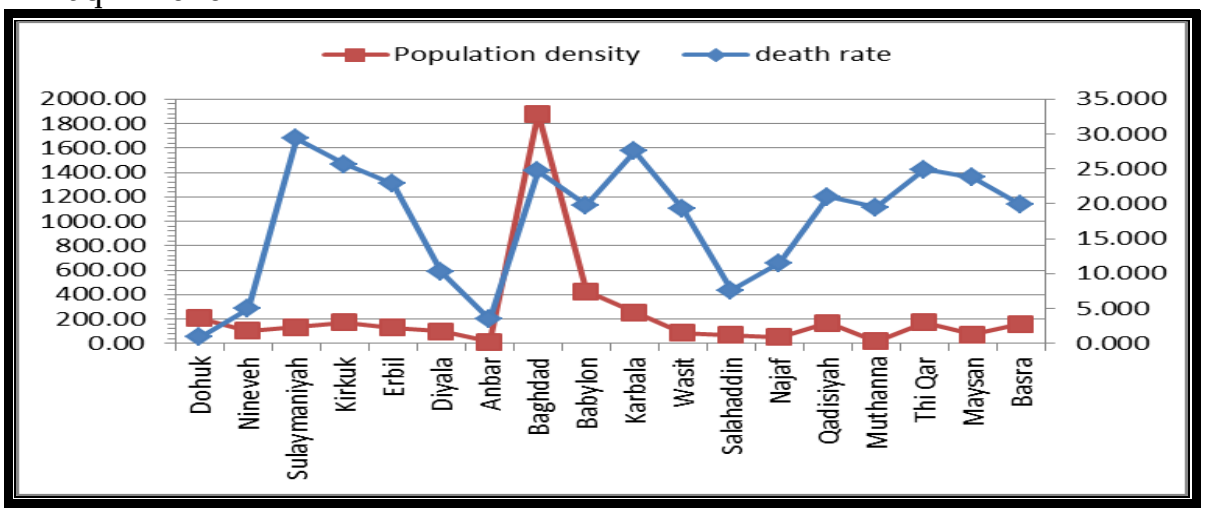
General population density is one of the simplest and easiest methods to apply to clarify the relationship between the population and the land on which

they live, despite its superficial representation of that relationship (Al-Khafaf 1987، p. 107),

Figure (2) illustrates the relationship between the population distribution and the death rate due to the Coronavirus, and from applying the Pearson correlation equation it became clear that there is a positive relationship of (0.26), as it is noted that the death rate increases as the population increases.

Figure (2)

The relationship between population density and death rate due to Corona virus in Iraq in 2020



Source: The researcher relying on Appendix (1) data

2- Spatial variation in the composition of the population

Which means the distribution of the population according to different and distinct groups such as age (al-Siddiqi, 2009، p. 153) Demographic characteristics constitute an important element to monitor the differences between different population groups, characteristics that are closely related to social and economic characteristics, and have significant indications on the extent of development reached by the various countries of the world, and age and gender represent the basic characteristics of the population and are two of the most important elements of the demographic composition worthy of analysis for each population group A different composition according to age and gender has demographic, socio-cultural, and economic repercussions, and these affect

various fields such as training, work, health and social support (Ali Labib, 2004 ، p. 115)

The composition data, especially age and gender, provide an indirect method for estimating fertility and mortality levels and the extent of their impact on future population movement (Abu Ayyana, 2002 ، p. 211)

A- The age structure

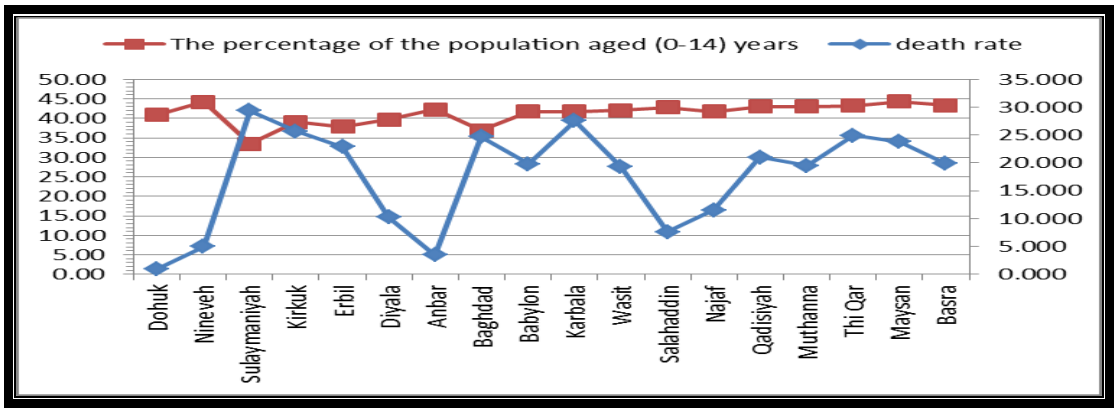
Disease infections are one of the phenomena that are closely linked to the demographic factors prevailing in society, which are mainly represented by the age and gender composition of the population, as there is no demographic phenomenon that is not affected by the population composition, which is one of the most important demographic factors and has the broadest influence (Al-Zayadi, p 59, 2023)

Population studies resort to classifying the age structure of the population into groups (five and ten years) or into three major age groups, which are the proportion of young people (less than 15 years), the proportion of adults or middle-aged (15-64 years), and finally the elderly (65 years and over). It is an unproductive group due to its exit from the labor market and production and includes large numbers of females and widows, and it is a reflection of fertility and death conditions in society, because its percentage decreases with the increase in the proportion of young people and thus the high rate of natural growth of the population as well as the rise of middle-aged and vice versa

Figures (3-4-5) show the relationship between the age structure of the population and the death rate due to the Corona virus in the governorates of Iraq in 2020, and from the application of the Pearson equation it became clear that there is a negative relationship of (-0.36) between the death rate and the youth group (0-14) years Where the death rate decreases with a decrease in the population

Figure (3)

The relationship between the age ratio (0-14) and the death rate due to Corona virus in the governorates of Iraq in 2020

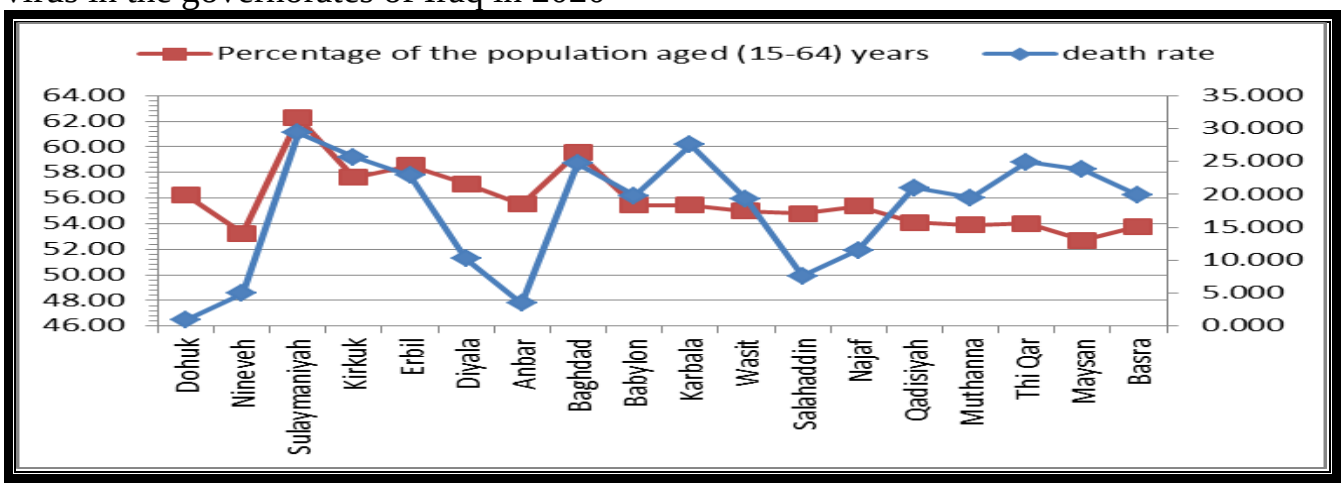


Source: The researcher relying on Appendix (1) data

As for the youth group (15-64 years), it has a positive correlation (0.30), which is a weak relationship. As for the elderly group (65) years and over, it reached (0.63). This means that the higher the proportion of elderly people, the higher the death rate

Figure (4)

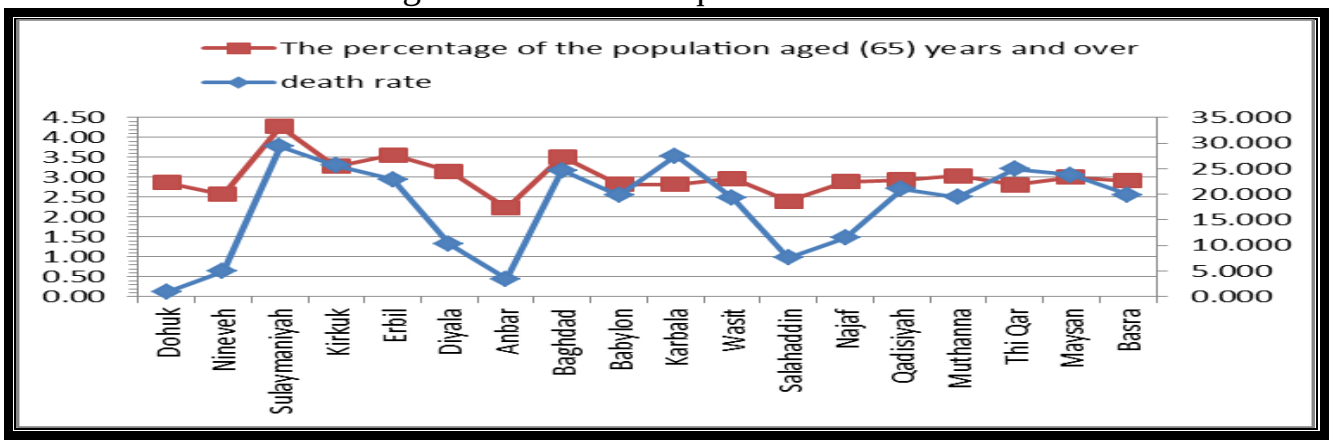
The relationship between the age ratio (15-64) and the death rate due to Corona virus in the governorates of Iraq in 2020



Source: The researcher relying on Appendix (1) data

Figure (5)

The relationship between the age ratio (65) years and over and the death rate due to Corona virus in the governorates of Iraq in 2020



Source: The researcher relying on Appendix (1) data

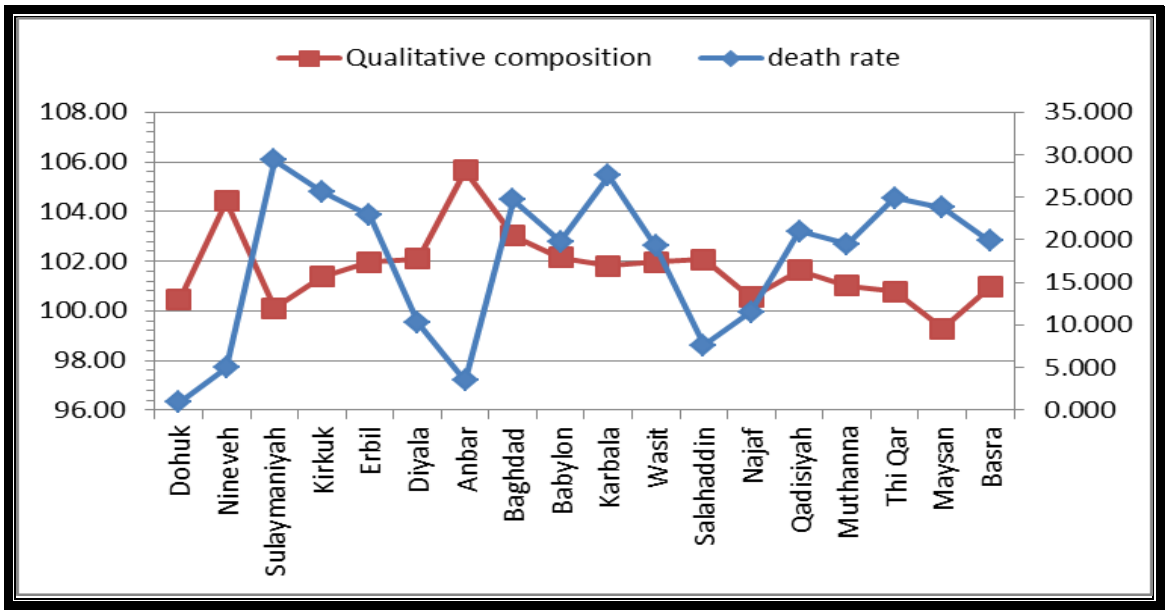
B- **Qualitative composition**

It means the ratio of males to females, and it is measured by the gender ratio, which is the result of dividing the number of males by the number of females multiplied by 100. The normal ratio, if it ranges between 105 and 106 (Abbas Fadel Al-Saadi, p. 731) And if the balance is off these percentages, the reason is due to the variation in the number of males and females during the life stages. The gender ratio has direct demographic implications, with consequences for marriage, births, deaths, socio-economic relations, immigration and occupational distribution. If the ratio of males and females of the age of marriage decreases, then the rate of marriage decreases, and consequently the total birth rate or the total fertility rate decreases, and vice versa (Al-Saadi,2002 p. 89).

Figure (6) shows the relationship between the gender ratio and the death rate due to the Coronavirus, and from applying the Pearson correlation equation it became clear that there is a positive relationship of (0.35), as it is noticed that the death rate increases the higher the percentage of the type.

Figure (6)

The relationship between the gender ratio and the death rate due to Corona virus in the governorates of Iraq in 2020



Source: The researcher relying on Appendix (1) data

The third topic

results of simple multiple regression analysis of mortality due to corona disease in Iraq with population characteristics using spss program

Table (1) shows the descriptive statistics of the variables that were entered into the regression equation, which is the dependent variable (death rate due to the Corona virus) and the independent variables (population density, qualitative composition, the proportion of the population aged (65) years and over, the proportion of the population aged (15-64) years And above, the percentage of the population aged (0-14) years

The table indicates that the average death rate due to Corona disease for Iraq reached (17.61) in thousands with a standard deviation of (8.84) the rest of the variables. (65) years and over (0.46), with an average of (3)% within the sample of (18) governorates.

Table (1) Descriptive Statistics

	Mean	Std. Deviation	N
death rate	17.61244	8.840748	18
Qualitative composition	101.732161	1.5094532	18
Population density	234.2256	421.52791	18
The percentage of the population aged (0-14) years	41.1837	2.81149	18
Percentage of the population aged (15-64) years	55.8160	2.43333	18
The percentage of the population aged (65) years and over	3.0003	.46032	18

Table (2) shows the correlation matrix between variables and the Sig value of the correlation. Through it, it is clear that the strongest inverse correlation coefficient was recorded between the death rate due to Coronavirus and the proportion of the population aged (65) years and over, which reached (0.634), which is a strong correlation with a significant level of (0.002) and statistically significant, while the weakest correlation coefficient was recorded for the proportion of population density, which reached (0.261) with a significant level of ability (0.014). As for the strongest direct correlation coefficient recorded between the death rate due to Corona disease and the specific composition of the population, which amounted to (-0.450), it is correlated with a significant level of (0.030) and statistically significant.

Table (2) Correlations

		death rate	Qualitative composition	Population density	The percentage of the population aged (0-14) years	Percentage of the population aged (15-64) years	The percentage of the population aged (65) years and over
Pearson Correlation	death rate	1.000	-.450-	.261	-.367-	.304	.634
	Qualitative composition	-.450-	1.000	.177	.094	-.024-	-.445-
	Population density	.261	.177	1.000	-.389-	.395	.291

	The percentage of the population aged (0-14) years	-.367-	.094	-.389-	1.000	-.995-	-.848-
	Percentage of the population aged (15-64) years	.304	-.024-	.395	-.995-	1.000	.791
	The percentage of the population aged (65) years and over	.634	-.445-	.291	-.848-	.791	1.000
Sig. (1-tailed)	death rate	.	.030	.148	.067	.110	.002
	Qualitative composition	.030	.	.241	.355	.462	.032
	Population density	.148	.241	.	.055	.052	.121
	The percentage of the population aged (0-14) years	.067	.355	.055	.	.000	.000
	Percentage of the population aged (15-64) years	.110	.462	.052	.000	.	.000
	The percentage of the population aged (65) years and over	.002	.032	.121	.000	.000	.

Table (3) shows the name of the variables that were entered into the equation for the regression of the death rate due to Corona disease (the proportion of the population aged (65) years and over) and the rest of the variables were excluded.

Table (3) Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	The percentage of the population aged (65) years and over	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: death rate

Table (4) shows the correlation coefficient between the dependent variable and the independent variables in the second column, which is (63%) between the death rate due to Corona disease and the proportion of the population aged (65) years and over.

Table (4) Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.634[a]	.402	.364	7.049015	.838

a. Predictors: (Constant), The percentage of the population aged (65) years and over

b. Dependent Variable: death rate

Table (5) ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	533.682	1	533.682	10.741	.005[b]
	Residual	795.018	16	49.689		
	Total	1328.700	17			

a. Dependent Variable: death rate

b. Predictors: (Constant), The percentage of the population aged (65) years and over

Table (6) shows the coefficients of the regression model, which help to obtain the equation of the regression line between the variables and the equation

Predicted = Coronavirus death rate of the regression line = 18.9-12.1

Table (6) Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
(Constant)	-18.907-	11.266		-1.678-	.113			
The percentage of the population aged (65) years and over	12.172	3.714	.634	3.277	.005	.634	.634	.634

a. Dependent Variable: death rate

Table (7) shows the names of the variables that were excluded by the gradient method, as the partial correlation between them and the death rate from Corona disease is not statistically significant, as is evident from the Sig values in the table. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which is that the gradient is not equal to zero, and therefore there is a relationship. Between the dependent variable and the death rate due to the Corona virus, and the independent variables (population density, gender composition, percentage of population aged (65) years and over, percentage of population aged (15-64) years and over, percentage of population aged (0-14) years.

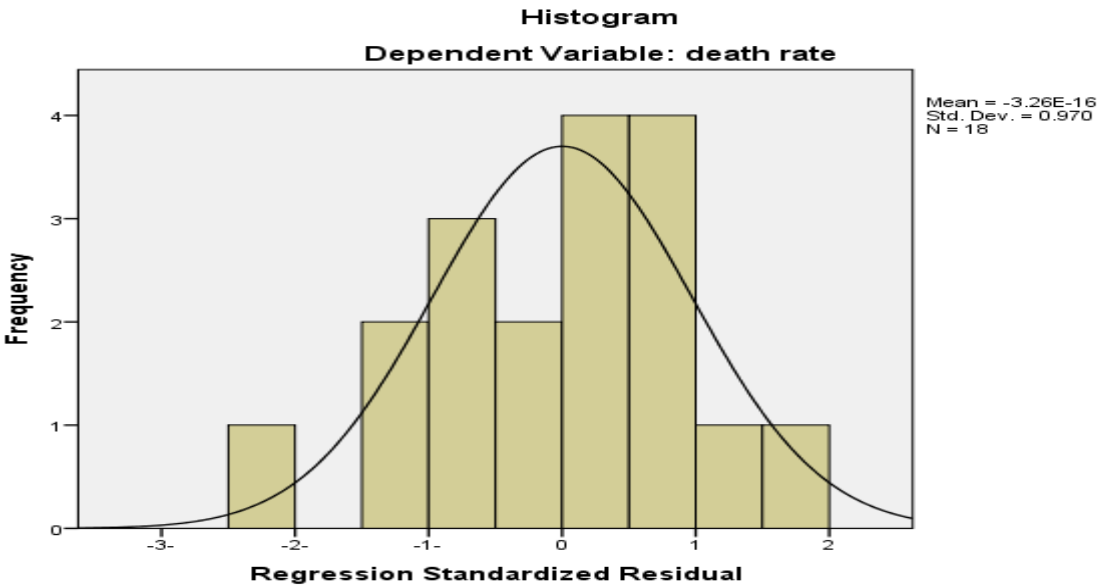
Table (7) Excluded Variables[a]

Model		Beta In	T	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Qualitative composition	-.210-[b]	-.970-	.347	-.243-	.802
	Population density	.083[b]	.401	.694	.103	.915
	The percentage of the population aged (0-14) years	.607[b]	1.772	.097	.416	.281
	Percentage of the population aged (15-64) years	-.526-[b]	-1.772-	.097	-.416-	.375

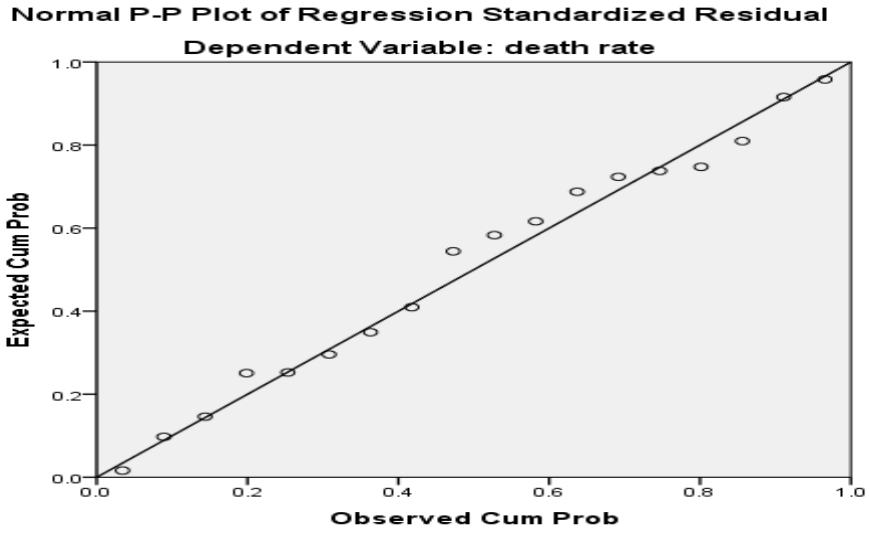
a. Dependent Variable: death rate The histogram graph shows that the data follow a normal distribution

Charts

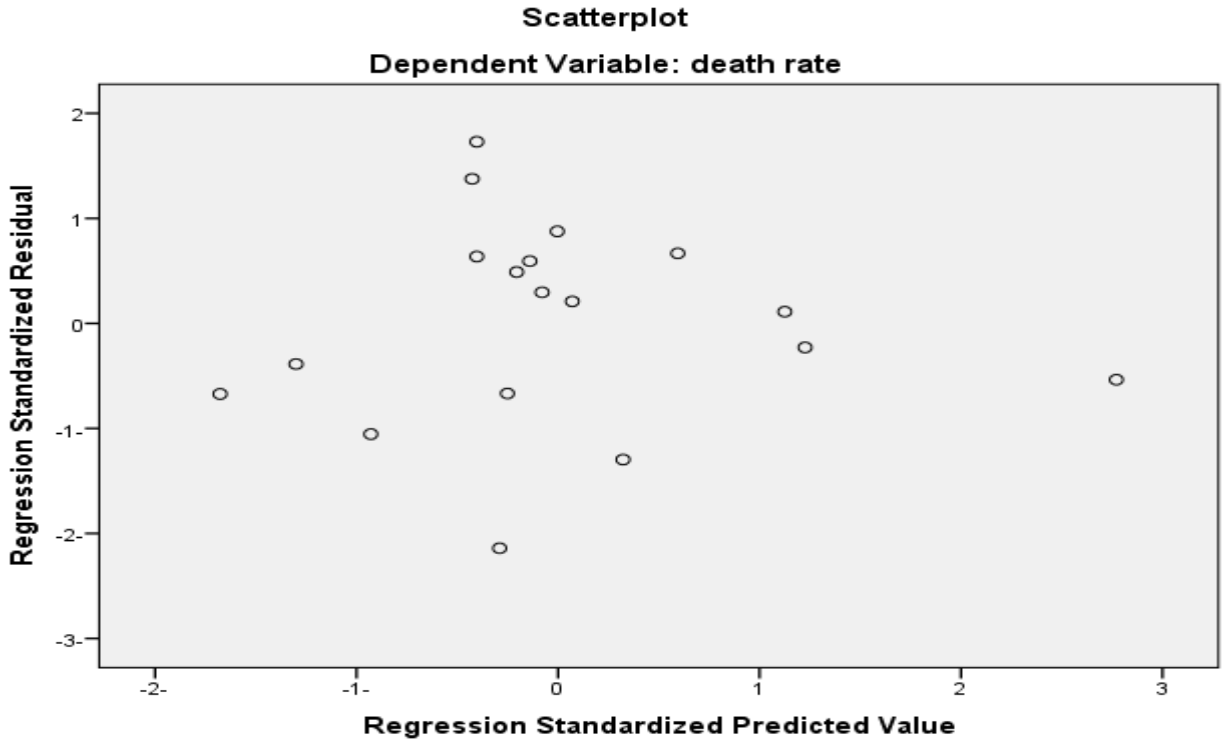
b. Predictors in the Model: (Constant), The percentage of the population aged (65) years and over



The p-pplot diagram shows that the data are clustered around the straight line and thus the residuals are distributed according to a normal distribution, which is one of the conditions of the regression test.



The diagram shows the shape of the residuals with the expected values and from it is clear that there is no specific pattern of points in the figure and this is consistent with the linear condition required for the regression test.



Conclusion

The summary of the study indicates that the death rate due to the Corona virus in Iraq reached (17.61) thousand. The research also found spatial variation according to relative rates, as the lowest rates were recorded in Dohuk Governorate (0.89) per thousand. The highest rate in Salah Governorate is (29.35). Through statistical analysis using the SPSS program, an interaction between the death rate before the Corona virus and the proportion of the population that exceeded the average between (65) years and older and over (0.634) was achieved, which is a strong correlation. Statistically significant, while the weakest correlation was recorded for the population effect ratio, which reached (0.261) with a significant level of power (0.014).

Sources

1. Abdel-Jabbar, Dalia, 2011, Spatial variation of deaths recorded in Maysan Governorate for the period 1977-2010, Master's thesis, Wasit University.
2. Abu Ayana, Fathi Muhammad, 2002, Studies in Demography, Dar Al-Nahda Al-Arabi, Beirut.
3. Al-Khafaf, Abdul Ali Hassan, 1987, Demographic Conditions in Iran, University of Basra.
4. Al-Rikabi, Abdul-Aali Habib Hussein, 2009, Spatial variation of deaths in Dhi Qar Governorate, doctoral thesis, University of Basra.
Al-Saadi, Abbas Fadel, 2002, Population Geography, Part Two, Baghdad.
6. Al-Siddiqi, Abdul Latif, 2009, Demographic Dictionary, Alphabet of Population Vocabulary, first edition, Damascus, Kiwan House for Printing, Publishing and Distribution.
7. Glenn, T. Trewartha, 1969, The Geography of World Population Patterns, New York, John Wiley & Sons, Inc.,
8. Labib Ali, 2004, The Geography of Fixed and Changing Populations, Beirut, first edition, Dar Al-Ulum Al-Arabi.
Al-Zayadi, Hussein Aliwi Nasser, 2023, Spatial variation in recorded infections with the Corona virus in Iraq, Al-Ma'moun College Journal, special issue.

Accessory (1)

Provinces	The percentage of the population			Population density	death rate	Qualitative composition
	aged (0-14) years	(15-64) years	(65) years and over			
Dohuk	40.89	56.25	2.87	207.72	0.893	100.44
Nineveh	44.18	53.25	2.57	105.25	4.977	104.43
Sulaymaniyah	33.47	62.25	4.28	133.77	29.357	100.10
Kirkuk	39.09	57.63	3.27	173.86	25.641	101.37
Erbil	37.88	58.56	3.56	129.58	22.868	101.96
Diyala	39.72	57.13	3.15	97.50	10.280	102.08
Anbar	42.24	55.53	2.23	13.49	3.474	105.65
Baghdad	36.94	59.54	3.52	1878.95	24.699	103.01
Babylon	41.73	55.46	2.81	424.85	19.841	102.14
Karbala	41.73	55.46	2.81	254.96	27.542	101.80
Wasit	42.05	54.98	2.96	84.65	19.253	101.95
Salahaddin	42.80	54.80	2.40	69.78	7.597	102.08
Najaf	41.74	55.37	2.88	53.77	11.503	100.55
Qadisiyah	42.98	54.09	2.94	166.77	21.008	101.62
Muthanna	43.08	53.89	3.03	16.58	19.487	101.01
Thi Qar	43.19	54.01	2.80	171.05	24.926	100.78

Maysan	44.31	52.69	3.00	72.91	23.771	99.27
Basra	43.29	53.80	2.91	160.62	19.907	100.95

Source: The researcher based on: - Republic of Iraq, Ministry of Planning and Development Cooperation, Central Organization for Statistics and Information Technology, Iraq Statistics Directorate, population estimates by environment, gender and administrative unit for the year 2020 (unpublished data).