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Effect of Statistical Planning for Economic and Social Factors on Urban Security

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Abstract: Long through history, crime has been stated as one of the most influential social diseases. It can damage and twist the essence of the society which is the mind. It is the result of the several bad conditions of the society. Accordingly, this study is intended to examine the most important factors that help in increasing such disease, trying to statistically measure these factors and the impact that they have on the society. The crime is one of the important and outstanding problems suffered by mankind and threatens all parts of the world because of the great impact on social construction and waste of human resources and the importance of this problem can be studied the factors affecting the emergence of crime and its increase around the world . The use of statistical methods in the analysis and study of some factors affecting the emergence of crime and the impact of growing on society, through Verrier-Klauber test, it was founded that there is a linear interference between independent variables that, there is a high correlation, it has been noticed through our study that human societies face crime as a problem that threatens its existence and sustainability. This increase has raised the concern of societies and institutions at various levels and attention has become necessary for officials in educational, social, health and security organizations to take care of them to reduce and multiply their dangers.

Key words: Statistical planning, urban security, economic, social factors, linear regression, impact

INTRODUCTION

A brief urban security: The Iraqi cities including Baghdad in the past years, sophisticated urban remarkable increase in the number of population, the size of the internal and external population migration, this development is reflected automatically on the social, economic and cultural aspects in many of these cities. On the other hand, this urban development and economic and cultural openness have some negative effects on the security and social situation in these cities. The main objective of this study is to analyze the patterns and causes of these economic and social problems such as crimes. In Iraqi cities in general and the city of Baghdad in particular as well as study the importance and role of urban security in reducing these crimes. Societies have faced social and social problems that have had a great impact on social construction with a threat to the existence of systems and societies and their future (Salhi, 2013).

Ethics is the cornerstone for the building of an integrated society which is the strong pillar for the preservation of the entity of society where the souls rise to the ranks of perfection and through which individuals can give the true concept of humanity. It is also an aspect of human personality because it performs a significant function in determining the behavior of the individual and the manner of his social interaction and his relationship with others (Salhi, 2013).

It is a social interest that emerges through the interaction of individuals among them. Its main objective is to strengthen social relations and contribute to the control and modification of the human race and thus contribute to making society a balanced and stable society without which a society cannot be conceived and flourished even if it takes the reasons of industrial civilization in which the crime has hampered development, social and economic benefits, social services and social welfare. It has led to an increase in the proportion of income spent on the methods of combating and preventing them, especially, those spent on the criminal justice system. Statistics indicate that some third world countries including some Arab Countries, Annual spending on the police and justice sectors exceeds what it allocates to vital sectors such as agriculture, health and education. And that the crime is harmful to social interests and in violation of the sanctity of traditions, customs and custom is dangerous to individuals and society for the damage caused to others and systems that sponsor public life (Theirl, 2014).

The emergence of some factors and their impact on urban security: that developed by developing societies of plans and programs for the development of social and economic development is accompanied by a steady rise in levels of crime. Since, the economic and social transformations conducive to the migration, urbanization, poor distribution of income and relative poverty, creating social and economic differences and raise unemployment

(Schmidt, 1976), this will lead to the disintegration of the family which leads to homelessness and other social risk. As a result, the dangers of crime are increasing day after day after social, economic and cultural development. In some developed societies such as America, the crime has become a social phenomenon. Complex to organize criminals are in institutions and organizations allocate to its existence has outstanding economic factors were considered conducive to crime on the basis of economic deprivation leads to the commission of the crime (Williams, 2009).

A research has shown that, poverty is the primary cause of the crime in addition to environmental conditions such as housing busy unequal opportunities, lack of education deprives individuals of satisfying their needs and prepare them for the occurrence of the crime, linking the owners of the socialist doctrine between economic factors and crime (Salvatore and Abstracts, 2010).

The social factors are also responsible for the crime on the basis that the social environment deviated by its many elements leads the individual to crime. The erratic rise between excessive tenderness and excessive cruelty leads to weak social norms. The severity of the punishment leads to an aggressive personality that lacks self-control and increases hatred of society (Walpole, 2009).

Family disintegration leads to a deviation in behavior where a large proportion of criminals suffer from family disintegration and these families have had a troubled emotional relationship before and after family disintegration.

Murders motivated by the fight, revenge, revenge and defense of honor or adultery has been committed is also the noise and congestion of factors accelerated the appearance of mental and behavioral disturbances (Zellner, 2008).

Other factors predisposed to crime are weak social and religious bonds, weak relations of kinship and neighborliness, imbalance in the value system and poor social control.

To sum up, societies in the past and modern times faced the crime as a social scourge tampering and played and changed ideas as a result of her birth from the womb of the reality of that society which suffers from circumstances leading to the emergence of these deviations in a variety of ways so this study aimed to identify the most important factors affecting the emergence of crime the researcher used a set of statistical methods to indicate the impact of these factors and their rate of increase in society (Al-Ani and Al-Farabi, 2014).

Some important terms used in statistics/concepts

The data: Observation, counting or measurement result information's that is obtained, symbols and figures.

Excessive, abnormal or biased observations: One or more data which is averaging significantly, upgrading or minimizing excessive is called abnormal or aberrant observations.

The rate: It is the unit affinity between the same two values. For example, income-expenditure ratio, birth-death rate, export-import ratio, etc.

Percent (%): It is the rate value that is expressed as a percentage by multiplying by 100.

Thousand: If the value is too small, it will be multiply with 1000 and to obtain the thousandth in value.

Velocity: The units used to determine the interest rate with each of two different variables. Price = money/ware; velocity = road/time, etc.

Population: Community that encompasses all elements of the population are called on to examine the character. The main mass of the universe such as the term is also used.

Parameter: Population equation calculated over the elements (μ = mu), the variance (σ^2 = sigma), regression coefficient (β = beta) is called parameters such as size.

Statistics (calculation/forecast): The equation, that is calculated from sample data ($\bar{X}$), variance (S^2), Standard deviation (S), the correlation coefficient (r), the regression coefficient (b), etc. are so, called statistical estimates. From this definition it is to be understood as an estimate of any statistics or the estimator.

Hypothesis: The claims which raised in any matter is called hypothesis.

Parametric: It is a test's and a forecast which equation, variance and ratio are used.

Non-parametric: Made using the sort and mark tests and estimates.

Unit values and measurement accuracy: If the numerically consist numbers such as 3, 5, 10, etc. the unit value will be 1; if they are 0.3; 0.5; 10.2, etc. decimally numbers it will 0.1. For numerical data 3, 5, 10, etc. If it is formed from

exactly say like as degree, brim degree is 1. 0.3; 0.5; 10.2 vs. If ondalykly is composed of data, the unit degree is 0.1. For 100 points, it will be 0.01 0.01 for dir. These values are defined as the measurement accuracy.

Variable: They are the values from which the data obtained as a result of observation, counting, measuring and evaluation. Variables are generally expressed from the last letters of alphabet like x, y, z or some word shortcuts are used usually expressed in abbreviated terms with the last letters of the alphabet.

Research aims: The objective of the research is to study the factors that influence the increasing appearance of the crime and study a statistical study to analyze these factors.

The importance of research: The crime is one of the important and outstanding problems suffered by mankind and threatens all parts of the world because of the great impact on social construction and waste of human resources and the importance of this problem which have studied the factors affecting the emergence of crime and its increase around the world.

Limits of research: Because cannot obtain a sample from our society because of the current circumstances, it relied on obtaining this sample through a realistic study of the Iraqi society(using only 20 cities).

MATERIALS AND METHODS

The use of statistical methods in the analysis and study of some factors affecting the emergence of crime and the impact of growing on society, the theoretical aspect includes:

The multiple regressions: The first to be called the word regression is the world Francis Calton when he studied the inheritance of the attribute of height where it was found that the parents of tall stature tend to be their sons tall and that the parents are short stature, their children are short. The decline in general is divided into 2 parts:

Field work: This involved data description and selection of the variables, then development of linear regression model.

F-test: The distribution of F is one of the most important distributions used in the applied statistics. It was the first of a recipe in the early 1920's and it was called the Z distribution (not intended for standard natural distribution) and then was transferred to F distribution by Snedecor the distribution of F in recognition of the most important and important uses of F distribution are (Salhi, 2013). Estimate the period of the category $\frac{\delta_1^2}{\delta_2^2}$:

$$F_c = \frac{MSR}{MSE}\alpha \quad (1)$$

Test hypotheses about the equality of two disparities. C-test hypotheses about the equality of more than two averages.

t-test: The t-test is an important test where, it is used to establish confidence intervals and to test hypotheses about averages when the variance of the community is unknown and when the sample size is small and the t-test is used to test the following hypothesis (Al-Ani and Al-Farabi, 2014): No significant effect of X on Y. H_o: $B_1 = 0$. Then, it can be made the following decision:

- If the calculated t is greater than the t-table, then rejected the null hypothesis H_o
- If t is the smallest t tabular and therefore accepts the null hypothesis H_o

FERER-CLUBER test: This test is an important test in determining the existence or absence of multiple linear interference between the variables. This method is summarized as follows (Narrator, 1989).

Calculate the simple correlation coefficients between each pair of independent variables and then find the correlation coefficients matrix. Use the test box (Kai-Square) which is extracted from Eq. 2 (Sifu and Ismail, 2012):

$$X_c^2 = \left[\frac{K}{3} + \frac{3}{2} - n\right] \ln D \quad (2)$$

Where:

K = The number of parameters including the constant
n = The sample size
D = Specifies the array or value (specified)

This test is used to test the following hypothesis. There is no linear interference between independent variables H_o: $rX_iX_j = 0$. Linear interference between independent variables H_1: $rX_iX_j \neq 0$. The calculated result (Al-Shafei, 2010) is compared with the tabular value with a degree of freedom $\chi^2(k-1)(k-2)/2, \alpha$. Then, it can be made the following: If the calculated value is less than the tabular value, the decision to accept the null hypothesis H_o is that, there is no linear interference between the independent variables.

If the calculated value is greater than the tabular value, then the decision to reject the null hypothesis H_o is that, there is multiple linear interference between the independent variables.

Durin-Wotson (D.W) (Spiegel, 2014): This test is used to determine whether or not a self-correlation exists. The steps of this test can be summarized as follows: Find the value calculated through the following sports law (Kazem and Hadi, 2010):

$$d^* = 2\text{-}2\rho \quad (3)$$

Test the following hypothesis:

- Lack of self-association H_o: $\rho = 0$
- There is a self-association H_1: $\rho \neq 0$

Comparing the calculated value d* with the tabular value of the two sides (Mahboob and Abdul-Ghani, 2011):

- The minimal rate d_L
- The highest rate d_u

Then it can be made the following decision (Kleinbaan, 2008). If the calculated value is smaller than the tabular value d_L this implies a positive self-correlation. If the calculated value is greater than the tabular value d_u, this means that there is no self-association. If the calculated value falls between the two values $dL < d^* < d_u$, it means that there is no certainty of self-correlation and so on.

Data collection: The application side content three points:

- Data collection and tabulation
- Data analysis
- View information and results

Data collection and tabulation: After get the data which is related to the increasing appearance of the crime where it was arranged and classified and then each variable was defined as clearly and can be found.

Data analysis

Multiple regressions: Multiple regressions was used for the existence of three independent variables and one dependent variable with a strong relationship measured by the multiple correlation coefficient (Rasool and Al-Zwainy, 2016). (R = 0.92). The linear regression equation was extracted by using matrix method. The value of the parameter was calculated in addition to the matrix of transactions. The equation of the coefficients used in the rest of the tests was extracted.

F-test: At the beginning of the test, the hypothesis is developed where it is used to make the decision and then calculate the mathematical law that is:

$$F_c = \frac{MSR}{MSC} \quad (4)$$

and when extracted the result which is shown to us (37.737) as shown in the practical side and compared it with the tabular value $F_{(3,16,0.05)} = 3.24$. That the calculated value is greater than the tabular and this is the meaning according to the hypothesis:

- $H_o = B_1 = B_2 = ,..., = B_k = 0$
- $H_1 = B_1 = B_2 = ,..., = B_k \neq 0$

In this context, the decision to reject the null hypothesis H_o which states that there is no independent variable effect on the dependent variable and to accept the hypothesis H_1 that there is a definite effect on the dependent variable. The percentage of crime depends on (X_1 size of sample) (X_2 the percentage of annual income of the families) (X_3) the percentage of the unemployed). When extracted the value of the average squares of error and found it to be of low value, this means that the difference is small.

In addition, R^2 the coefficient of determination which represents the percentage of the independent variables was calculated in the effect on Y and equal value of 0.8692 ($R^2 = 86.92$).

T-test: It mean by it create meaningful features, the first thing can be started the test was to test the significance of the parameter of the first independent variable (X_1 sample size). In the beginning, can be put the test hypothesis H_o which states) that the independent variable size (sample size) does not have an effect on the dependent variable (crime appearance percentage). (No effect of sample size on Y crime appearance percentage) H_o: $B_1 = 0$ (the effect of sample size on the appearance percentage of crime Y) H_1: $B_1 \neq 0$ then calculated the mathematical law:

$$t_c = \frac{B_1}{SB_1} \quad (5)$$

That is and extracted the calculated value (3.0960). When comparing it with the tabular value $t_{0.025,16} = 2.11$, it found that, the calculated value is smaller than the tabular

value. This means rejecting the null hypothesis and accepting the alternative hypothesis which states as mentioned above that, there is a direct effect of the size of the sample on the rate of appearance of the crime. This means that, the greater the size of the sample, the greater the appearance of the crime. Can be calculated the significance of the parameter of the second independent variable (X_2 the percentage of the annual income of the families) by setting the hypothesis for this variable.

(No effect of annual income percentage X_2 on the percentage appearance of crime Y) H_o: $B_2 = 0$ (the effect of the annual income percentage X_2 on the percentage appearance of crime Y) H_1: $B_2 \neq 0$. And the calculation of the value calculated through the law $t_{0.025,16} = 2011$ which appeared to us (2.6179) and compared with the value of the table ($t_{0.025,16} = 2.11$) and found that the calculated value is greater than the tabular and this means rejecting the null hypothesis and accepting the alternative hypothesis which states that there is a significant impact and it is sure that the annual income affects the crime the lower the income of the family the greater the appearance of crime because the material factor of the important and influential factors when the decrease of income for the individual or the family will push him to take any way to increase his money without interest if this road is legitimate or illegal and thus we will have a society where the crime .

Test the parameter of the third independent variable (X_3 the percentage of the unemployed) and then put the test hypothesis for this variable: (no effect of the proportion of unemployed X_3 on the appearance percentage of crime Y) (the effect of the proportion of the unemployed X_3 on the appearance percentage of crime Y) Calculated the value calculated by the law $t_c = B_3/SB_3$ (as shown to us in the practical aspect). The calculated value is (3.8825). When comparing with the tabular value $t_{0.025,16} = 2.11$, it found that, the calculated value is greater than the tabular. This means that, our decision is to reject the null hypothesis and accept the alternative hypothesis. States that, there is an impact on the number of unemployed or the percentage of unemployed persons to increase the appearance of crime because when there is no work for the man occupies it and makes it more attention and development in the scientific, practical and cultural, this will be swept to the work of things that are far from the principles of society in which he was raised and growing number of emotions Yen from work in the community, this will lead to a society where crimes abound and therefore, this variable has a significant impact on crime.

D-self-correlation test using the Doreen-Watson test; this test means to find the independent correlation between the independent variables (X_1 sample size) and (X_2 annual income percentage of the families) and (X_3 the percentage of the unemployed). Put the hypothesis for this test: (no self-correlation between independent variables) H_o: $\rho = 0$. (Self-correlation between independent variables) H_1: $\rho \neq 0$. And then, we extracted the calculated value which is ($d^* = 1.936$) and was compared with the table value of this test which is a maximum ($d_u = 1.68$) and a minimum ($d_L = 1$) and founded that the calculated value is greater than the upper limit and this means that there is no self-correlation between independent variables.

Multiplexing/subscribing/multiplexing test using the Farrier-Cloper method

Farrer Glowber: This test means that there is a linear linear overlap between the independent variables (X_1 sample size) and (X_2 the annual income percentage of the families) (X_3 the percentage of the unemployed) and put the hypothesis for this test: (No linear interference between independent variables) H_o: $\rho = 0$ (multiple linear interference between independent variables) H_1: $\rho \neq 0$. Calculated the value of the parameter for the correlation matrix (for independent variables, X_1, X_2, X_3) and it is possible to observe the correlation between some independent variables which is significant but to make sure a test account (Kai Square) and when the value is extracted ($X^2_c = 19.01$) and can be compared it with the tabular value $X^2_{0.053} = 7.81$) And found that the calculated value is greater than the tabular value and therefore our decision will be to reject the null hypothesis and accept the alternative hypothesis which states (with multiple linear interference between the independent variables).

Can be know the explanatory variable that caused the interference and detect it by test F and then determine the independent variable that caused the multiple linear interference by t-test (Table 1).

Table 1: View data

City	Y	X1	X2	X3
1	11.2	587	16.5	6.2
2	13.4	643	20.5	6.4
3	40.7	635	26.3	9.3
4	5.3	692	16.5	5.3
5	24.8	1248	19.2	7.3
6	12.7	643	16.5	5.9
7	20.9	1964	19.2	6.4
8	35.7	1531	16.5	7.6
9	8.7	713	20.2	4.9
10	9.6	749	21.3	6.4
11	14.5	1895	17.2	6.0
12	26.9	762	14.3	7.4
13	15.7	2793	18.1	5.8
14	36.2	741	23.1	8.6
15	18.1	625	18.6	6.5
16	28.9	854	24.9	8.3
17	14.9	716	17.9	6.7
18	25.8	921	22.4	8.6
19	21.7	595	20.2	8.4
20	25.7	3353	16.9	6.7

Y: Appearance percentage of crime for each city; X_1: Sample size per thousand in each city; X_2: Percentage of annual income of families; X_3: Percentage of unemployed in each city

RESULTS AND DISCUSSION

Presentation of data: Estimated regression equation:

$$\hat{Y} = 36.0246+0.003483X_1+ 1.2125X_2+4.8651X_3 \quad (6)$$

F-test:

- H_o: $B_1 = B_2 = B_3 = 0$
- H_1: $B_1 \neq B_2 \neq B_3 \neq 0$

$$F = \frac{MSR}{MSE} = \frac{541.826}{14.3577} = 37.7377 \quad (7)$$

From Table 2 $F_{(0.05,3.16)} = 3.24$. $F_c > F_T$. Thus, our decision will be to reject the null hypothesis H_o and accept the alternative hypothesis H_1, i.e., there is an effect of independent variables X_1, X_2, X_3 on Y and then calculated the coefficient of selection R^2:

$$R^2 = \frac{SSR}{SST}\times 100\% = 87.61$$
$$R^2 = 1-\frac{SSE}{SST}\left(\frac{n-1}{n-2}\right) = 86.92\% \quad (8)$$

T test: (No effect of sample size X_1 on crime rate Y) H_o: $B_1 = 0$ (effect of sample size X_1 on crime percentage Y) H_1: $B_1 \neq 0$:

$$t_1 = \frac{B_1}{SB_1} = \frac{0.003483}{0.001124} = 3.0960$$
$$t_{T(0.025,16)} = 2.119 \quad (9)$$

$t_1 > t_T$ thus, it will make the decision to reject the null hypothesis and accept the alternative hypothesis; there is an effect X_1 on Y. The size of the sample has a significant effect on the crime appearance rate (no effect of annual income on the incidence of crime Y) H_o: $B_2 = 0$. (The effect of annual income X_2 on appearance percentage of crime Y) H_1: $B_2 \neq 0$:

$$t_2 = \frac{B_2}{SB_2} = \frac{0.003483}{0.001124} = 2.6179$$
$$t_{T(0.025,16)} = 2.119 \quad (10)$$

$t_2 > t_T$ thus, it will make the decision to reject the null hypothesis and accept the alternative hypothesis there is an effect of X_2 on Y. That is the annual income has a significant effect on the rate of crime (no effect of the proportion of the unemployed X_3 on the percentage of crime appearance) H_o: $B_3 = 0$ (The effect of the proportion of the unemployed X_3 on the percentage of crime) H_1: $B_3 \neq 0$:

Table 2 ANOVA table analysis

S.O.V	df	SS	MS	F-value
R	3	1625.480	541.8210	37.7377
E	16	229.723	14.3577	
Total	19	1855.200		

$$t_2 = \frac{B_3}{SB_3} = \frac{4.8651}{1.25308} = 3.8825$$
$$t_{T(0.025,16)} = 2.119 \quad (11)$$

$t_3 > t_T$ thus, it will make the decision to reject the null hypothesis and accept the alternative hypothesis there is an effect of X_3 on Y. That is, there is an impact on the proportion of unemployed persons on the increase in the appearance of crime.

Doreen-Watson test: (Lack of self-correlation between independent variables on crime percentage) H_o: $\rho = 0$. The existence of a subjective correlation between independent variables on the crime percentage Y). H_1: $\rho \neq 0$; $d^* = 2\text{-}2\ \rho = 2\text{-}2(0.032) = 1.936$; $d_l = 1.00$, $d_u = 1.68$.

$d_u < d^*$ if the calculated value is greater than the value of the upper limit of the tabular value, then our decision will be that there is no self-correlation between the independent variables.

Multiple linear interference test by Farrier-Cloper (F.G): H_o: $rX_i \times X_j = 0$ (No linear interference between independent variables); H_1: $rX_i \times X_j \neq 0$. (Existence of linear interference between independent variables)… 10:

$$D = \begin{vmatrix} 1 & -0.0079 & 0.1202 \\ -0.0079 & 1 & -0.8104 \\ 0.1202 & -0.8104 & 1 \end{vmatrix} = 0.33028$$
$$X_c^2 = \left[\frac{k}{3}+\frac{3}{2}\text{-}n\right]\ln D = \left[\frac{4}{3}+\frac{3}{2}\text{-}20\right]$$
$$(-1.1078) = 19.0172\ X^2_{\frac{(k-1)(k-2)}{2},\alpha} = X^2_{\frac{3(2)}{2},0.05}$$
$$X^2_{(0.05,3)} = 7.815$$

$X^2_c > X^2_T$ thus, the decision will be to reject the null hypothesis H_o and accept the alternative hypothesis H_1 there is a linear overlap between the independent variables (X_1, X_2, X_3) and through a specific observation matrix link D above it can be said that the variable X_2 is linked to the variable X_3 only through the correlation coefficient between them and its value (0.81).

CONCLUSION

Through the results obtained from the application of statistical measures can be note the following: by applying the F-test, it notes that the percentage of crime or the increase in the appearance of crime depends on the following factors: (X_1 the size of the sample) (X_2 the annual income of the families) (X_3 the percentage of the unemployed). In the test of the model, it found that there is a significant effect of 5% for the explanatory variables on the adopted variable.

The study of each of the factors mentioned above and the t-test to determine the significance of the parameters, it found that when the study of the factor (X_1 size of the sample) and conduct a T test to determine the impact on the percentage of crime, it found that the size of the sample directly affects the growing appearance of crime.

When the t-test was conducted to determine the effect of the second factor (X_2 the annual income of families) on the appearance of crime, the result was the effect of this factor on the appearance of crime which is the driving force behind the crime, especially in our present society. When the test T to know the impact of the third factor which is: (X_3 percentage of the unemployed) on the appearance of crime, it found that it affects directly and accurately on the increase in the emergence of crime in society the more the society is more unemployment and the unemployed and the lack of awareness and awareness as the crime increased this community.

Through, the use of the Doreen-Watson test, it observed after the test that the self-correlation coefficient $\rho = 0.032$ was weak and when testing the hypothesis it found a self-correlation. Through Verrier-Klauber test, it found that there is a linear interference between independent variables, that is, there is a high correlation. This means that when a person does not practice his work, his income will be reduced. The negative correlation between the income ratio and the percentage of the unemployed means the higher the percentage of income unemployed and vice versa.

RECOMMENDATIONS

It has been noticed through our study that human societies face crime as a problem that threatens its existence and sustainability. This increase has raised the concern of societies and institutions at various levels and attention has become necessary for officials in educational, social, health and security organizations to take care of them to reduce and multiply their dangers.

Citizens are advised to increase their interest in developing the scientific level to raise awareness and awareness, where increasing the scientific level of citizens will be to a society of science and knowledge and ethics, in addition to the religious trend where religion teaches man mercy and non-deviation towards the actions or conduct leading to the commission of crimes.

To address the multiple linear interference that emerged between the independent variables (sample size, annual income, unemployment rate) it add either the sample size increase or the addition of new variables except for the above variables which may be important factors for committing the crime in the same direction that may be introduced as new variables depending on the status of the study of the community under study according to tradition.

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