

## The Influence of Weather Temperature on Crime Occurrence in Babylon Province

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Received: 28/8/2023

Revised: 11/10/2023

Accepted: 21/11/2023

Published online: 1/10/2024

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Citation: Gahar, A. K. ., Najem, R. H. ., & Karim, A. K. A. (2024). The Influence of Weather Temperature on Crime Occurrence in Babylon Province. *Dirasat: Human and Social Sciences*, 51(6), 207–216. <https://doi.org/10.35516/hum.v51i6.5571>



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### Abstract

**Objectives:** This study investigates the influence of temperature fluctuation on specific types of crimes in Babylon in Iraq. It also analyzes how varying temperatures leave an impact on crime patterns and trajectories.

**Methods:** The study uses quantitative analysis, descriptive statistics, and Geographic Information Systems (GIS) to examine temperature and crime data. Statistical techniques, including correlation and regression analysis, are applied to assess the relationships between temperature variables and crime rates.

**Results:** The study results showed that there is a strong affinity between temperatures and crime rates. Murder crimes reach their peak in hot summer months. The study also showed that theft crimes, including burglary, increase during cold winter months. Statistical analysis validates these findings, highlighting a direct correlation between temperature and murder rates and an inverse correlation with theft rates.

**Conclusions:** This study confirms the huge impact of temperature fluctuation on criminal behavior in Babylon, Iraq. Recognizing these seasonal variations may help construct effective crime prevention strategies. Additionally, the study explores multiple theoretical perspectives, underlining the importance of adopting a multidisciplinary approach to comprehensively grasp the intricate relationship between climate and crime.

**Keywords:** Temperature, Crime, Babylon province.

### درجة الحرارة وأثرها في حدوث الجريمة في محافظة بابل

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### ملخص

**الأهداف:** تبحث هذه الدراسة في تأثير تقلبات درجات الحرارة في أنواع محددة من الجرائم في بابل، العراق وتحلل كيفية تأثير درجات الحرارة المتفاوتة في أنماط الجريمة.

**المنهجية:** يستخدم البحث التحليل الكمي والإحصاء الوصفي ونظم المعلومات الجغرافية لفحص بيانات درجات الحرارة والجريمة. يجري تطبيق التقنيات الإحصائية، بما في ذلك تحليل الارتباط والانحدار، لتقييم العلاقات بين متغيرات درجات الحرارة ومعدلات الجريمة.

**النتائج:** كشفت الدراسة عن وجود علاقة قوية بين درجات الحرارة ومعدلات الجريمة. تبلغ جرائم القتل ذروتها خلال أشهر الصيف الحارة، بينما ترتفع جرائم السرقة، بما في ذلك السطو، خلال أشهر الشتاء الباردة. ويؤكد التحليل الإحصائي صحة هذه النتائج، ويسلط الضوء على العلاقة المباشرة بين درجات الحرارة ومعدلات القتل والارتباط العكسي مع معدلات السرقة. الاستنتاجات: يؤكد هذا البحث على التأثير الكبير لتقلبات درجات الحرارة في السلوك الإجرامي في مدينة بابل، العراق. إن التعرف على هذه الاختلافات الموسمية يمكن أن يرشد الاستراتيجيات الفعالة لمنع الجريمة. بالإضافة إلى ذلك، تستكشف الدراسة وجهات نظر نظرية متعددة، مما يؤكد أهمية اعتماد نهج متعدد التخصصات لفهم العلاقة المعقدة بين المناخ والجريمة بشكل شامل.

**الكلمات الدالة:** درجة الحرارة، الجريمة، محافظة بابل.

## 1. Introduction

The trend among criminology researchers has shifted towards studying the impact of climate characteristics on the phenomenon of crime. Some research and studies have indicated a close relationship between temperature or light or humidity and the criminal phenomenon, including its scale and type. This is supported by criminal statistics conducted in Germany, Italy, and France, which compared the crime phenomena in northern regions, where the climate tends to be cooler, with crime in southern regions characterized by a warmer climate. The data showed variations in the size and type of criminal activities between the northern and southern regions (Abu Khatwa, 1994).

Climate's effect on crime varies widely by region and income factors. Climate can influence the prosperity or deterioration of the economy, impacting crime rates differently across continents, countries, and regions.

For instance, Lacassage, a researcher, conducted a statistical study in France from 1827 - 1870, reaching a unique result, which is the proof of crime in terms of its quantity and diversity based on the seasons (Ali, 1996). Additionally, climatic factors can impact the psychological state of individuals, affecting both their physiological and psychological functions, thereby influencing their mood, physical energy levels, and intellectual productivity.

Previous studies in criminology have delved into the intricate interplay between climatic conditions and criminal behavior, shedding light on the potential role of climate in influencing the propensity for criminal acts. These studies have highlighted the vulnerability of individuals with weaker nervous systems to sudden fluctuations in climatic conditions, which can disrupt their physiological and neural functions, leading to aberrant behaviors that may escalate to criminal acts (Mohamedamin, 2022). While this research has significantly contributed to our understanding of the climate-crime relationship, it primarily focuses on regions with distinct climates. There exists a noticeable research gap concerning the specific impact of climate on crime patterns in regions with unique climatic conditions, such as Babylon, Iraq. Babylon's central region experiences hot and dry summers and mild winters, making it an ideal case for studying the nuanced connections between temperature and criminal behaviour (Al-Taai, 2017). Thus, this study aims to bridge this research gap and provide valuable insights into the role of climate as a predisposing factor in criminal activities within this specific climate context.

The main contribution and novelty of this work lie in several key aspects. First, we focus on Babylon, Iraq, a region with distinct climatic characteristics and socio-economic factors, offering a unique opportunity to explore the influence of temperature fluctuations on crime patterns. Second, our interdisciplinary approach utilizes Geographic Information Systems (GIS) and statistical methods to comprehensively analyze the relationship between temperature and crime, uncovering not only correlations but also the underlying mechanisms. Third, we identify specific crime types most affected by temperature variations, providing insights for targeted law enforcement strategies. Fourth, we integrate natural theory, social theory, and psychological organic theory to offer a holistic understanding of how climate impacts criminal behavior. Finally, our research offers practical implications for law enforcement agencies and policymakers, aiding in the development of effective crime prevention and intervention strategies tailored to specific seasons and crime types. This combination of factors contributes to the novelty and significance of our work in the field of criminology and climate studies.

### 1.1 Motives of the study

The motives of this study are multifaceted, with a primary focus on unravelling the intricate interplay between temperature characteristics and the incidence of criminal activities within the study region. This endeavour assumes heightened significance within the broader context of a burgeoning interest in the nexus between climate dynamics and criminal behavior.

In the pursuit of these motives, this study aspires to achieve the following objectives:

1. To observe and identify the relationship between temperature and the occurrence of specific types of crimes, investigating whether they tend to increase with rising temperatures and decrease as temperatures drop, and vice versa.
2. To study and identify crimes that tend to increase during summer seasons and decrease during winter seasons, and vice versa.
3. Studying and comprehending the impact of climate on the occurrence of crimes in the study area.

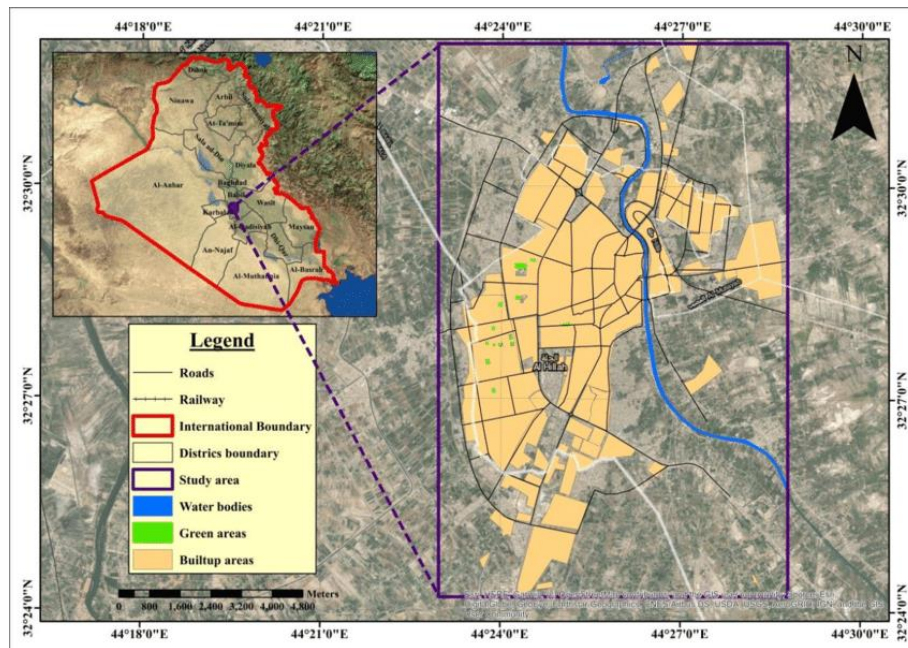
## 2. Methodology and data

### 2.1 Study Area

The study area comprises one region, which is Babylon:

It is located geographically in the central region of Iraq, as shown in figure1. It occupies the western part of the sedimentary plain and the northern part of the middle Euphrates region. It is a middle center between several cities. It is bordered on the north by the city of Baghdad, on the northeast by the city of Wasit, on the northwest by the city of Anbar, on the west by the city of Karbala, and on the southwest by the city of Najaf in addition to its eastern and south-eastern borders, it will be with the city of Al-Diwaniyah.

Astronomically, the study area is situated between latitudes (6°32' - 8°33' North) and longitudes (57°43' -12°45' East). It covers a spatial expanse of 5,119 km<sup>2</sup>, accounting for approximately 1.12% of the total area of Iraq, which is 435,244 km<sup>2</sup>.



**Figure 1: The study area in the city of Al-Hillah, Babylon Province (Azeez, 2021)**

**Table 1: Study area climate station (Iraq Climate Atlas, 2012)**

No.	Station	Astrological Position		Code	Height above sea level (meters)
		Latitude (North)	Longitude (East)		
1	Al-Hillah	32°.27'	44°.27'	657	27

### 2.2 Data Collection

- Climatic Data: Monthly temperature data, including moderate, minimum, and maximum temperatures, are collected for the study area over an extended period.

- Crime Data: Crime statistics, including the types and frequencies of crimes, are obtained from official records and law enforcement agencies for Babylon province.

### 2.3 Data Analysis

- Quantitative Methodology:

Employ quantitative analysis to examine the relationship between climate and crime.

- Descriptive Approach:

Use descriptive statistics to characterize the range and variation of different crime types in Babylon

- Geographic Information Systems (GIS):

Utilize Geographic Information Systems (GIS) software (ArcGIS 10.7.1) for mapping and visualization of crime data to identify spatial patterns and correlations.

## 2.4 Statistical Analysis

Statistical techniques, including correlation analysis and regression analysis, will be applied to assess the relationships between temperature variables and crime rates. This analysis will help quantify the strength and direction of these relationships and identify any statistically significant associations.

The methodology of this study integrates climate data analysis, crime data analysis, statistical techniques, and theoretical perspectives to provide a comprehensive understanding of the relationship between temperature and crime in Babylon province. By following this systematic approach, the study aims to contribute valuable insights to the field of criminology.

## 3. Results and Discussion

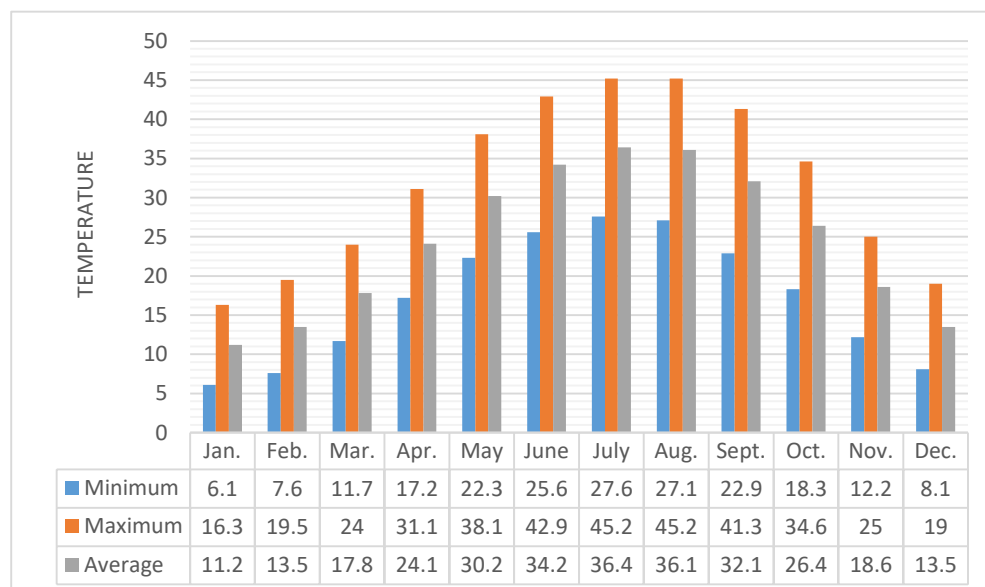
**The results can be divided into parts in line with the considered region:**

### 3.1 Temperature Characteristics Analysis:

It is evident from the digital data in the figure (2) that temperature values (average, minimum, maximum) exhibit variations from month to month at the study stations. Temperature values gradually began to increase starting from the month of (March) (Al-Samarrai, 2000), with an average temperature of (17.8 °C) recorded during this month. The average temperature reaches its peak during the months of (June, July, August, and September)\*. The average temperature during these months at the Kut station reached (34.2, 36.4, 36.1, 32.1 °C) respectively. This rise in temperature averages during these months can be attributed to the movement of the semi-tropical high-pressure belt towards the northern hemisphere, affecting the entire Iraq (Al-Samarrai, 2000).

During the month of January, the average temperature experienced a gradual decrease, reaching its lowest value of (11.2 °C) for the study station. This decline in temperature averages during this month is due to the disappearance of the semi-tropical jet stream and the appearance of the polar jet stream (Al-Samarrai, 2000).

Regarding the monthly averages of maximum temperature, they rise to more than (40 °C) in the months of (June, July, August, September). Recorded values for these months were approximately (42.9, 45.2, 45.2, 41.3°C) respectively at the study station. As for the monthly averages of minimum temperature, the study stations recorded values below (10°C) during the months of (December, January, and February).



**Figure 2: Monthly and annual averages of the maximum and minimum temperatures for the study stations (Ministry of Transport, 2019).**

### 3.2 Seasonal and Monthly Crime Rates Analysis

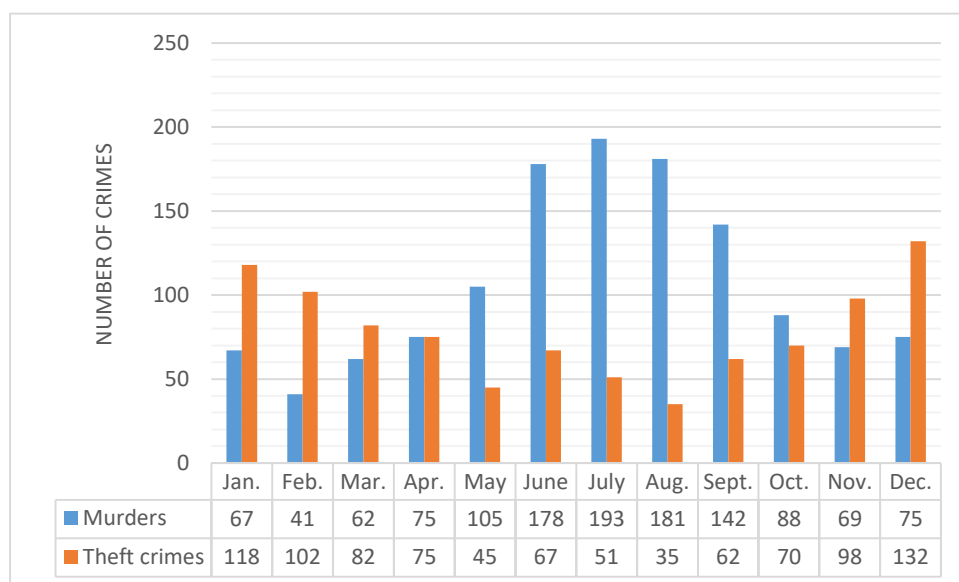
The figure (3) illustrates that murder crimes exhibit their highest occurrence rates during the summer season. The recorded counts for crime were (178, 193 and 181) crimes respectively, with percentages of (13.9, 15.1 and 14.1 %) for the same months. Conversely, the winter season, encompassing December, January, and February, characterized by lower temperatures, registered lower numbers of crimes with (75, 67, and 41 crimes) respectively, accounting for percentages of (5.9, 5.3 and 3.2 %).

The spring months of March, April, and May collectively reported a crime rate of (62, 75, and 105 crimes) respectively, with percentages of (4.9, 5.9, and 8.3 %) in sequence. As for the autumn months of September, October, and November, the crime rate stood at (142, 88, and 69 crimes) respectively, with percentages of (11.1, 6.9, and 5.4 %) in sequence.

From the foregoing, it can be inferred that thermal characteristics have a significant impact on the occurrence of murder crimes in the study area, as evidenced by the substantial variation in the number of murder crimes committed during different months of the year. The count of committed crimes rises from March to reach its peak during the summer, specifically in the month of July, which is one of the months with the highest recorded temperatures.

Regarding theft crimes, in Figure (3), it was found that the winter months of December, January, and February recorded a consecutive number of theft crimes reaching (132, 118, and 102 crimes) respectively, with percentages of (14, 12.7, and 10.8 %) for the same months in sequence. Meanwhile, the spring months recorded counts of (82, 75, and 45 crimes) respectively, with percentages of (8.8, 8 and 4.8 %) for the same months in sequence. As for the summer months of June, July, and August, they recorded counts of (67, 51, and 35 crimes) respectively, with percentages of (7.2, 5.4 and 3.7%) for the same months in sequence. While the autumn months of September, October, and November recorded counts of (62, 70, and 98 crimes) respectively, with percentages of (6.6, 7.5, and 10.5 %) for the same months in sequence.

From this, it can be inferred that during the winter season, the duration of night-time, characterized by darkness, is prolonged, in addition to the reduced movement of people who serve as mutual watchful eyes, leading to the commission of various forms of theft crimes. Among these, burglary, break-ins, and violent theft are more prevalent. On the other hand, the number of theft crimes increases during the winter months due to the general increase in human needs for food and clothing in this cold season. Additionally, job opportunities are scarcer compared to the summer season (Tawfiq. 2006).



**Figure 3: The numerical distribution of crimes by months of the year in the study area (Babylon city province Police Command, 2021)**

### 3.3 Statistical Analysis of Temperature Characteristics and Crime

The study of statistics holds numerous benefits for students of geographical sciences. One of the reflections of the importance of statistical science is its utilization in guiding the data collection process and interpreting the relationships that such data reflect (Shehadeh, 1997). Geographers employ statistics in various ways, including the description and summarization of spatial data, as well as using samples of geographical data to infer characteristics of larger sets of geographical data. This is done to ascertain whether the size or frequency of certain phenomena varies from one location to another, thereby identifying relationships, their nature, direction, and conducting analysis accordingly (Al-Saleh, 1999).

In applying the statistical method within Table (2), it becomes evident that all relationships are logical, as they indicate a direct correlation of the set of temperature characteristics with murder rates. This implies that as the temperature increases, the incidence of murders also increases. The highest direct correlation is observed with the minimum temperature at approximately 0.89, with a slope of 0.051, and an impact percentage of about 71.2. This represents a strong direct relationship. On the other hand, an inverse correlation exists between temperature levels and burglary rates.

The decline in temperature appears to coincide with an increase in burglary incidents within the study area, suggesting a connection between temperature and burglary rates. It reveals a strong negative correlation, with correlation coefficients of approximately -0.93, between both minimum and average temperatures and burglary incidents. This negative correlation signifies that as the temperature drops, burglary incidents tend to rise, and vice versa. Additionally, a slope of -0.0046 indicates that for every unit decrease in temperature, there is an associated increase in the number of burglary incidents, emphasizing the inverse relationship between temperature and burglaries. The mentioned impact percentage of about 32% signifies that roughly one-third of the variation in burglary incidents can be explained by changes in temperature, underlining the substantial influence of temperature on crime rates. In summary, this data highlights a robust and consistent inverse association between temperature and burglary incidents, suggesting that colder weather is linked to a higher likelihood of such incidents, while warmer weather is associated with a lower likelihood, which can be valuable information for law enforcement and policymakers in planning crime prevention strategies.

**Table 2: The statistical relationship between temperature characteristics and crime in the study area.**

	Variables	Correlation r	Change in gradient	Explanation %	Relationship type
Murders	Minimum temperature	0.89	0.051	71.2	Strong direct
	Maximum temperatures	0.88	0.0001	60.5	Strong direct
	Average temperature	0.88	0.0001	60.5	Strong direct
Theft crimes	Minimum temperature	-0.93	-0.0046	32.0	Strong inverse
	Maximum temperatures	-0.92	-0.003	69	Strong inverse
	Average temperature	-0.93	-0.0046	32.0	Strong inverse

### 3.4 The Correlation between Murder Crimes and Temperature

There is a prevailing belief, dating back to ancient times, in the correlation between temperature and human behaviour. Instances of assaults against individuals noticeably increase in hot climatic regions during the summer, whereas crimes related to financial theft tend to rise in the winter. The reason for this phenomenon is that during the summer, daylight hours are longer, leading to increased communication among people. Additionally, the elevated temperatures in the study area tend to make individuals more irritable. As a result, even the slightest issues can provoke them, and sometimes, matters escalate to the point of committing a crime (Al-Dabbas, 2007).

The relationship between temperature and crime is confirmed by researchers' studies and statistical evidence. Solar radiation has an impact not only on the face of the earth, but also on the face of history, as it was noted that the fall of this radiation on different parts of the earth's surface is not at one angle, but in several different angles, and that the centers of human civilization in Europe, Asia and America appeared in places where the climate is average (Bahnam, 1983).

It's worth noting that universities, institutions, and schools are closed over the summer, leading to mixing and societal

rapprochement, which in turn leads to a relatively high rate of crime. On the other hand, many workers and expatriates abroad return home during this season, causing traffic jams in most streets, resulting in car accidents and other events that would raise the relative rate of crime in the study area (Tawfiq, 2006). Additionally, in hot climate regions, people are in a bad mood, which leads to acts of violence and intolerance, and thus acts of assault on others, suicide, and sexual rape prevail, because the heat weakens the ability of the nerves to resist, with an increase of the strength of tizzy and emotion (Bahnam, 1983).

From Table (3), it becomes evident that there is a relationship between climatic characteristics (temperature) and the occurrence of homicide crimes. We observe that the highest rates of committing homicide crimes were recorded in the summer months with elevated temperature levels. The correlation between temperature rates and the incidence of crime is notably strong, showing a direct correlation. In other words, as temperature rates increase, the rates of crime occurrence also increase. It's notable that the summer months with the highest recorded temperature rates, namely June, July, and August, at (33.6, 35.8, and 35.7 °C) respectively, also recorded the highest rates of crime occurrence, reaching (178, 193, and 181 crimes) respectively. The corresponding percentages for these months were (13.9, 15.1, and 14.1 %) respectively. During the winter months of December, January, and February, characterized by their typical low temperatures, the crime rates reached (75, 67, and 41 crimes) sequentially, with proportions of (5.9, 5.3, and 3.2 %) respectively. While in the spring months of March, April, and May, the recorded crime rates were 62, 75, and 105 crimes, with proportions of 4.9%, 5.9%, and 8.3%, respectively. As for the autumn months of September, October, and November, a crime rate of (142, 88, and 69 crimes) was recorded sequentially, with proportions of (11.1, 6.9, and 5.4 %) respectively. It was found that the total number of committed homicide crimes in Babylon Province for the year 2020 reached (1276).

From the above, we can infer that climatic characteristics have a significant impact on the occurrence of homicide crimes in the study area, as evident from the substantial variation in the number of committed homicide crimes in Babylon province throughout the year. We observe that the number of committed crimes starts to increase from the month of March, reaching its peak in the summer season, specifically in the month of July, which is one of the months with the highest recorded temperatures.

**Table 3: Murder Crime in Babylon province during the year 2020.**

	Month	Average Temperature	Number of Crimes	Percent %
1.	January	11.1	67	5.3
2.	February	14.4	41	3.2
3.	March	19	62	4.9
4.	April	24.1	75	5.9
5.	May	29.7	105	8.3
6.	June	33.6	178	13.9
7.	July	35.8	193	15.1
8.	August	35.7	181	14.1
9.	September	31.9	142	11.1
10.	October	26.4	88	6.9
11.	November	18.1	69	5.4
12.	December	12.3	75	5.9
13.	Total	24.3	1276	100%

### 3.5 The correlation between Theft Crimes and Temperature

There is a direct relationship between criminal phenomena on one hand, and temperature levels, both rising and falling, as well as between night-time and daytime duration on the other hand. Various perspectives have been presented regarding this matter: some believe that an increase in temperature leads to heightened human vitality and activity, making



individuals more prone to impulsiveness and excitement, with a heightened desire for the opposite sex (Tawfiq, 2006). This leads to an increase in various violent crimes during the hot summer season in the hot regions, with the study area falling within one of those hot regions, namely the desert climatic region. On the other hand, the rise in the rate of property crime in the cold winter season can be attributed to the long nights of that season, in addition to the factor of darkness (night obscurity). These are factors that facilitate the commission of theft crimes in their various forms (Al Hammadi, 2005).

In the cold season, human concerns are directed towards providing the body with energy to feel the warmth it lacks, often relying on fuel sources. This consumption is engaged in activities that could potentially harm others or lead to mischief, given a different circumstance. This explains the diminished intensity of emotions and feelings during the cold winter season. This phenomenon leads to the commission of theft and similar crimes. These crimes require a level of calmness and planning, which contradict impulsiveness and emotional reactions. Maintaining self-control and restraint are crucial in their execution (Abu Khatwa, 1994).

During the winter season, the duration of night-time increases, enveloping the environment in darkness. Additionally, there is a decrease in people's movement, which acts as a form of mutual surveillance. These factors contribute to the commission of various forms of theft, with burglary, breaking and entering, and violent theft being the most common. On the other hand, the number of theft crimes increases in the winter months due to the general human needs for food and clothing intensifying during this cold season. Furthermore, job opportunities tend to be scarcer compared to the summer season (Walker, 2003).

The winter nights in Babylon province are characterized by their length, which can reach up to 14 hours in the month of December. This has led to an increase in the rates of theft crimes during the winter months in the study area (see table 4).

**Table 4: Theft crimes in Babylon province during the year 2021.**

	Month	Average Temperature	Number of Crimes	Percent %
1.	January	11.1	118	12.7
2.	February	14.4	102	10.8
3.	March	19	82	8.8
4.	April	24.1	75	8
5.	May	29.7	45	4.8
6.	June	33.6	67	7.2
7.	July	35.8	51	5.4
8.	August	35.7	35	3.7
9.	September	31.9	62	6.6
10.	October	26.4	70	7.5
11.	November	18.1	98	10.5
12.	December	12.3	132	14
13.	Total	24.3	937	100%

The statistics in the above table affirm the accuracy of the relationship between crime and the prevailing climatic factor. They confirm that the extended winter months from December to February are the months during which the highest number of committed theft crimes in Babylon province was recorded, surpassing the numbers for the rest of the year.

During the winter months of December, January, and February, a consecutive series of theft crimes were recorded, numbering (132, 118, and 102 crimes) respectively, with corresponding percentages of (14, 12.7, and 10.8 %) for the same months in order. In contrast, during the spring months, numbers were recorded as (82, 75, and 45 crimes) respectively, with percentages of (8.8, 8 and 4.8 %) for the same months in order.

As for the summer months of June, July, and August, the recorded numbers were (67, 51, and 35 crimes) respectively, with corresponding percentages of (7.2, 5.4, and 3.7 %) for the same months in order. On the other hand, during the autumn months of September, October, and November, the recorded numbers were (62, 70, and 98 crimes) respectively, with



percentages of (6.6, 7.5, and 10.5 %) for the same months in order.

### **3.6 Theoretical Insights**

**Three theoretical perspectives were discussed: natural theory, social theory, and psychological organic theory:**

- The Natural Theory: Advocates of this theory emphasize that the relationship between climatic characteristics and the phenomenon of crime is a direct one. They assert that an increase in temperature leads to human activity and vitality. As a result, individuals become more prone to emotional reactions and impulsiveness, with a great inclination towards the opposite sex. Therefore, individuals often tend to commit crimes of assault on individuals and dignity in these hot climatic conditions (Iraq Climate Atlas, 2012).
- Social Theory: Advocates of this theory argue that climate change does not directly impact the phenomenon of crime, but rather mediates between them are social factors. The increase in temperature during the summer, for instance, compels people to spend more time outside their homes, thereby increasing opportunities for interaction and contact in public places like parks and gardens. This creates conducive conditions for conflicts and altercations, which may culminate in the commission of a crime. Furthermore, the summer season coincides with annual vacations, during which individuals disengage from their usual work commitments. This idleness might lead some individuals to channel their energies into committing crimes of assault against others. Additionally, the rising summer temperatures induce feelings of fatigue and thirst in individuals, prompting them to consume alcoholic beverages. Excessive consumption of such beverages can push individuals towards committing acts of aggression and violence (Ministry of Transport, 2019).
- The psychological organic theory: Advocates of this theory posit that the relationship between climatic fluctuations and the phenomenon of crime is an indirect one. Its explanation lies in the impact these fluctuations have on the functioning of the human body's organs and also on the psychological state of individuals. This theory has primarily focused on crimes of assault on personal dignity, which peak in the spring season, after the failure of the two previous theories to provide an explanation for these crimes (Babylon city province Police Command, 2021).

### **4. Conclusion**

This study in Iraq's central region highlights a clear correlation between temperature and crime rates:

- 1- Murder Crimes: During hot summer months, murder rates significantly rise, reaching their peak in July when temperatures are highest. This suggests that elevated temperatures can trigger increased aggression and violent behavior.
- 2- Theft Crimes: Theft crimes, including burglary, tend to increase during cold winter months. Longer nights and reduced outdoor activity create favourable conditions for theft. Economic factors, such as job scarcity, likely contribute to this trend.
- 3- Statistical Analysis: Statistical analysis confirms these trends, showing a strong direct correlation between temperature and murder rates and a strong inverse correlation with theft rates.
- 4- Theoretical Insights: The study explores three theoretical perspectives: natural theory, social theory, and psychological organic theory. These perspectives shed light on the complex interplay of natural, social, and psychological factors in the relationship between climate and crime.
- 5- Finally, this research underscores the impact of climate on criminal behaviour, with temperature fluctuations playing a significant role. Recognizing these seasonal variations can inform more targeted crime prevention strategies and resource allocation.

### **5. Recommendations**

1. Implement scientific programs aimed at safeguarding society from crime in all its forms.
2. The importance of caring for crime victims and providing necessary services to them, assisting them in overcoming the harm they suffered as a result of being subjected to crimes such as murder or theft.
3. Intensify security awareness and guide public opinion through various media outlets towards the victims' families in order to enhance the sense of security among various segments of society.

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