The Relationship Criminal Behaviour Towards Quality of Life Based on Weather Changes: A Systematic Literature Review

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Abstract
Crime has been one of the most significant and interesting issues to be highlighted, both locally and internationally. Due to the crime rate, crime has become a severe concern in all communities, affecting the quality of life based on weather changes. Humans have the right to get a good quality of life and security. However, research regarding the quality of life towards the relationship between crime and weather changes is quite challenging because there is still a lack of references regarding the topic. There is still insufficient research that have comprehensively explored the relationship between criminal behaviour and quality of life based on weather fluctuations. Therefore, this study aims to conduct a systematic literature review on the relationship between criminal behaviour and weather changes towards the quality of life. This study's methodology incorporated numerous research designs, and its evaluation was based on the ROSES publication standard (Reporting Standard for Systematic Evidence Synthesis). This study selected papers from three databases: Scopus, Web of Science, and Google Scholar. The review process includes four main methodological steps, guided by review protocol, searching strategies based on identification, screening, and eligibility, followed by quality of appraisal, data abstraction, and analysis. Three themes were found based on thematic analysis: (a) crime, (b) weather, and (c) quality of life contribute to creating a relationship between criminal behaviour and weather changes towards the quality of life. This study found that criminal behaviour is related to the quality of life based on weather changes. The significant findings explained the study exploits the correlation and significance of the relationship between crime based on weather and the indicator of the quality-of-life domain. It shows the previous studies are insufficient for identifying the correlation between the quality of life and crime based on weather changes. Furthermore, weather change has an indirect link to criminal behaviour. However, there is still a limitatioof

study on previous papers on the relationship between criminal behaviour and quality of life-based on weather changes. The study would like to propose future research focus on crime prediction using a different approach, such as crime prediction of the criminal acts based on weather and how it affects the quality of life of people and communities.

Introduction

Crime has become one of the variables influencing the quality of life in the urban areas. Since it jeopardises public safety and quality of life, crime has become a severe social problem and a burning issue in all communities (Ghani, 2017a). Human beings have the right to a better quality of life and should be given necessities and protection in all aspects of life. Crime is a public wrong, and it will undoubtedly be seen as a severe disease in the society. As a result, some people are afraid to leave their houses for fear of being robbed. Whenever we watch international news broadcasts on the internet, television, or other forms of mass media, we frequently encounter references to crimes because hundreds of crimes are perpetrated almost every day worldwide. Criminal activity is an unavoidable social issue in most countries (Muhammad et al., 2021).

Forecasting criminal activity is essential in ensuring the country's prosperity and human well-being. As a result, crime forecasting is important to determine the government's position. Research on crime prediction has been growing continually. Criminal activity and the factors that contribute to it have received a lot of attention. Weather is one of the factors that is thought to influence criminal activity. The findings of previous research and studies have concentrated on the pattern of criminal activity without considering weather factors and data. Weather is frequently defined in terms of the characteristics of the atmosphere over a shorter amount of time, such as humidity, rainfall/precipitation, wind speed and temperature, and air pressure. Crime and weather are related in social science, history which dated back to the nineteenth century, and social statisticians' work Quetelet (1984), as cited by (Lynch et al., 2020). The weather has various psychological and behavioural effects on humans, such as making individuals feel more energised, encouraging people to go outside, or leading them to choose to stay indoors, among other things. Therefore, the crime prediction is very important to identify the crime pattern and support decision making in crime prevention Noor & Ab Hamid (2016), as cited by (Janardhanarao et al., 2020).

Thus, the main purpose of this systematic literature review paper is to identify the related-work studies or reviews that date back to 2010 and are connected to the keyword strategy that we used (further details in the "study selection" section). The research objectives are to systematically review crime prediction criminal acts based on the weather towards the quality of life and the issues and challenges faced in the existing studies. This review will help the researcher to gain state of the art methods of crime prediction based on weather changes and help highlight the research gap. Compared to prior studies, this one differs in that the researcher employed and applied the weather as a variable to investigate criminal activity patterns. This study is considered significant as the findings will offer other researchers the knowledge of which categories of crime prediction measures and techniques and challenges have been covered in the previous research studies and help identify gaps.

Literature Review
Review Protocol-ROSES
The SLR is guided by ROSES (Reporting Standards for Systematic Evidence Syntheses). Haddaway et al (2018) developed ROSES, which aims to strengthen and preserve good methodologies to create SLRs by increasing clarity and ensuring the survey's quality. However, this survey is centred on the relationship crime behaviour based on weather changes towards the quality of life. It was developed specifically for environmental management. This survey protocol is in line with the current survey as it was designed to match the nuances in various situations and research on synthesis methods (Haddaway et al., 2018).

Furthermore, this paper includes explanation on systematic strategies searching, consisting of three sub-processes: identification, screening, and eligibility. The quality appraisal process assesses the quality of the selected articles where the strategy applied to ensure the quality of the articles to be reviewed will be justified (Shaffril et al., 2020). Before the articles were included in the reviews, the value of each selected article was decided. Finally, the chosen articles were managed through several stages that involved data abstraction and analysis.

Systematic Searching Strategies
Identification, screening, and eligibility are the three key procedures in systematic searching methods (refer to Figure 1). Figure 1 contains three phases for the selection of papers.

Identification
Identification is a phase to search any synonym related to terms and variation for the study's main keywords, crime prediction, weather, and quality of life. The identification process provides more options for the selected database to search for more related articles for the review (Shaffril et al., 2020). The number of articles and papers selected in the Identification phase on five keywords related to crime prediction acts was based on the weather towards the quality of life (i.e., crime, weather, behaviour, and quality of life). In addition, the researcher added six more spatially explicit terms (i.e., violent crime, property crime, crime prediction model, temperature, climate, well-being).

The researcher enriched the existing keywords and developed a search string (based on Boolean operator, phrase searching and truncation) on the two main databases, Scopus, and Web of Science by Clarivate Analytics (WoS). According to the study, an effective search procedure should incorporate various academic search databases, with searches conducted at the greatest level of detail possible (Kounadi et al., 2020). According to Neal Robert Haddaway et al (2015), that Google Scholar (GS) was chosen as an additional search engine database to support their research and realised GS's potential to operate as a supporting database during the systematic literature review process.

Haddaway et al (2015) discovered that when looking for specific articles, the majority of the literature identified by Web of Science was also found through GS. However, when they used equivalent search keywords in Web of Science and GS (10%–67% overlap), they discovered GS lacked significant material in five of the six case studies (Kounadi et al., 2020). If the

research is more interdisciplinary, a more comprehensive science database, such as Web of Science, is likely beneficial in researching database combinations. Regarding Google Scholar, researchers have various perspectives on whether it has useful materials for an interdisciplinary review. In addition, this paper has also developed through manual searching strategies (based on snowballing method). The searching process in these three databases, namely Scopus, Web of Science and Google Scholars, have resulted in a total of 125 (n=125) papers (Refer Table 1).

Table 1

The selected database used for the search string

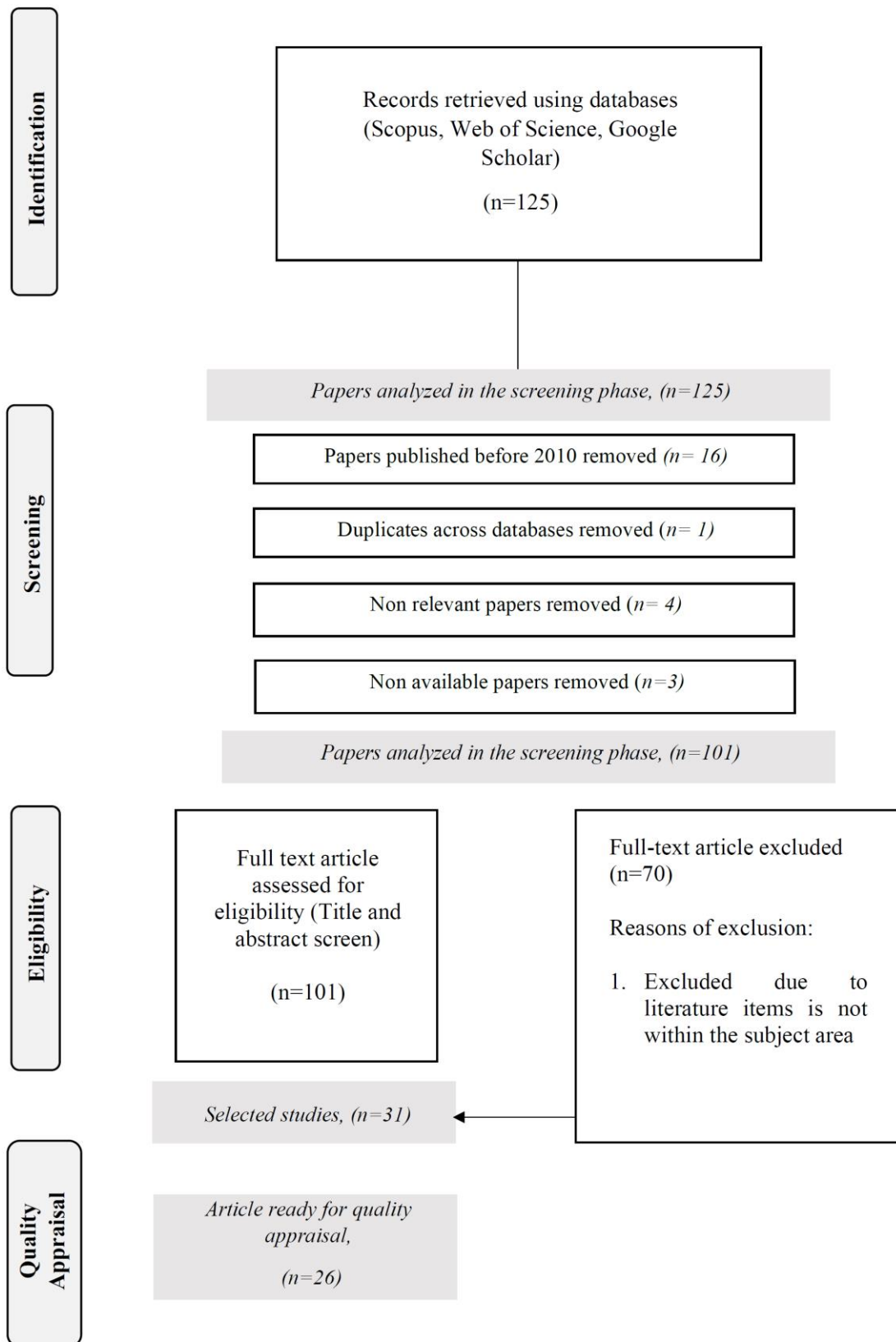| Database	String
Scopus	TITLE-ABS-KEY (("Crime" OR "Violent Crime" OR "Property Crime") AND ("Weather" OR "Climate" OR "Temperature" OR "Rainfall" OR "Humidity") AND ("Quality of life" OR "Well-Being" OR "Behaviour"))
Web of Science	TS=(("Crime" OR "Violent Crime" OR "Property Crime") AND ("Weather" OR "Climate" OR "Temperature" OR "Rainfall" OR "Humidity") AND ("Quality of life" OR "Well-Being" or "Behaviour"))
Google Scholar	allintitle: "Crime" OR "Violent Crime" OR "Property Crime") ("Weather" OR "Climate" OR "Temperature" OR "Rainfall" OR "Humidity") ("Quality of life" OR "Well-Being" OR "Behaviour)

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Identification

    ┌──────────────────────────────────────┐
    │  Records retrieved using databases   │
    │  (Scopus, Web of Science, Google     │
    │            Scholar)                  │
    │                                      │
    │            (n=125)                   │
    └──────────────────────────────────────┘

Screening

    ┌──────────────────────────────────────┐
    │ Papers analyzed in the screening     │
    │         phase, (n=125)               │
    └──────────────────────────────────────┘

    ┌──────────────────────────────────────┐
    │ Papers published before 2010 removed │
    │              (n= 16)                 │
    └──────────────────────────────────────┘

    ┌──────────────────────────────────────┐
    │ Duplicates across databases removed  │
    │              (n= 1)                  │
    └──────────────────────────────────────┘

    ┌──────────────────────────────────────┐
    │   Non relevant papers removed (n= 4) │
    └──────────────────────────────────────┘

    ┌──────────────────────────────────────┐
    │  Non available papers removed (n=3)  │
    └──────────────────────────────────────┘

    ┌──────────────────────────────────────┐
    │ Papers analyzed in the screening     │
    │         phase, (n=101)               │
    └──────────────────────────────────────┘

Eligibility

    ┌─────────────────────┐      ┌──────────────────────────────┐
    │ Full text article   │      │ Full-text article excluded   │
    │ assessed for        │      │ (n=70)                       │
    │ eligibility (Title  │      │                              │
    │ and abstract screen)│      │ Reasons of exclusion:        │
    │                     │      │ 1. Excluded due to           │
    │    (n=101)          │      │    literature items is not   │
    │                     │      │    within the subject area   │
    └─────────────────────┘      └──────────────────────────────┘

    ┌──────────────────────────────────────┐
    │  Selected studies, (n=31)  ◄─────────┘
    └──────────────────────────────────────┘

Quality Appraisal

    ┌──────────────────────────────────────┐
    │  Article ready for quality appraisal,│
    │              (n=26)                  │
    └──────────────────────────────────────┘
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Figure 1 The phase of the study selection process

Screening

This study screened all the 125 selected article by choosing the criteria for articles selection which is done automatically based on the sorting function available in the database. The main reason is that during the screening phase, papers published before 2010 need to be excluded first. Second is to remove duplicates across the three selected databases (Scopus, WoS and GS). Third, is to evaluate all papers in order to exclude those considered "irrelevant". Finally, the paper will be filtered as non-available paper. This assessment of screening process defined only "relevant" documents as they contain three components which is related to crime, weather, and quality of life.

Eligibility

Eligibility was the third process in the systematic search strategy. It is like a second screening process of manually checking the rest of the paper to classify based on the title, abstract, or entire article content to check whether the paper meets the pre-determined entry criteria. This process excluded 70 articles because literature items are not within the subject area and not aligned with this paper's objectives. Figure 1 displays the research process flow and the total evaluation of the last article, which was 31 articles.

Quality Appraisal

Next, is the quality appraisal. At least two experts are required to review these selected articles in the field or researchers themselves Dunwoody, Krenzischek, Pasero, Rathmell, and Polomano, (2008) to ensure the quality of the articles content. Articles should be categorised into the highest, medium, and low quality (Mohamed Shaffril et al., 2020). Articles that were classified as having high and medium quality should be then reviewed. The researcher organised the articles according to the rating method as to determine their ranking quality. To ensure this, the researcher must mutually agree with the categories of the articles that were categorised into high, medium, and low ranks. Any disagreements should be discussed before deciding on the inclusion or exclusion of articles for review. This process made the remaining 26 articles eligible to be reviewed.

Data Abstraction

After completing all the phases stated in the guideline Systematic Literature Review Shaffril et al (2020), the review proceeds to the final stage, data abstraction. The data were retrieved first from the abstract and then from the full (in-depth) article to find applicable themes and subthemes. A quantitative study was conducted using content analysis to identify themes relating to criminal behaviour and weather change towards the quality of life. The subthemes were then organised around the themes, which were guided by typology by the researcher.

Result and Discussion

The relationship of criminal behaviour towards the quality of life based on weather changes

The review managed to obtain 26 selected articles. The three themes were developed based on the thematic analysis, namely, a) crime, b) weather and c) quality of life. Following a deeper examination of the topics, ten sub-themes emerged. A conceptual framework has been developed based on the discovered dependent variable and independent variable to better understand the relationship between crime-weather and quality of life. Establishing this Conceptual Framework evolved from a literature review that focused on crime prediction based on weather by considering the quality of life (dependent variable). The independent

variables are categorised into types of crime and types of weather. In this study, for dependent variable is considering the quality of life. A conceptual framework and variable matrix table were developed by considering the categorisation elements and sub-themes. An overview of the 26 selected papers with information about the crime, weather and quality of life details is shown in Table 1.

Quality of Life
The first framework is quality of life. Quality of life is popularly used in various contexts, including international development, healthcare, political science, architecture, education, recreation and leisure, and social longing (Din et al., 2013). The rise of urban populations globally, due to growth in population and urbanisation, has increased the relevance of urban quality of life for a rapidly expanding number of people. Simultaneously, cities' physical characteristics have been adapted to accommodate new populations (Mouratidis, 2021). A better understanding of the relationship between the quality of urban life and crime and weather can significantly determine current and future urban development.

The quality of life has been classified into seven dimension; (a) environmental (Bracy et al., 2014; Mohit, 2013a; Mouratidis, 2021; Din et al., 2013); (b) physical (Bracy et al., 2014; Mohit, 2013a); (c) mobility (Bracy et al., 2014; Din et al., 2013); (d) social (Corcoran & Zahnow, 2021; Ghani, 2017a; Mohit, 2013a; Soh, 2012); (e) psychological (Corcoran & Zahnow, 2021; Kitchen & Williams, 2010; Lynch et al., 2020; Din et al., 2013; Trujillo & Howley, 2021); (f) economic (Ghani, 2017a; Din et al., 2013); (g) political (Ghani, 2017a; Mohit, 2013a; Din et al., 2013; Soh, 2012). Four out of seven dimension have been chosen to be applied in this study namely, (a) physical (Bracy et al., 2014; Mohit, 2013a); (b) psychological (Corcoran & Zahnow, 2021; Kitchen & Williams, 2010; Lynch et al., 2020; Serag El Din et al., 2013; Trujillo & Howley, 2021); (c) environment (Bracy et al., 2014; Mohit, 2013a; Mouratidis, 2021; Serag El Din et al., 2013); (d) social (Corcoran & Zahnow, 2021; Ghani, 2017a; Mohit, 2013a; Soh, 2012). To address the relationship between quality of life and crime based on weather changes, Figure 2 illustrate a conceptual framework domain related to crime and weather.

The relationship between quality of life and crime
Crime will have psychological and physical impacts on everyone involved, including the victims, reducing their overall quality of life. There would be uneasiness in society, which would not be perfect for the urban dwellers' social development. investigated the relationship between crime and quality in urban geography and urban studies. The study examined how residents' perceptions of crime and safety had affected their quality of life in the neighbourhood around the country. Meanwhile, a study by Soh (2012) on *Crime and Urbanisation; Revisited Malaysian Case,* Soh looked into the cause and effect between crime and urbanisation relationship, i.e., how urbanisation can lead to crime. Soh's study shows that the effect of crime regarding urbanisation growth could lead mental and psychological suffering, and quality of life could also decrease.

The next study was done by Ghani (2017) on *A Comparative Study of Urban Crime Between Malaysia and Nigeria.* The researcher also relates crime with urbanisation factors. In Ghani's study, the key factors that lead or persuade criminal behaviours in urbanisation for potential offenders include unemployment, poverty, bad governance, and weaknesses in law enforcement or crime control agencies. The study also concludes that criminal activities in

urban areas can be terrifying in many parts of the world. Where the urban areas are crime prevalent, it creates social problems that may threaten the safety and lives of people. People will be living in a surrounding environment that excludes the fear of crime feeling, and it led to a low quality of life. Furthermore, a study by Mouratidis (2021), that look into the built environment field in terms of safety aspect is positively contributing to city's satisfaction, it may trigger people's emotional reactions via its influence on perceptions of safety (Mouratidis, 2021).

Ishak & Bani (2017), in their article "Determinants of Crime in Malaysia: Evidence from the Developed States", explained that time spent combating criminal activity should be more productive and improve the quality of life. This study, however, mainly focused on the socioeconomic factor as a variable to relate with the crime rate. The next paper is "Quality of Life in Natural and Built Environment-An Introductory Analysis" written by (Mohit, 2013a). Mohit solely emphasised on the quality of life in built environment scope and how the quality of life and built-environment element are related with each other. In this study, the researcher explained how the quality of life and crime could be related by measuring the level of satisfaction of quality of life in terms of the crime aspect. However, the researcher did not explain the relationship between quality of life and crime in more detail.

Next is an articles by Bracy et al (2014) entitled "Is The Relationship Between the Built Environment and Physical Activity Moderated by Perceptions of Crime and Safety?" that looks into the relationship between quality of life and crime, and more specifically the relationship between safety concerns and physical activity. Thus, the study focussed on the neighbourhood areas to study the quality of life to examine the relation between built environment and safety concern. The study's finding was significant as it shows correlation of perceived safety factor or their interactions with objective built environment factors (Bracy et al., 2014).

The relationship between quality of life and weather
Weather is widely known to impact the environment, but it is uncommon to notice how weather changes might affect crime patterns and life quality. It is argued that weather change will increase strain, reduce social control, weaken social support, foster belief favourable to crime, contribute to crime traits, increase specific opportunities for crime and create social conflicts (Agnew, 2012).

A well-documented study by Hu et al (2017) on *"Impact of Climate Variability and Change on Crime Rate in Tangshan, China"*, has demonstrated climate's impact on human conflicts, including large-scale conflicts (e.g. civil conflict, warfare and human crisis) and crime. The next study on *"Crime, Weather and Climate Change"* conducted by Ranson (2014) stated that the weather has a strong causal effect on the incidence of criminal activities. Individuals are more likely to exhibit aggressive or violent behaviour towards others if the ambient temperatures are less consequential. Ranson (2014) also indicated that weather may directly impact people's psychological encouragement to commit violent crimes. There is a correlation between monthly weather patterns and crime rates across various offences; showing that higher temperatures would increase crime rate (Ranson, 2014).

In addition, the study on *"The Effects of Weather on Crime"* by Horrocks and Menclova (2011) indiated that the weather could be used as an instrumental variable in analysing crime's effect on several variables such as property prices and quality of life indices, economic growth, etc. Besides, some scholars have examined the weather-crime association from an alternative perspective, suggesting that heat may induce psychological changes that facilitate intolerance and aggression leading to a greater violent crime (Corcoran & Zahnow, 2021; Ranson, 2014). Meanwhile, Lynch et al (2020) explained that high temperatures should simulate aggressive behaviour, stress, or disruptions in usual routines, resulting in more violent crime. Thus, climate-related stress may also encourage low self-control. Those with low self-control are more susceptible to climate-related stress, potentially increasing the chance of criminality among some people.

The relationship between quality of life and crime based on weather changes
The article on environment and behaviour entitled *"The Effect of Weather on Assault"* by Corcoran and Zahnow (2021) discusses how local weather conditions can explain geographic variations in assaults. Corcoran and Zahnow (2021) also looked into the studies conducted by Cohen and Felson (1979); Cohn and Rotton (2000); Horrocks and Menclova (2011), and also from the first sociologist Adolphe Quetelet in the 1800s in setting up their research regarding the relationship between crime and weather. Corcoran & Zahnow (2021) used micro-geographic crime and weather data as their variables to examine the location and timing of police-reported assaults. The first-stage analysis to estimate a negative binomial multilevel regression model with random effect. The second-stage analysis of the approach is to investigate the hypothesis that temperature combination has a moderate effect on crime. The research finding was an interesting comparison to existing crime-weather studies.

On the other hand, extreme temperatures were not a significant predictor of assault. After controlling seasonal variables, Corcoran and Zahnow (2021) found that higher daily temperatures are associated with an increased tendency for assault at the neighbourhood level. According to findings, climate change and human behaviour are closely linked to the quality of life. Lynch et al (2020) conducted a study titled "Climate Change, Temperature and Homicide; A Tale of Two Cities, 1895-2015". Their research involved the argument about the correlation between climate change and significant increase in violent crime. To examine the relationship between crime-climate, the researchers first determined the appropriate analysis level for assessing that relationship. Lynch et al (2020) asserted that there was no association between long-term changes in temperature and annual homicide rates. It should not be perceived in such a way as it would dismiss previous studies' empirical findings of an association between temperature.

On the other hand, Kitchen and Williams (2010) discovered that crime-related issues had a relatively minor impact on people's satisfaction on the quality of their lives and their happiness. This particularly true when the individual's actions negatively impact subjective well-being and personal safety than property and other domestic crimes. Ghani (2017) and Soh (2012) stated that urbanisation is a crucial factor that causes criminal behaviour to reduce the quality of life. In other words, the ultimate effect of urbanisation from rapid growth seems to be the cause of crime. In another study, Wawrzyniak et al (2018) indicated that everyday conditions, such as weather, had significantly affected the present history of human behaviour in the environment and society, as well as criminal or common illegal behaviour.

Previous researchers stated that the relationship of quality of life between crime and weather from the physical environment aspect is the weather's effect of change or response to human behaviour (Jung et al., 2020a). From the standpoint of researchers and scholars in the field of criminal and aggressive behaviour, the impact of weather changes has drawn interest and attracted the interest of both scientists and the citizens. In the nineteenth century, the study found a relationship between hot temperatures and aggression to justify the rise in violent behaviour in the summer (Jung et al., 2020a).

From the Negative Affect Escape Model (NAEM) theory perspective, human aggression rises in response to increased discomfort, but only when in negative relationship (Hu et al., 2017a). According to NAEM theory, aggression is facilitated by the discomfort caused by moderately high and low temperature. Hu et al (2017) argued that heat stress in terms of General Affective Aggression Model (GAAM) theory may also contribute to at least part of the relationship between rape and temperature. Higher temperature may increase human discomfort and may lead to crime. Meanwhile, the theory of the Routine Activity opposite to NAAM and GAAM theory because there are three necessary conditions to committing crime in the Routine Activity Model theory, namely a) a potential offender with the capacity to commit a crime; b) a suitable target or victim; and c) the absence of guardians capable of protecting and preserving targets and victims (Hu et al., 2017a). The most frequent use of Routine Activity is to explain the relationship between weather conditions and crime (Corcoran & Zahnow, 2022).

Conceptual Framework
Based on the systematic literature review, this research proposes a conceptual framework as illustrated in Figure 2. The meaning of "conceptual framework" refers to the form of the variables' conceptual basis in terms of literature-based understandings and the researcher's operational definitions. This conceptual framework is the researcher's idea on how the research problem will have to be explored. This conceptual framework is founded on the theoretical framework, which lies on the broader resolution scale. The theoretical framework is based on established theories that incorporate the results of numerous research studies into how-
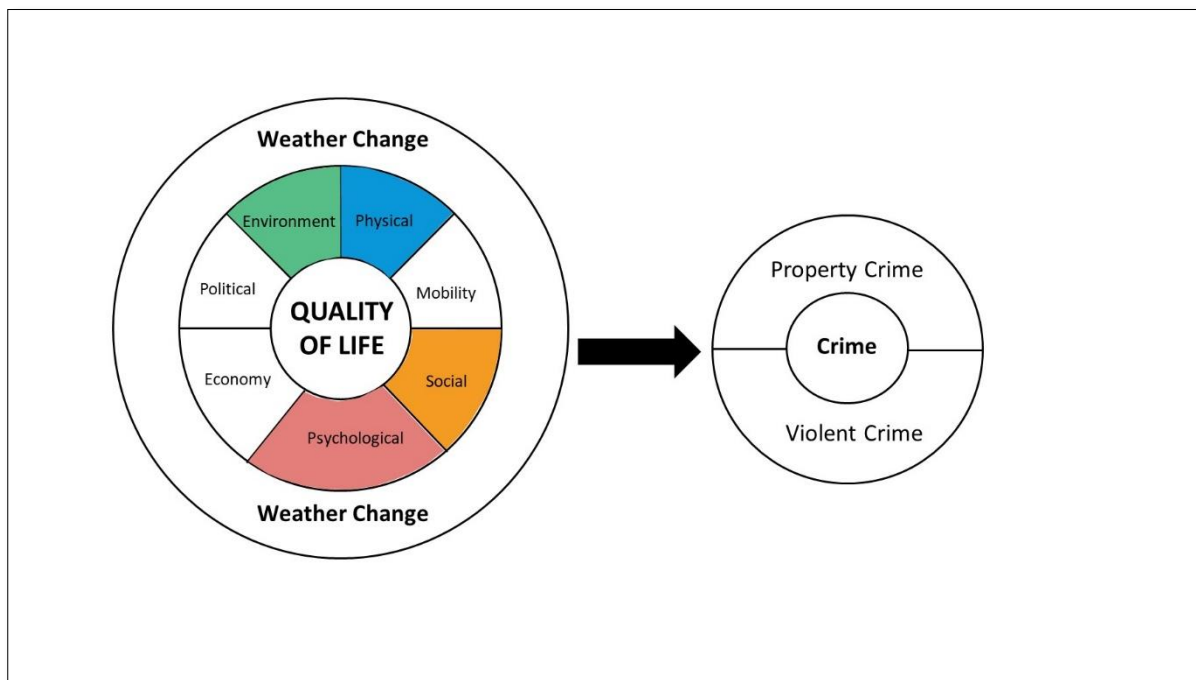
Figure 2 Conceptual framework of the study

Table 2
An overview of the 31 selected papers with information about the crime, weather and quality of life

| Author | Study Area | City | Year of Publication | Types of Crime | | Types of Weather | | | Quality of Life | | | Data Collection |
				Violent Crime	Property Crime	Rainfall	Temperature	Humidity	QoL + Crime	QoL+ Weather	QoL+ Crime+ Weather	Qualitative / Quantitative
(Kitchen & Williams, 2010)	Saskatoon, CND	City	2010	✓					✓			Qualitative/ Quantitative
(Horrocks & Menclova, 2011)	NZ	Country	2011	✓	✓	✓	✓					Quantitative
(Soh, 2012)	MYS	Country	2012						✓			Quantitative
(Agnew, 2012)	USA	Country	2012	✓	✓	✓	✓					Quantitative
(Murataya, 2013)	USA	Country	2013	✓	✓	✓	✓	✓				Quantitative
(Mohit, 2013b)	MYS	Country	2013						✓			Quantitative

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Author	Location	Scope	Year							Method
(Ranson, 2014)	USA	Country	2014	✓			✓			Quantitative
(Hsiang, Hsiang, Burke, & Miguel, 2014)	NRW, NGR	Country	2014	✓						Quantitative
(Chen, Cho, & Jang, 2015)	Chicago, USA	City	2015	✓			✓			Quantitative
(Williams, Hill, & Spicer, 2015)	NZ	Country	2015	✓			✓			Quantitative
(Habibullah, 2017)	MYS	Country	2017	✓		✓	✓			Quantitative
(Ishak & Bani, 2017)	Selangor, K.L, P.Pinang, MYS	State	2017		✓				✓	Quantitative
(Ghani, 2017b)	MYS, NGR	2017	2017	✓	✓				✓	Quantitative / Qualitative
(Hu et al., 2017b)	Tangshan, CHN	City	2017	✓			✓			Quantitative
(Shah, 2017)	Vancouver, CND	City	2017		✓					Quantitative
(Lin et al., 2017)	TWN	Country	2017		✓					Quantitative
(Bracy et al., 2014)	Washington, DC USA	City	2018						✓	Quantitative
(Wawrzyniak et al., 2018)	PLD	Country	2018	✓			✓			Qualitative& Quantitative
(Hajela et al., 2020)	San Francisco, USA	City	2020		✓					Quantitative
(Lynch et al., 2020)	New York & Landon, USA & UK	City	2020	✓		✓	✓	✓	✓	Quantitative

Author	Location	Type	Year										Method
(Jung, Chun, & Griffith, 2020b)	Seoul, KS	City	2020	✓			✓						Quantitative
(Lersch & Hart, 2020)	UK	Country	2020	✓			✓						Qualitative
(Mouratidis, 2021)	Norway	Country	2021							✓			Quantitative
(Trujillo & Howley, 2021)	Urban Torrid Zone, CO	City	2021	✓		✓	✓	✓					Quantitative
(Corcoran & Zahnow, 2021)	Brisbane, AUS	City	2021	✓		✓	✓						Qualitative
(He & Zheng, 2021)	Philadelphia, USA	City	2021	✓	✓								Quantitative

phenomena occur. This conceptual framework comprises three variables which are dependent variable (quality of life) and two independent variables (crime and weather). Figure 2 presents the Conceptual Framework of the study. The dependent variable includes quality of life which is adapted from Bracy et al (2014); Kitchen and Williams (2010); Lynch et al. (2020); Mohit (2013a); Mouratidis (2021); Soh (2012). These previous scholars employed this variable to examine the relationship between quality of life. The independent variables, on the other hand, include the types of crime and types of weather that become the parameter to examine the relationship of crime based on weather changes towards quality of life.

More recent research has correlated factors including the time of day, the weather, the location, and census statistics like the area's human development index to changes in crime and weather (Hajela et al., 2020). Some scholars attempted to categorise crime by categorising it into two types, namely violent crime and property crime Ghani (2017a); Habibullah (2017); Soh (2012) and for weather such as humidity, rainfall and temperature over a short time (Lynch et al., 2020).

Conclusion and Recommendation

In this paper, nine (9) domains were identified based on the findings of the systematic literature review and classified into three (3) key characteristics. They are namely, (a) quality of life; (b) crime; and (c) weather. These domains were thoroughly identified using relevant data from previous studies and online databases. As a result, by examining the relationships between quality of life and crime-weather based on the evolution of the research and related publications over the last 12 years, the researcher can transition from crime prediction based on weather changes to quality life using reliable and updated sources.

Thus, the researcher exploits the correlation and significance of the relationship crime based on weather changes for quality of life. The previous studies mentioned some of the major studies on the variable of crime and weather and how it affects the quality of life. These studies show evidence of the correlation between crime and weather towards the quality of life. Unfortunately, the above studies are insufficient for identifying the correlation between the quality of life and crime-weather changes. Studying current crime pattern data, weather data, and level satisfaction of quality of life should show even more evidence of a correlation and significance between the quality of life, crime, and weather. As a recommendation, this research would like to propose future research focus on crime prediction using a different approach such as forecasting the criminal activity patterns based on weather and how it affects quality of life.

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Author Contributions
All authors contributed to the design of the research, the write-up. All authors have read and approved the final manuscript.

Conflict of Interest
The authors declare no conflict of interest.

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