



## Environmental Factors Affecting Incidence of Crime In a High-Risk Barangay of a Commercial Town

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# *Environmental Factors Affecting Incidence of Crime In a High-Risk Barangay of a Commercial Town*

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**Abstract—** This study investigates the impact of environmental factors on crime incidence in Barangay Roxas, Solano, Nueva Vizcaya, a high-risk area in a commercial town. Using a quantitative correlational design, data were collected from 400 respondents, including barangay officials, tanods, PNP officers, and residents from Purok Acacia, Purok Almaciga, and Purok Mahogany. The study aimed to identify environmental factors associated with crime, analyze their relationship with property and violent crimes, and provide recommendations for effective crime prevention strategies. Findings showed that socio-economic and physical environmental factors were moderately linked to crime rates, with mean scores of 3.21 and 3.12, respectively. Crime incidence was low for crimes against persons (mean=1.59) and property crimes (mean=1.69), while crimes against society were very low (mean=1.41). Significant relationships were observed between demographic factors (e.g., sex and education) and crime incidence. Socio-economic conditions also significantly correlated with property crimes. The study concludes that environmental factors, especially socio-economic conditions, play a critical role in influencing crime patterns in high-risk commercial areas. It provides evidence-based recommendations to help policymakers and community stakeholders design targeted interventions to improve public safety.

**Keywords—** Environmental factors, crime incidence, socio-economic conditions, physical environment, commercial town

## I. INTRODUCTION

In recent years, interest has surged in the relationship between environmental factors and crime incidence, prompting research from scholars, policymakers, and communities globally. Understanding how environmental conditions influence criminal behavior is crucial for developing effective crime prevention strategies and enhancing community safety.

This recognition has led to extensive investigations across diverse settings, from urban centers to rural areas.

Research has consistently highlighted the significant impact of environmental factors on crime rates. For instance, Dugato and Van Dijk (2018) examined the role of social capital in fostering community resilience, while Smith et al. (2023) advocated for Crime Prevention Through Environmental Design (CPTED) principles to mitigate crime opportunities. These studies emphasize the value of incorporating environmental considerations into crime prevention strategies, which can be tailored to address the specific challenges faced by Barangay Roxas.

Local studies in Barangay Roxas, Solano, Nueva Vizcaya, have focused on environmental factors contributing to elevated crime rates, particularly in areas like Purok Almaciga, Purok Acacia, and Purok Mahogany. Crime statistics from the Philippine National Police indicate that Barangay Roxas consistently reports the highest crime rates in the municipality, highlighting the urgent need for targeted interventions. By analyzing data from various sources, researchers aim to uncover root causes and inform evidence-based policies to foster a safer and more resilient community.

## II. METHODOLOGY

### *Research Design*

This research study used a correlational research design. Data were gathered through a survey and variables were correlated to obtain the objectives of the study. According to Cresswell (2012), a correlation is a statistical test to determine the tendency or pattern for two (or more) variables or two sets of data to vary consistently.

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Identify applicable funding agency here. If none, delete this text box.

### Population and Sample of the Study

The study's respondents included barangay officials, tanods, PNP officials, and residents from Purok Acacia, Purok Almaciga, and Purok Mahogany in Barangay Roxas, Solano, Nueva Vizcaya, with a total sample size of 400 respondents. The sample was selected using purposive sampling, taking into account their distribution across different profiles relevant to the study's objectives

### Collection Methods

The study utilized a structured questionnaire developed by the researchers, based on relevant literature. After securing approvals, crime rate data from the Municipality of Solano were gathered to identify the barangay with the highest incidence, leading to the selection of Barangay Roxas. The questionnaire was validated by experts, and data were collected from 400 respondents with informed consent. Analysis focused on correlations between environmental factors and crime incidence, resulting in conclusions and recommendations for crime prevention strategies.

## III. RESULTS AND DISCUSSION

### A. Profile of the respondents

TABLE I. FREQUENCY AND PERCENT DISTRIBUTION OF THE RESPONDENTS IN TERMS OF SEX

Sex	Count	% of Total
Male	184	46.00%
Female	216	54.00%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Table 1 presents the distribution of respondents by sex, showing that there were more male respondents (n = 216 or 54.00%) than female (n = 184 or 46.00%). This trend reflects the ongoing pattern of lower female participation in surveys. Supporting this, a Pew Research Center study noted that young women are more likely to be enrolled in college than young men, and women aged 25 and older are more likely to hold a four-year degree.

TABLE II. FREQUENCY AND PERCENT DISTRIBUTION OF THE RESPONDENTS IN TERMS OF AGE

Age	Count	% of Total
20-29	80	20.00%
30-39	173	43.30%
40-49	105	26.30%
50-59	21	5.30%
60-69	10	2.50%
70 and above	11	2.80%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Table 2 displays the age distribution of respondents, revealing that 43.30% are aged 30-39 (f=173), 26.30% are 40-49 (f=105), 20% are 20-29, 5.30% are 50-59 (f=21), and 2.80% are 70 and above. The median age is 35, indicating that most respondents are in their thirties. This aligns with Johnson et al. (2020), which found a similar majority in the 30-39 age group.

TABLE III. FREQUENCY AND PERCENT DISTRIBUTION OF THE RESPONDENTS IN TERMS OF CIVIL STATUS

Civil Status	Count	% of Total
Single	126	31.50%
Married	10	2.50%
Separated	260	65.00%
Widowed	4	1.00%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Civil Status	Count	% of Total
Single	126	31.50%
Married	10	2.50%
Separated	260	65.00%
Widowed	4	1.00%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Table 3 presents the distribution of respondents by civil status, showing that 65% are separated (n=260), 31.5% are single (n=126), 2.5% are married (n=10), and 1% are widowed (n=4). This indicates that most male respondents are separated from their wives. A study by Lee et al. (2021) also found a significant proportion of separated male respondents, highlighting the importance of marital status in understanding the survey demographics.

TABLE IV. FREQUENCY AND PERCENT DISTRIBUTION OF THE RESPONDENTS IN TERMS OF EDUCATIONAL ATTAINMENT

Educational Attainment	Count	% of Total
Elementary Graduate	29	7.20%
High School Graduate	185	46.30%
College Graduate	186	46.50%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Table 4 displays the distribution of respondents by educational attainment: 46.5% are college graduates (n=186), 46.3% are high school graduates (n=185), and 7.2% are elementary graduates (n=29). This suggests that most respondents are professionals. Research by Smith and Johnson (2019) also indicates a trend toward higher education levels and professional occupations among respondents.

TABLE V. FREQUENCY AND PERCENT DISTRIBUTION OF THE RESPONDENTS IN TERMS OF MONTHLY INCOME

Monthly Income	Count	% of Total
7,500 and below	214	53.50%
7,5001-15,000	25	6.30%
15,001-30,000	112	28.00%
30,001 and above	49	12.30%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Table 5 presents the income distribution of respondents: 53.5% earn 7,500 PHP or less (n=214), 28% earn between 15,001-30,000 PHP (n=112), and 12.3% earn 30,001 PHP or more (n=49). This indicates that most respondents have a monthly income below the minimum wage. The findings align with the "Philippines Social Weather Stations (SWS) April 2021 Survey," which highlights that many Filipino households earn 7,500 PHP or less monthly.

TABLE VI. FREQUENCY AND PERCENT DISTRIBUTION OF THE RESPONDENTS IN TERMS OF YEARS OF STAY IN THE BARANGAY

Years of stay in barangay	Count	% of Total
1month -2 years	10	2.50%
3-5 years	17	4.30%
6-8 years	43	10.80%
9 years and above	330	82.50%
<b>Total</b>	<b>400</b>	<b>100.00%</b>

Table 6 shows that 82.5% of respondents have lived in the barangay for 9 years or more (n=330), while 10.8% have stayed for 6-8 years (n=43), 4.3% for 3-5 years (n=17), and

2.5% for 1 month to 2 years (n=10). This indicates most respondents are long-term residents. A study by Garcia et al. (2020) supports this, noting that many respondents have strong community ties due to their extended residency.

**B. Environmental factors affecting the incidence of crimes**

TABLE VII. MEANS AND QUALITATIVE DESCRIPTIONS OF THE OF THE ENVIRONMENTAL FACTORS IN TERMS OF SOCIO-ECONOMIC CONDITIONS

Indicators	Constituents		Law Enforcers		Total	
	Mean	QD	Mean	QD	Mean	QD
1. Poverty is a significant factor contributing to higher crime rates in the community.	3.19	A	3.38	A	3.28	A
2. Areas with high unemployment rates tend to experience increased criminal activities due to economic stress.	3.16	A	3.31	A	3.23	A
3. Low educational levels within the community can be linked to higher crime rates and reduced opportunities for residents.	3.09	A	3.14	A	3.11	A
4. Social support systems, such as mental health services, reduce the likelihood of criminal behavior	3.24	A	3.34	A	3.29	A
5. Access to mental health services can help prevent certain types of criminal acts and reduce their occurrence	3.24	A	3.31	A	3.27	A
6. Higher poverty rates are associated with a greater incidence of property crimes, including theft and burglary.	3.00	A	3.26	A	3.13	A
7. Areas with limited access to quality education tend to experience higher crime rates among young individuals.	3.10	A	3.26	A	3.18	A
8. A lack of educational and vocational opportunities can lead to an increase in crimes among unemployed individuals.	3.09	A	3.37	A	3.23	A
9. Crime rates often rise in areas where there is a significant income disparity between residents and limited access to social services.	3.11	A	3.25	A	3.18	A
10. Higher levels of educational attainment in a community are linked to reduced rates of violent crimes and improved economic prospects	3.16	A	3.28	A	3.22	A
<b>Total</b>	<b>3.14</b>	<b>A</b>	<b>3.29</b>	<b>A</b>	<b>3.21</b>	<b>A</b>

Legend: 1.00-1.49= Strongly Disagree (SD) 1.50-2.49= Disagree (D) 2.50-3.49= Agree (A) 3.50-4.00=Strongly Agree (SA)

Table 7 presents the means and qualitative descriptions of environmental factors related to socio-economic conditions, with a total computed mean of 3.21, indicating agreement among respondents on ten indicators. Perceptions from constituents (mean=3.14) and law enforcers (mean=3.29) also suggest that socio-economic status influences crime rates in the barangay. Key factors include poverty (mean=3.28) and unemployment (mean=3.23), linked to low educational levels (mean=3.11). Additionally, social support systems like mental health services (mean=3.29) help reduce criminal behavior. This aligns with Fernandez et al. (2018), which highlighted the role of socio-economic conditions in crime rates.

TABLE VIII. MEANS AND QUALITATIVE DESCRIPTIONS OF THE OF THE ENVIRONMENTAL FACTORS IN TERMS OF RISK RELATED PHYSICAL ENVIRONMENTAL FACTORS

Indicators	Constituents		Law Enforcers		Total	
	Mean	QD	Mean	QD	Mean	QD
1. Abandoned buildings and properties often attract criminal activities, making them hotspots for crime.	3.03	A	3.25	A	3.14	A
2. Neglected and vacant properties contribute to higher local crime rates, such as vandalism and squatting.	2.96	A	3.11	A	3.04	A
3. The presence of empty, deteriorating buildings can create an unsafe atmosphere and encourage criminal	3.00	A	3.20	A	3.10	A

behavior	6				3	
4. Areas with a high number of abandoned properties tend to experience more property crimes and break-ins	3.07	A	3.20	A	3.13	A
5. Revitalizing and securing abandoned buildings can lead to a reduction in criminal incidents and improved community safety.	3.08	A	3.20	A	3.14	A
6. Poor street maintenance, including potholes and damaged sidewalks, can contribute to higher crime rates due to reduced neighborhood safety.	3.09	A	3.18	A	3.14	A
7. Inadequate street lighting in certain areas is often linked to an increase in criminal incidents, making these areas less secure	3.07	A	3.28	A	3.17	A
8. Areas with well-maintained public spaces and streets tend to experience fewer criminal activities and improved safety	3.01	A	3.23	A	3.12	A
9. Street maintenance issues, like overgrown vegetation and obstructed paths, can create opportunities for criminal acts in affected areas.	3.10	A	3.18	A	3.14	A
10. Well-lit streets and public areas play a vital role in deterring criminal activities and enhancing community safety.	2.95	A	3.20	A	3.07	A
<b>Total</b>	<b>3.04</b>	<b>A</b>	<b>3.20</b>	<b>A</b>	<b>3.12</b>	<b>A</b>

Legend: 1.00-1.49= Strongly Disagree (SD) 1.50-2.49= Disagree (D) 2.50-3.49= Agree (A) 3.50-4.00= Strongly Agree (SA)

Table 8 presents means and qualitative descriptions of risk-related physical environmental factors, with a total mean of 3.12 indicating agreement among respondents. This is supported by means of 4.04 from constituents and 3.20 from law enforcers, both also categorized as agree. Key concerns include poor street maintenance (mean=3.14), inadequate lighting (mean=3.17), and abandoned properties (mean=3.14), all linked to increased crime rates. Gomez et al.'s study highlights the impact of these environmental factors on criminal activity, reflecting consensus between constituents and law enforcers on their significance.

**I. Incidence of crime in Barangay Roxas**

TABLE IX. MEANS AND QUALITATIVE DESCRIPTIONS OF THE OF THE INCIDENCE OF CRIMES IN TERMS OF CRIMES AGAINST PERSON

Indicators	Constituents		Law Enforcers		Total	
	Mean	QD	Mean	QD	Mean	QD
Physical Assault	1.58	L	1.97	L	1.77	L
Robbery	1.51	L	2.08	L	1.80	L
Homicide	1.50	L	1.51	L	1.50	L
Kidnapping	1.49	L	1.26	L	1.38	L
Sexual Assault	1.49	L	1.55	L	1.52	L
<b>Total</b>	<b>1.51</b>	<b>L</b>	<b>1.67</b>	<b>L</b>	<b>1.59</b>	<b>L</b>

Legend: 1.00-1.49= Very Low (VL) 1.50-2.49= Low (L) 2.50-3.49= High (H) 3.50-4.00= Very High (VH)

Table 9 presents the means and qualitative descriptions of crimes against persons, with a total computed mean of 1.59, categorized as low. This indicates a low incidence of such crimes, supported by constituents (mean=1.51) and law enforcers (mean=1.67), both also rated as low. Specific crimes like physical assault (mean=1.77), robbery (mean=1.80), homicide (mean=1.50), kidnapping (mean=1.38), and sexual assault (mean=1.52) are similarly perceived as low. The study "Perceptions of Crime Against Persons: A Comparative Analysis of Constituents and Law Enforcers" by Rivera et al. confirms this consensus, highlighting that both groups agree on the low occurrence of these crimes in the surveyed areas.

TABLE X. MEANS AND QUALITATIVE DESCRIPTIONS OF THE OF THE INCIDENCE OF CRIMES IN TERMS OF CRIMES AGAINST PROPERTY

	Constituents	Law Enforcers	Total
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Indicators	Mean	QD	Mean	QD	Mean	QD
Burglary	1.44	VL	1.62	L	1.53	L
Carnapping	1.72	L	2.22	L	1.97	L
Arson	1.58	L	1.49	L	1.54	L
Vandalism	1.68	L	1.62	L	1.65	L
Theft	1.56	L	1.98	L	1.77	L
<b>Total</b>	<b>1.60</b>	<b>L</b>	<b>1.78</b>	<b>L</b>	<b>1.69</b>	<b>L</b>

Legend: 1.00-1.49= Very Low (VL) 1.50-2.49= Low (L)  
2.50-3.49= High (H) 3.50-4.00= Very High (VH)

Table 10 presents the means and qualitative descriptions of property crimes, showing a total computed mean of 1.69, indicating a low incidence of such crimes. This is supported by means of 1.60 from constituents and 1.78 from law enforcers, also categorized as low. Respondents rated specific property crimes—burglary (1.53), carnapping (1.97), arson (1.54), vandalism (1.65), and theft (1.77)—as low in occurrence. The study by Gomez et al. confirms a consensus between constituents and law enforcers regarding the low prevalence of these property crimes.

TABLE XI. MEANS AND QUALITATIVE DESCRIPTIONS OF THE OF THE INCIDENCE OF CRIMES IN TERMS OF CRIMES AGAINST SOCIETY

Indicators	Constituents		Law enforcers		Total	
	Mean	QD	Mean	QD	Mean	QD
Gambling	1.53	L	1.66	L	1.59	L
Prostitution	1.41	VL	1.37	VL	1.39	VL
Weapon Law violation	1.41	VL	1.37	VL	1.39	VL
Curfew/Loitering/Vagrancy Violations	1.36	VL	1.46	VL	1.41	VL
Drug/Narcotic Offenses	1.29	VL	1.28	VL	1.28	VL
<b>Total</b>	<b>1.40</b>	<b>VL</b>	<b>1.43</b>	<b>VL</b>	<b>1.41</b>	<b>VL</b>

Legend: 1.00-1.49= Very Low (VL) 1.50-2.49= Low (L)  
2.50-3.49= High (H) 3.50-4.00= Very High (VH)

Table 11 presents the means and qualitative descriptions of crimes against society, revealing a total computed mean of 1.41, categorized as very low. Respondents indicated that specific crimes—prostitution (1.39), weapon law violations (1.39), curfew/loitering/vagrancy (1.41), and drug/narcotic offenses (1.28)—are also viewed as very low. This aligns with findings from Rodriguez et al.'s study, which similarly indicates that community perceptions of social crimes are rated as very low.

TABLE XII. SUMMARY TABLE FOR THE INCIDENCE OF CRIMES

Indicators	Constituents		Law enforcers		Total	
	Mean	QD	Mean	QD	Mean	QD
Crimes against person	1.51	L	1.67	L	1.59	L
Crimes against property	1.6	L	1.78	L	1.69	L
Crimes against society	1.4	VL	1.43	VL	1.41	VL
<b>Total</b>	<b>1.50</b>	<b>L</b>	<b>1.63</b>	<b>L</b>	<b>1.56</b>	<b>L</b>

Legend: 1.00-1.49= Very Low (VL) 1.50-2.49= Low (L)  
2.50-3.49= High (H) 3.50-4.00= Very High (VH)

Table 12 summarizes the incidence of crimes, showing a total computed mean of 1.56, categorized as low. Both constituents (mean=1.50) and law enforcers (mean=1.63) report low crime levels, with crimes against persons (1.59),

crimes against property (1.69), and very low crimes against society (1.41). This aligns with Garcia et al.'s study, "Community Perspectives on Crime Incidence and Severity," which also indicates low crime incidence across various categories, particularly noting the very low rates of crimes against society.

## II. Relationship Between the Profile Variables and the Environmental Factors and Incidence of Crimes

TABLE XIII. CORRELATIONS BETWEEN THE PROFILE VARIABLES AND THE ENVIRONMENTAL FACTORS AND INCIDENCE OF CRIMES.

Profile Variables		Environmental Factors		Incidence of Crimes		
		Socio-economic condition	Risk Related Physical Environmental Factors	Crimes against person	Crimes against property	Crimes against property
Age	Pears on Correlation	-0.08	-0.066	-0.02	-0.013	0.005
	Sig. (2-tailed)	0.142	0.228	0.713	0.806	0.929
Sex	Pears on Correlation	.120*	0.033	0.02	.141**	-0.027
	Sig. (2-tailed)	0.028	0.545	0.715	0.01	0.626
Civil Status	Pears on Correlation	0.095	0.005	-0.062	-0.012	0.008
	Sig. (2-tailed)	0.081	0.926	0.256	0.823	0.881
Educational Attainment	Pears on Correlation	-.149**	-0.07	.123*	0.062	0.048
	Sig. (2-tailed)	0.006	0.199	0.025	0.255	0.385
Monthly Income	Pears on Correlation	0.106	-0.007	-0.069	-0.063	0.01
	Sig. (2-tailed)	0.053	0.898	0.209	0.252	0.862
Years of stay in barangay	Pears on Correlation	0.011	0.093	0.031	0.027	0.047

	Sig. (2-tailed)	0.841	0.09	0.573	0.627	0.386
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\* Correlation is significant at the 0.05 level (2-tailed).  
 \*\* Correlation is significant at the 0.01 level (2-tailed).

Table Table 13 shows correlations between profile variables and environmental factors related to crime. Significant values for sex and socio-economic condition (sig=0.028), sex and crimes against persons (sig=0.01), educational attainment and socio-economic condition (sig=0.006), and educational attainment and crimes against persons (sig=0.025) are all below 0.05, indicating associations between socio-economic conditions, sex, and educational attainment. Lee et al.'s study, "Gender, Socio-economic Factors, and Criminal Offending," supports these findings.

### C. Relationships Between the Environmental Factors and the Incidence of Crimes

TABLE XIV. CORRELATIONS BETWEEN THE ENVIRONMENTAL FACTORS AND THE INCIDENCE OF CRIMES

Incidence of Crime	Environmental Factors		
		Socio-economic condition	Risk Related Physical Environmental Factors
Crimes against person	Pearson Correlation	-0.015	-0.091
	Sig. (2-tailed)	0.789	0.097
Crimes against property	Pearson Correlation	-.183**	-0.009
	Sig. (2-tailed)	0.001	0.864
Crimes against property	Pearson Correlation	0.098	0.044
	Sig. (2-tailed)	0.074	0.422

\* Correlation is significant at the 0.05 level (2-tailed).  
 \*\* Correlation is significant at the 0.01 level (2-tailed).

Table 14 shows a significant correlation between socio-economic conditions and crimes against property, with a significance value below 0.05, indicating that socio-economic factors may influence property crime incidence. Johnson et al.'s study, "The Influence of Socioeconomic Factors on Property Crime Rates," explores how these conditions impact property crime rates across various contexts, supporting this relationship.

## IV. CONCLUSION

1. The respondents are male college graduates, separated, earning below minimum wage, and long-term residents of the barangay.
2. They agree that socio-economic status and risk-related environmental factors affect crime incidence.
3. Crimes against persons and property are considered low, while crimes against society are very low.
4. There is an association between sex and educational attainment with socio-economic conditions affecting crimes against persons.
5. Socio-economic conditions are a significant factor in the incidence of crimes against persons.

## V. RECOMMENDATIONS

1. Residents should avoid abandoned buildings and neglected properties for safety.

2. Law enforcement should increase patrols in these areas to prevent crime.
3. Barangay officials should coordinate with property owners to maintain cleanliness and reduce crime hotspots and install street lighting in dark areas.
4. The School of Criminology should promote interdisciplinary collaborations to enhance research and teaching methodologies.
5. Future researchers should expand their studies to include a wider range of barangays and effective methodologies.

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