Crime Patterns and Trends in the Province of Bataan During the Covid-19 Pandemic

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Abstract:- The COVID-19 pandemic has significantly impacted various aspects of our society, and criminal activity is no exception. This study investigates how crime dynamics shifted in Bataan Province, Philippines, during the pandemic. Utilizing a descriptive quantitative approach, the researchers analyzed data from the Bataan Provincial Police Office for a three-year period. While the total number of recorded crimes rose in 2021, it declined in 2022. However, significant fluctuations and persistent high rates were observed across specific crime categories. Temporal analysis of "Crime Clock" statistics revealed changes in reported crimes throughout different time periods, indicating potential shifts in criminal behavior. A comparison of Municipal Police Stations (MPS) data revealed varying trends, suggesting the potential effectiveness of existing strategies in some areas. Notably, some MPSs showcased a decline in crime. Overall, this research highlights the dynamic nature of criminal activity during the pandemic. The study demonstrates the importance of ongoing crime surveillance and collaborative efforts between law enforcement and the community to ensure public safety in Bataan Province.

Keywords:- Covid-19, Crime Pattern, Crime Trends, Focus Crimes, Crime Clock.

I. INTRODUCTION

The COVID-19 pandemic has had a profound impact on how people live their lives worldwide. Around the end of the first quarter of 2020, governments all over the world started to issue orders for people to stay at home after learning of the virus's potential severity. These "lockdowns," despite their stated goal of saving lives and reducing the quickly increasing COVID-19 infection and mortality rates, caused a disruption to human existence that only happened once in several generations. These restrictions were implemented with no historical precedent and almost no understanding of how they will affect life, even though they seem to have been successful in lowering COVID-19 infection and fatality rates. The public, criminologists, legislators, public safety authorities, and the media have all been asking the same question amid the significant attention given to the unexpected repercussions of stay-at-home orders: how has COVID-19 affected crime worldwide?

Moreover, the world has been drastically altered by COVID-19, which has also unavoidably affected people's behavior, particularly their propensity for crime and deviance. The pandemic has influenced many aspects of human existence, and news information indicates that aggressive and criminal conduct has also been impacted. Since March 2020, there have been frequent news stories of gun violence in major cities (Rector, 2021), abuse of intimate partners during enforced lockdowns (Taub, 2020), and anti-Asian rhetoric directed toward Asian Americans and Pacific Islanders (Chan et al., 2020). In addition, the epidemic increased the number of opportunities for online fraud. The public's use of technology has increased to an unprecedented degree, which has allowed hackers to gain unauthorized access to personal data by repeatedly breaching security networks (INTERPOL, 2020).

In this study, it investigates the distinct connection between crime and the COVID-19 pandemic. According to recent studies, there has been a decline in certain property crimes, robberies, and assaults throughout the pandemic, but a rise in various aggressive behaviors and cybercrime (Abrams, 2021; Buil-Gil et al., 2021; Langton et al., 2021; Schleimer et al., 2020). It shows that the extraordinary disruptions to people's everyday schedules and the stress experienced during the COVID-19 pandemic have influenced crime patterns and trends.

II. METHODOLOGY

The study employs a descriptive statistical approach to analyze crime data collected throughout the COVID-19 pandemic, aiding policymakers, law enforcement organizations, and stakeholders in decision-making regarding crime prevention tactics, resource allocation, and long-term planning. Utilizing this research approach, the researchers analyzed data from the Bataan Provincial Police Office for a three-year period, from 2020-2022. The analysis includes measures of central tendency and dispersion, such as mean, median, mode, and range, to understand crime rates' typical magnitude and variability. Graphical representations such as graphs, charts, and tables are used to visually summarize crime patterns and trends, facilitating the interpretation of temporal fluctuations and seasonal variations. Additionally, the data is stratified by factors such as geographic location, crime type, and temporal trends in identifying specific patterns or correlations within subgroups.

III. DISCUSSION

According to data from the location tracking website Foursquare (2020), by late March, trips to workplaces had decreased by 37%, while those to malls, clothes stores, gyms, bars, restaurants, airports, and hotels had all fallen by more

than 50% from mid-February. In contrast, since children were not in school, many workers in the service sector were furloughed, and companies encouraged employees to work from home, individuals were probably spending more time at home. Undoubtedly one of the most serious worldwide calamities in recent times is the COVID-19 pandemic of 2020 which has had a significant impact on society in terms of politics, economics, crime, and social interactions. One distinctive aspect of this issue is the government's strategy of issuing official stay-at-home orders to stop the virus's spread. Although the severity and timing of these mandates varied by nation and state, they always began with strong encouragement for individuals to distance themselves willingly. In only a few short weeks during the first few months of 2020, the COVID-19 pandemic fundamentally altered how people interacted with one another and conducted business around the world. More than half of the world's population—3.9 billion people—will be under some kind of lockdown by the first week of April 2020. Additionally, research indicates that various crime and violence patterns have been largely stable across national borders (Wilkins et al., 2019; Wolf et al., 2014). In Mexico, Sweden, England, Wales, and Australia, for instance, rates of assault and burglary sharply dropped following the implementation of containment measures (Balmori de la Miyar et al., 2021a; Gerell et al., 2020; Langton et al., 2021; Payne et al., 2020, 2021). In Mexico, Canada, Australia, England, and Wales, comparable and steady declines in various forms of theft have been noted (Balmori de la Miyar et al., 2021a; Hodgkinson & Andresen, 2020; Langton et al., 2021; Payne et al., 2021).

Conversely, there have been variations in the prevalence of some forms of violence across national borders, particularly fatal violence. Studies examining homicide rates in Latin American nations have revealed that, while violent crime rates declined in Colombia, Guatemala, Chile, Ecuador, El Salvador, and Honduras, they surged in Brazil and Mexico; however, these shifts were only transitory (United Nations Office on Drugs and Crime (UNODC, 2020). Furthermore, depending on the pandemic period, there have been brief drops in homicide rates in Italy, Moldova, Spain, Kazakhstan, and South Africa (UNODC, 2020). These variations across the board suggest that complicated national-level mechanisms may be at work, interacting with COVID-19 pandemic-related circumstances to impact shifts in the rates.

Likewise, the COVID-19 pandemic-induced nine-month community quarantine in Manila, Philippines, is credited for reducing crime rates, but other experts are concerned that the lockdown may have made abuses worse, as movement constraints and limited resources were major contributing factors. During the 275 days of COVID-19 lockdown enforcement, the number of what the Philippine National Police (PNP) claimed to be eight focus crimes nationwide had decreased by 45%, according to PNP data. These included rape, robbery, theft, car and motorcycle theft, murder, homicide, and bodily harm.

According to the nation's police force, from March 17, during the early days of a severe enhanced community quarantine (ECQ), until December 16, only 27,442 crimes were recorded. This is in contrast to 49,774 crimes from June 15, 2019, to March 16, 2020, the day before ECQ was implemented in Metro Manila. In addition, based on a comparison of pre-lockdown and post-quarantine numbers, the Philippine National Police said that the largest decline in crime was seen in motorcycle theft (61%), followed by robbery (59%), theft (57%), and theft of motor vehicles (52%). These are all regarded as offenses against property. Records from the PNP also indicated a notable decline in crimes committed against people. Physical injury cases decreased by 40% during the community quarantine, from 8,546 cases before the lockdowns to 5,111 cases. Following there was a 26% decrease in homicide cases, from 1,276 cases before the lockdown to 942 cases during the quarantine periods. In addition, police revealed that during the community quarantine, the number of rape cases decreased by 21%, from 7,274 before the lockdown to 5,764. Murder cases during the nine-month quarantine decreased by 19%, from 4,796 before the lockdown to 3,889 cases. Besides, according to the Council for the Welfare of Children (CWC), the imposition of community quarantine also "increased" children's exposure to abuse, violence, and exploitation due to a lack of support. However, CWC cautioned that due to restricted internet access and transit constraints that would allow victims to report to authorities, there may be a drop in reported occurrences of abuse. There were 2,678 cases of child rights violations from March 1 to May 15, 2020, and 1,384 cases from May 16 to June 2020, according to data from the Women and Children Protection Center and the Philippine National Police's Crime Information Reporting and Analysis System. These included instances of child abuse and exploitation, rape, and acts of lasciviousness. According to another set of data from the Department of the Interior and Local Government, an average of 24 reports of physical, sexual, psychological, and emotional abuse, neglect, and other forms of violence against children were received by villages across the country every day. Moreover, the impact of the COVID-19 pandemic on people's lives and communities has been profound. Given the extraordinary times that global civilization is currently experiencing, it is especially critical to address concerns about crime, violence, and justice in general.

IV. FINDINGS

➢ *Types of Crimes Committed during the COVID-19 Pandemic in Bataan*

Over the span of three years, the data on various crime categories in the province reveals fluctuating trends. Table 1 provided data on focus crimes in Bataan Province during the COVID-19 pandemic (2020-2022) and it reveals some interesting trends. The focus crimes are homicide, carnapping of motorcycle and motor vehicle, murder, physical injuries, rape, robbery, robbery with homicide, robbery with rape and theft.

Table 1 Crime Count of the Focus Crimes from 2020-2022

FOCUS CRIMES	2020		2021		2022		GRAND TOTAL	PERCENTAGE
	CRIME COUNT	PERCENTAGE	CRIME COUNT	PERCENTAGE	CRIME COUNT	PERCENTAGE		
HOMICIDE	2	1.49%	6	2.86%	3	1.89%	11	2.19%
MC CARNAPPING	11	8.21%	7	3.33%	8	5.03%	26	5.17%
MURDER	13	9.70%	14	6.67%	13	8.18%	40	7.95%
MV CARNAPPING	1	0.75%	2	0.95%	1	0.63%	4	0.80%
PHYSICAL INJURIES	12	8.96%	28	13.33%	9	5.66%	49	9.74%
RAPE	38	28.36%	62	29.52%	36	22.64%	136	27.04%
ROBBERY	21	15.67%	19	9.05%	28	17.61%	68	13.52%
ROBBERY W/ HOMICIDE	0	0.00%	0	0.00%	1	0.63%	1	0.20%
ROBBERY W/ RAPE	0	0.00%	1	0.48%	0	0.00%	1	0.20%
THEFT	36	26.87%	71	33.81%	60	37.74%	167	33.20%
Grand Total	134	100.00%	210	100.00%	159	100.00%	503	100.00%

Homicides showed an increase from 2 cases in 2020 to 6 cases in 2021, before slightly declining to 3 cases in 2022, maintaining a consistent percentage relative to total focus crimes. The slight increase in homicides (2020-2021) followed by a decline (2022) might be attributed to various factors. Social strain theory (Merton, 1938) suggests that economic hardship during the pandemic could have contributed to frustration and violence.

Motorcycle carnapping cases displayed fluctuations, with 11 cases in 2020, 7 in 2021, and 8 in 2022, yet the percentage rose slightly from 8.21% in 2020 to 5.17% in 2022. The fluctuations in motorcycle thefts, with a slight decrease in percentage despite case number variations, could be related to increased police presence or public awareness campaigns. Situational crime prevention theory (Clarke, 1995) emphasizes the importance of reducing crime opportunities.

Similarly, murders varied, with 13 cases in 2020, 14 in 2021, and 13 in 2022, retaining stable percentages ranging from 6.67% to 8.18%. On the other hand, reported incidents of motor vehicle carnapping remained low and stable annually.

Physical injuries exhibited a notable increase from 12 cases in 2020 to 28 in 2021, before decreasing to 9 in 2022, with percentages ranging from 8.96% to 9.74%. The significant increase in physical injuries (2020-2021) followed by a decrease (2022) warrants further investigation. Domestic violence incidents might have risen during lockdowns due to increased stress and social isolation, as supported by studies during the pandemic (e.g., Amato & Knowles, 2020).

Instances of rape significantly rose from 38 cases in 2020 to 62 in 2021, then fell to 36 in 2022, representing the highest percentage of focus crimes each year, ranging from 22.64% to 29.52%. The concerning rise in rape cases (2020-2021) followed by a decrease (2022) demands immediate attention. Lockdowns and school closures may have increased vulnerability for certain demographics, aligning with ecological theory (Brantingham & Brantingham, 1973) which suggests that crime patterns are influenced by environmental factors.

Robbery cases fluctuated, with 21 cases in 2020, 19 in 2021, and 28 in 2022, with percentages ranging from 9.05% to 17.61%. Specific combinations of robbery with homicide and rape had minimal reported instances. Thefts increased from 36 cases in 2020 to 71 in 2021, declining to 60 in 2022, with percentages consistently high, ranging from 26.87% to 37.74%. The fluctuations in robbery and theft cases could be due to a combination of factors. The economic downturn during the pandemic may have increased motivations for property crimes, as suggested by routine activities theory (Cohen & Felson, 1979) which emphasizes the convergence of suitable targets, motivated offenders, and the absence of capable guardians.

Overall, the total number of reported focus crimes rose from 134 in 2020 to 210 in 2021, then dropped to 159 in 2022, with percentages indicating each focus crime's proportion relative to the total number of reported focus crimes for each year.

➤ *Common Time of the Crime Commissions*
The "Crime Clock" statistics offer valuable insights into the temporal patterns of criminal activity in Bataan Province during 2020, 2021, and 2022. Analyzing these statistics reveals significant variations in reported crime counts across different times of the day (Brantingham & Brantingham, 1993).

Table 2 Crime Clock Statistics from 2020-2022

CRIME CLOCK	2020		2021		2022	
	Crime Count	PERCENTAGE	Crime Count	PERCENTAGE	Crime Count	PERCENTAGE
1:00:00 AM	39	2.61%	41	1.81%	59	3.17%
2:00:00 AM	49	3.28%	96	4.25%	54	2.90%
3:00:00 AM	19	1.27%	99	4.38%	34	1.83%
4:00:00 AM	16	1.07%	96	4.25%	25	1.34%
5:00:00 AM	21	1.41%	92	4.07%	26	1.40%
6:00:00 AM	23	1.54%	108	4.78%	41	2.20%
7:00:00 AM	22	1.47%	94	4.16%	48	2.58%
8:00:00 AM	50	3.35%	115	5.09%	49	2.63%
9:00:00 AM	61	4.08%	134	5.93%	53	2.85%
10:00:00 AM	45	3.01%	110	4.87%	71	3.81%
11:00:00 AM	77	5.15%	146	6.46%	80	4.30%
12:00:00 PM	57	3.82%	130	5.75%	91	4.89%
1:00:00 PM	57	3.82%	108	4.78%	81	4.35%
2:00:00 PM	65	4.69%	70	3.63%	78	5.80%
3:00:00 PM	70	4.69%	82	3.63%	108	5.80%
4:00:00 PM	102	6.83%	88	3.89%	94	5.05%
5:00:00 PM	98	6.56%	100	4.42%	123	6.61%
6:00:00 PM	95	6.36%	101	4.47%	145	7.79%
7:00:00 PM	116	7.76%	102	4.51%	109	5.85%
8:00:00 PM	103	6.89%	78	3.45%	100	5.37%
9:00:00 PM	85	5.69%	65	2.88%	114	6.12%
10:00:00 PM	72	4.82%	84	3.72%	123	6.61%
11:00:00 PM	84	5.62%	53	2.35%	77	4.14%
12:00:00 AM	68	4.55%	68	3.01%	79	4.24%
Grand Total	1494	100.33%	2260	100.53%	1862	101.61%

The datain Table 2 highlights specific periods with consistently higher offenses. For instance, the 6:00 PM to 7:00 PM time frame shows a recurring peak, coinciding with the end of the workday and increased activity in public spaces. Conversely, 3:00 AM consistently exhibits lower crime counts, potentially due to reduced activity and increased police presence during late-night hours. Other time frames, like 2:00 AM, display greater variability in reported crimes. This variability suggests that crimes during these hours may be more opportunistic or situational (Clarke, 1995). It's important to note that further analysis is needed to understand the specific factors influencing these variations.

By analyzing "Crime Clock" statistics and understanding the temporal nature of crime patterns, Bataan law enforcement can proactively manage crime hot spots and enhance public safety (Ratcliffe, 2015). This data-driven approach allows for more effective resource allocation and targeted interventions, ultimately leading to a safer Bataan community.

➤ *Crime Rate for each Municipality in Bataan during the COVID-19 Pandemic*

The analysis of crime data across various Municipal Police Stations (MPS) in Bataan Province reveals significant spatial variations in crime rates and counts over the three-year period (2020-2022) as shown in Table 3. The concerning surge in Hermosa with a population of 77,443, necessitates immediate investigation. Social disorganization theory (Shaw & McKay, 1942) suggests that a breakdown in social control mechanisms can contribute to crime. Examining factors like poverty, unemployment, and community cohesion might reveal underlying issues. Furthermore, problem-oriented policing (Goldstein, 1990) could be implemented to identify and address specific crime problems in the area.

Further, despite fluctuations, Limay's comparable population size decrease in crime rates suggesting potentially effective strategies. Environmental criminology theory (Brantingham & Brantingham, 1973) emphasizes the role of the physical environment in facilitating or hindering crime. Analyzing Limay's crime reduction strategies, such as improved lighting or increased police presence in high-crime areas, could offer valuable insights for other MPS.

The varied crime trends in Abucay, Orani (increased in 2022), and Samal with smaller population of 38,302 (sharp rise) highlight the need for ongoing monitoring and focused initiatives. Broken windows theory (Wilson & Kelling, 1982) suggests that addressing minor offenses can deter more serious crimes. These MPS could benefit from implementing targeted interventions like zero-tolerance policies for minor offenses or community outreach programs to address potential root causes.

Table 3 Crime Rate of Each Barangay in Bataan from 2020-2022

MUNICIPALITIES	Population (CENSUS 2020)	2020		2021		2022	
		Crime Count	Crime Rate	Crime Count	Crime Rate	Crime Count	Crime Rate
Hermosa MPS	77,443	270	349	489	631	387	500
Limay MPS	78,272	206	263	331	423	143	183
Abucay MPS	42,984	102	237	148	344	140	326
Orani MPS	70,342	144	205	107	152	237	337
Samal MPS	38,302	71	185	382	997	84	219
Mariveles MPS	149,879	258	172	250	167	270	180
Morong MPS	35,394	53	150	121	342	105	297
Orion MPS	60,771	81	133	139	229	120	197
Balanga MPS	104,173	125	120	49	47	50	48
Dinalupihan MPS	118,209	114	96	51	43	157	133
Pilar MPS	46,239	44	95	151	327	49	106
Bagac MPS	31,365	26	83	42	134	120	383
Grand Total	853,373	1494	175	2260	265	1862	218

Fluctuations in crime data observed in Mariveles, Morong, and Orion necessitate continued monitoring and proactive measures. Routine activity theory (Cohen & Felson, 1979) emphasizes the convergence of suitable targets, motivated offenders, and the absence of capable guardians. Analyzing crime patterns in these areas might reveal specific vulnerabilities that could be addressed through targeted police patrols or increased security measures in high-risk locations. On the other hand, the relatively consistent crime rates in Balanga and Dinalupihan might be attributed to successful community involvement programs or effective law enforcement strategies. Community-oriented policing (Sherman & Weisburd, 1995) emphasizes building trust and collaboration between police and the community. Lastly, the rise in crime rates in Pilar in 2022 and fluctuations in Bagac signifies the importance of continuous observation and preventive actions. These MPS could benefit from collaborating with social service agencies to address potential underlying social issues that contribute to crime.

➤ *The Trend of Crime (Increasing or Decreasing)*

As shown in Table 4, the analysis of crime data spanning 2020 to 2022 reveals fluctuating trends in reported crimes. In 2020, there were 1,494 recorded crimes, which notably surged to 2,260 in 2021, before decreasing to 1,862 in 2022. This pattern suggests an initial increase in recorded crimes between 2020 and 2021, followed by a decline between 2021 and 2022. These fluctuations reflect a mix of community dynamics, law enforcement efforts, and other influencing variables shaping crime rates over time, underscoring the need for comprehensive measures to address and prevent crime effectively.

serious crimes. These MPS could benefit from implementing targeted interventions like zero-tolerance policies for minor offenses or community outreach programs to address potential root causes.

Table 4 Total Crime Count from 2020-2022

	2020	2021	2022
TOTAL CRIME COUNT	1494	2260	1862

Moreover, the examination of specific crime categories highlights varying patterns. Some crimes, like homicide, motorcycle carnapping, murder, physical injuries, rape, robbery, and theft, showed fluctuations, while others remained stable or slightly varied. Despite a surge in total reported crimes in 2021, there was a subsequent decline in 2022. However, persistent challenges were noted, particularly with crimes like rape, which maintained consistently high percentages relative to the total. The "Crime Clock" statistics offer insight into temporal variations in reported crimes, with certain hours consistently showing higher offenses.
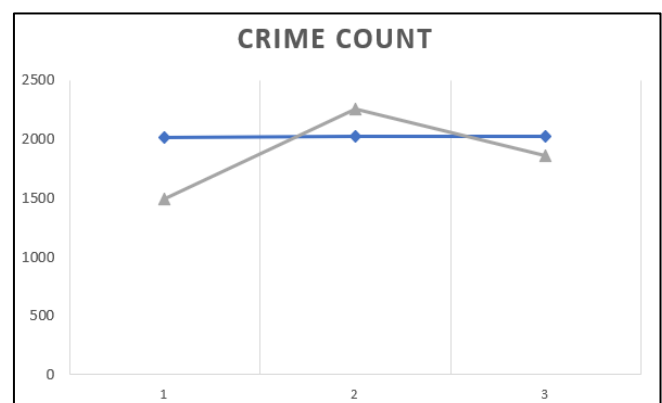

Fig 1 Graph on the Total Crime Count from 2020-2022

Additionally, analyses of individual Municipal Police Stations (MPS) reveal distinct trends, with some experiencing increases or decreases in reported crimes, suggesting the effectiveness of various strategies and initiatives across different areas. Overall, the data underscores the importance of continuous monitoring, proactive measures, and collaborative efforts to ensure public safety and security in Bataan Province.

V. CONCLUSION

This study has analyzed crime data from Bataan Province during the COVID-19 pandemic (2020-2022). The findings reveal several key trends that illuminate the complex relationship between lockdown restrictions and criminal activity. Notably, the data suggests that offenses often occur during unexpected times, highlighting the importance of temporal analysis for effective crime prevention strategies. Furthermore, the research identified distinct crime patterns across different Municipal Police Stations (MPS). While some areas saw a rise in crime events, others experienced decreases or held steady. This spatial variation highlights the need for efficient approaches to address emerging issues in specific locations. Despite a promising decrease in total recorded crimes from 2021 to 2022, the findings emphasizes the necessity for continued vigilance and data-driven approaches, even with a promising decrease in overall crime, to ensure lasting public safety across Bataan Province.

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