

Determining the Nature of Index Crimes in Bacoor, Cavite, Philippines

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Abstract. The rapid commercial developments, the number of access roads, and the growing population in Bacoor, Cavite is making the city a highly probable prime location for crime. To ensure effective crime deterrence and reduction even with limited manpower, frequency analysis was used to analyze the nature of index crimes and derive insights on how to approach crime reduction and deterrence in Bacoor city. The results revealed that theft and robbery are the top index crimes, which occur mostly during rush hour times in highly urbanized barangays, especially those with malls. The spikes and dips of index crime occurrences in respect to time, day, and months show that index crime suspects in Bacoor follow a logical fashion, making it easy for authorities to come up with effective interventions on a holistic and tactical level.

Keywords: index crime, focus crime, philippines, bacoor, cavite, frequency analysis

1. Introduction

Index crimes in the Philippines are defined as consummated focus crimes: serious crimes with high frequency and regularity such as robbery, rape, theft, physical injury, homicide, vehicle theft, and motorcycle theft. [1] In terms of occurrences, most of these Philippine-based index crimes are headed by cities based in Metro Manila [2].

The city of Bacoor is considered the gateway between South Luzon and Metro Manila.[3] Due to Bacoor's proximity to Metro Manila, an increase in crime reduction efforts in Metro Manila may lead to crimes relocating to Bacoor as per the Displacement Theory. [4] Considering the city's strategic position, its rapid urbanization efforts, and the number of major access roads available, Bacoor is poised to become a convenient gateway for hostile entities. The increase in criminal cases filed in Cavite before the COVID-19 pandemic [5], corroborates this view.

The researcher consulted with PCpl Wilson Mendoza of Bacoor Philippine National Police's Operations Department, who provided insight on the limited manpower Bacoor PNP must cover for the entire city. Once the COVID-19 pandemic ends, it's reasonable to anticipate a sudden surge of crime. To combat this highly probable scenario with limited manpower, Bacoor PNP needs a reliable plan and strategy using quality index crime data analysis.

While there's a significant number of studies made regarding Bacoor city, none of them are focused on index crimes, and more importantly, no recent data was used. To fill this gap, the research will focus on analyzing the nature of index crimes in Bacoor, Cavite. The proponent of the study believes that this study is beneficial to the Bacoor government, Bacoor PNP, Bacoor community, neighboring cities of Bacoor, as well as researchers looking to analyze further the nature of index crimes in the Philippines.

2. Methodology

Bacoor PNP supplied its index crime data from 2016 to 2020 for this research. A total of 2034 index crimes have been tallied, which became the foundation for the study's frequency analysis on Bacoor Index Crimes.

Fig. 1 shows that Theft leads the index crimes at Bacoor at 41.69% followed by Robbery at 19.86%. Homicide is the least frequent index crime at 1.67%

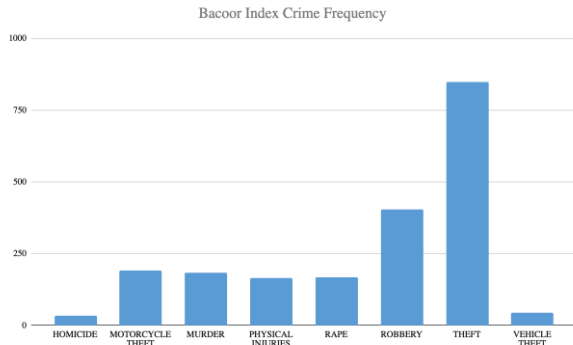


Fig. 1. Bacoor index crime frequency.

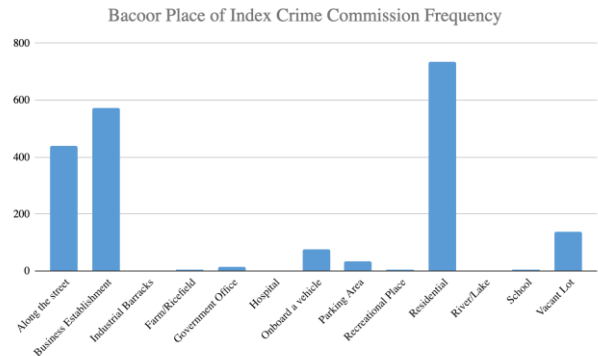


Fig. 2. Bacoor index crime place of commission frequency.

In terms of places where the index crime has been committed, Residential Area leads with 36.14%, followed by Business Establishments at 28.12% and Along The Street at 21.68%. Index crimes committed in industrial barracks, hospitals, schools, farms, and recreational places are virtually nonexistent with a combined total of 1.08%.

Index crimes are committed in private places 7 out of 10 times as shown in Figure 3.

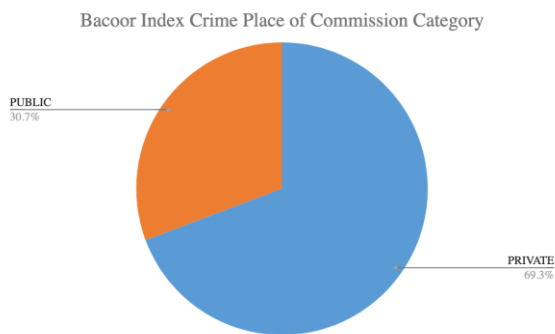


Fig. 3. Bacoor index crime place of commission category

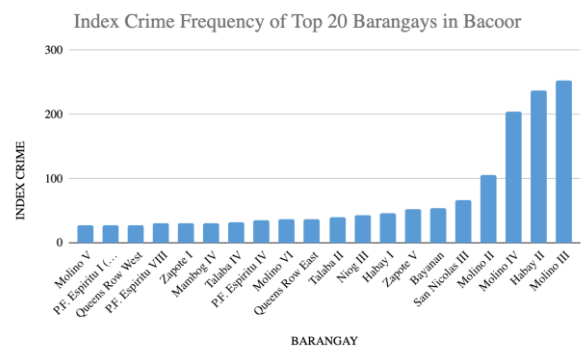


Fig. 4. Index crime frequency of top 20 barangays in Bacoor.

Out of 73 barangays in Bacoor, 20 of them comprises 69.71% of total index crimes. The top 20 barangays with the most index crimes are led by Molino III at 12.44%, closely followed by Habay II and Molino IV at 11.65% and 10.03% respectively.

A general downtrend of index crime commissions is observed from 2016 to 2020. From this 5-year range, a 46% drop can be observed from 2017 to 2018.

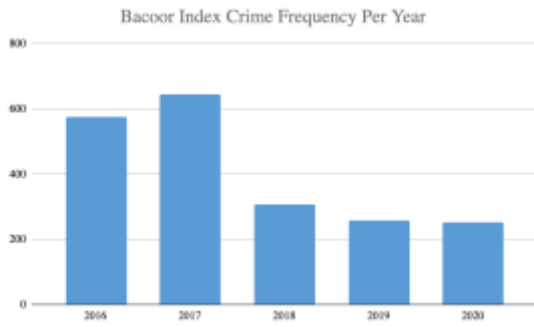


Fig. 5. Bacoor Index Crime Frequency Per Year

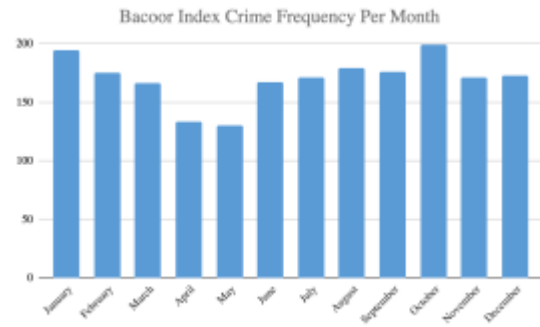


Fig. 6. Bacoor index crime frequency per month.

The month with the highest number of index crimes committed can be observed for October, closely followed by January. The months with the fewest crimes can be observed for the months of April and May.

The day with the most index crimes tallied is Sunday, followed by Thursday. The day with the fewest index crimes tallied is Saturday, followed by Tuesday.

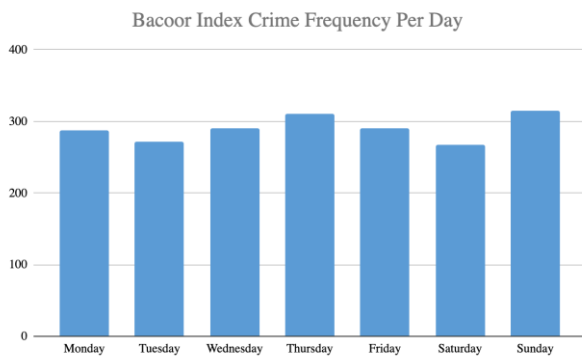


Fig. 7. Bacoor index crime frequency per day.

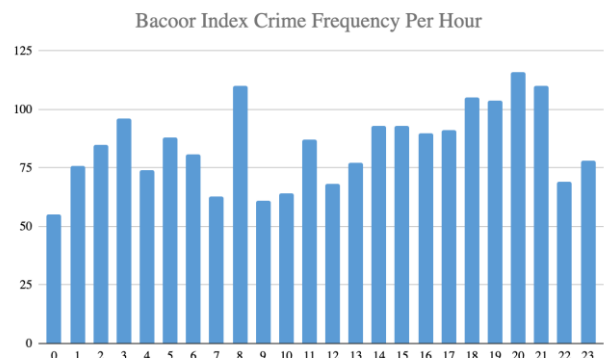


Fig. 8. Bacoor index crime frequency per hour.

A sudden spike of index crime for 8 AM is observed, while there's a generally increasing trend of index crime frequency from 2 PM to 9 PM, followed by a significant drop at 10 PM.

The ones being targeted the most by Index Crimes in Bacoor are people in their 30s, followed by people in their 40s and late 20s.

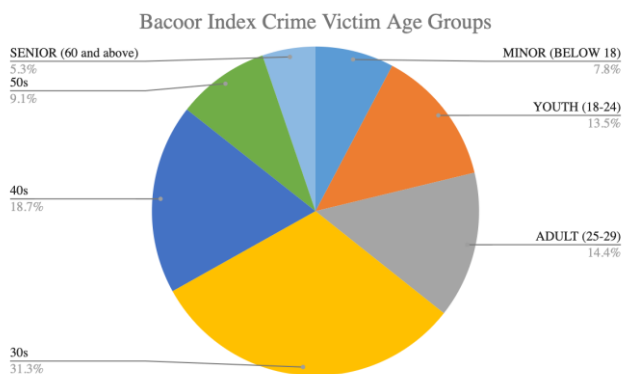


Fig. 9. Bacoor index crime victim age groups.

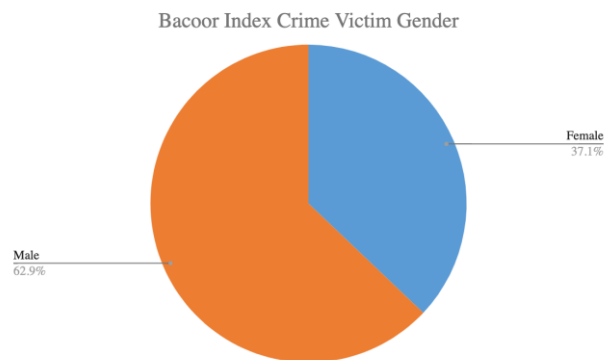


Fig. 10. Bacoor index crime victim gender.

Male victims of index crimes in Bacoor outnumber the female victims.

58.60% of index crime victims in Bacoor are employees.

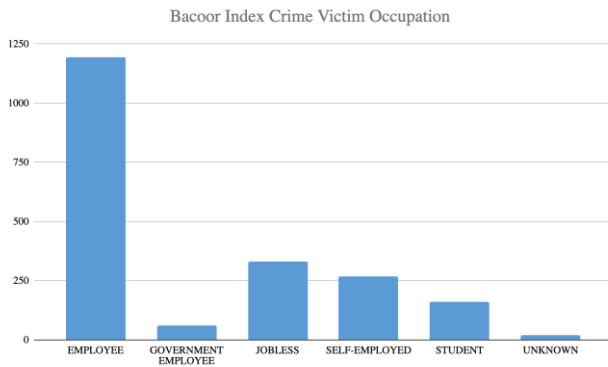


Fig. 11. Bacoor index crime victim occupation.

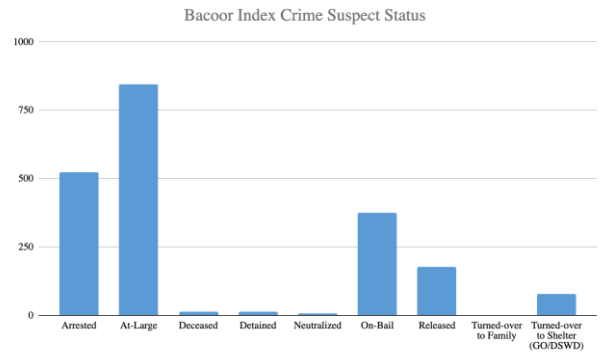


Fig. 12. Bacoor index crime suspect status.

41.54% of index crimes suspects are still at large, 18.44% on bail, and 8.65% are released, for a total of 68.53% of index crime suspects still free. In contrast, only 25.71% are arrested.

People in their 30s dominate the age group of index crime suspects in Bacoor, followed by people ages 18-24. People in their late 20s and people in their 40s are leading as well.

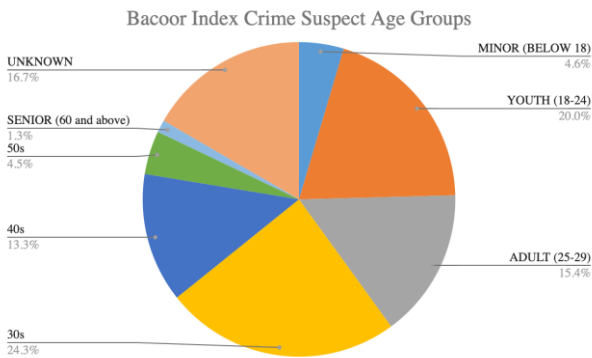


Fig. 13. Bacoor index crime suspect age groups.

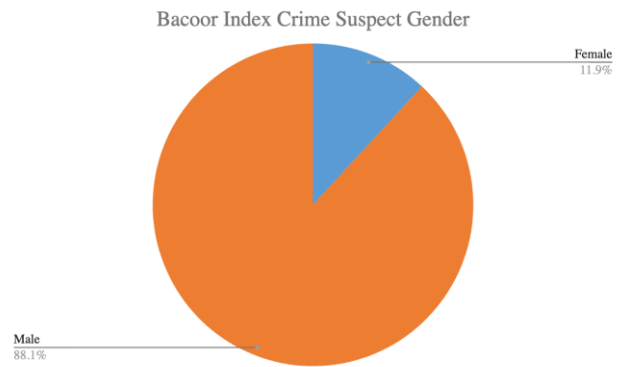


Fig. 14. Bacoor index crime suspect gender.

Males dominate the suspect gender of index crimes in Bacoor at 88.1%
 Suspects are mostly unemployed (42.23%) or private employees (26.38%)



Fig. 15. Bacoor index crime suspect occupation.

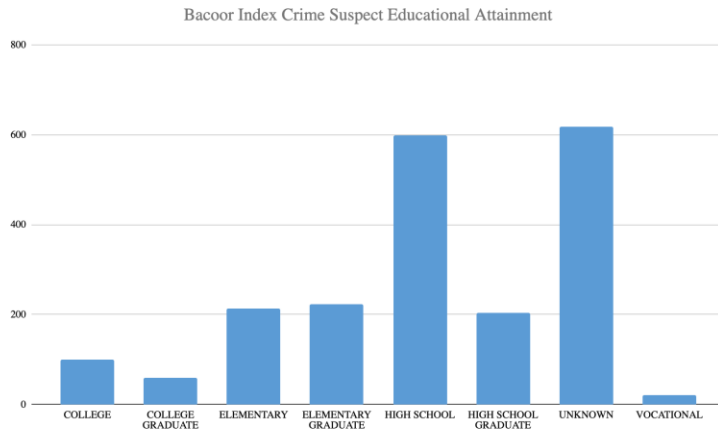


Fig. 16. Bacoor index crime suspect educational attainment.

Bacoor index crime suspects with high school education top the list at 29.4%. A general downward trend is observed the higher the educational attainment is.

For 79.35% of index crimes committed, there's no relationship found between the suspect and victim. Looking past this, we can observe that the remaining suspect-victim relationship is either professional (10.82%) or family (4.18%).

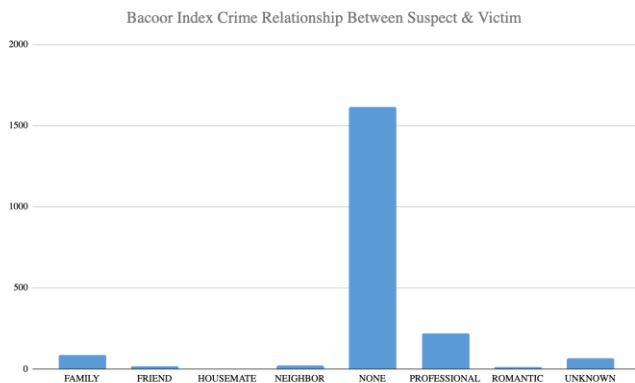


Fig. 17. Bacoor index crime relationship between suspect & victim.

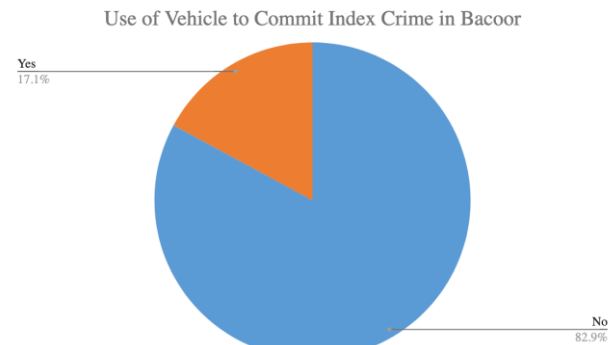


Fig. 18. Use of vehicle to commit index crime in Bacoor.

8 out of 10 index crimes committed in Bacoor don't involve the use of a vehicle.

97.6% of index crimes committed in Bacoor don't involve the use of a firearm.

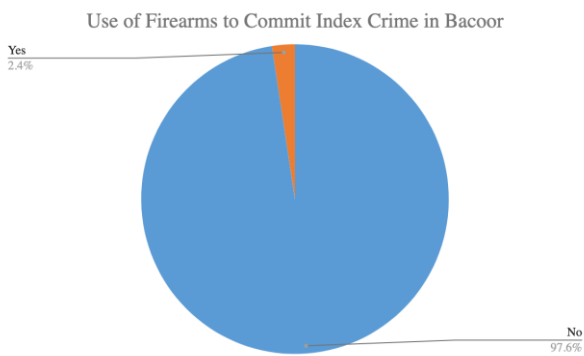


Fig. 19. Use of firearms to commit index crime in Bacoor.

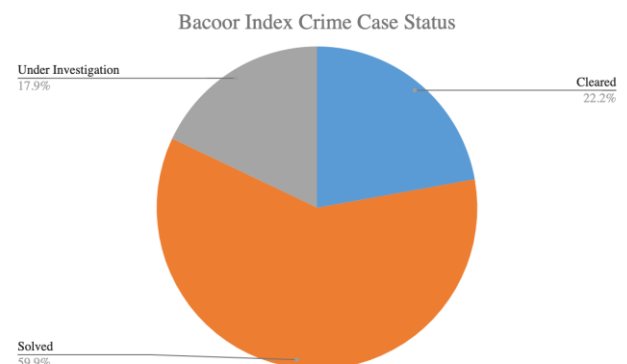


Fig. 20. Bacoor index crime case status.

60% of index crimes in Bacoor are tagged as Solved, the remaining cases are under the Cleared and Under Investigation categories

3. Results & Discussion

61.55% of all index crimes in Bacoor from 2016 to 2020 fall under the Theft and Robbery category. In the context of police operations efficiency and alleviating manpower allocation problems, an awareness campaign against typical robbery and theft modus may help lower the number of cases. Adding preventive measures such as surveillance camera installation in public spaces can aid in deterring and reducing the rate of theft and robbery.

This observation is crucial as 7 out of 10 index crimes in Bacoor occurred in private places, specifically residential units. The knowledge against typical modus may decrease the robbery and theft effectiveness and the presence of surveillance cameras may dissuade the attempt in general. It should be noted that the place with the 2nd most index crime occurrences is business establishments, which should push the Bacoor national police to make installation of security devices and adoption of security measures a requirement.

20 Bacoor barangays out of 73 generate 69.71% of total index crimes. From this 20, 49% of these crimes occurred in the top 3 barangays, Molino III, Habay II, and Molino IV. In terms of density, Molino 3 has the most schools, business establishments, and major access roads. Habay II is the home of SM Bacoor, the first major mall in Bacoor. While Molino IV is the home of SM Molino, the 2nd major mall built in Bacoor that is within reasonable distance to most subdivisions. Molino IV is also the home of Evia Lifestyle Center, an upscale mall that houses Southeast Asia's first IMAX with Laser cinema. This contextual information may be the reason why they dominate in terms of index crime occurrences. For effective reduction and deterrence of index crimes, it's a good idea to increase police presence, police patrols, and surveillance cameras in these areas.

Index crime frequency per year is on a downward trend and there's no factor that can be attributed to the sharp drop from 2017 and the steady decline from 2018 to 2020. This is notable since the population and developments in Bacoor are continuing to increase, which can be observed in the increased frequency and severity of traffic congestions. In the interest of public safety, it's best to err on the side of caution and assume that the downward trend may be attributed to increased sophistication of modus and suspects or limited police activity due to limited manpower.

In terms of index crime frequency in Bacoor per month, it should be noted that a significant decrease can be observed in April and May, which are considered the months of summer in the Philippines and when vacation for students starts. Probable reasons may be either the suspects or the police aren't incentivized to go out in the summer heat, the suspects don't have enough victims to target in the absence of students, the suspects don't have enough victims to target since most of them are on a vacation, or the suspects are having a difficult time initiating their modus since there are now fewer people around.

Index crime frequency is highest on a Sunday, which can be explained by the number of churchgoers attending Sunday mass in Bacoor, which has 12 major Roman Catholic churches. Index crimes frequency is highest at 8 PM and 8 AM respectively. Both times are classified as rush hour, where suspects can capitalize on stressed and tired commuters stuck in cramped spaces and long queues. Another notable observation in the index crime frequency per hour is the general upward trend starting from 2 PM then a sharp drop starting from 10 PM. This may be a crucial insight on how the Bacoor PNP can plan and time their patrol operations.

Exactly 50% of index crime victims in Bacoor are people in their 30s to 40s and surprisingly, 6 out of 10 victims are males. Over half of these victims are employees, which might be a corroborative insight with respect to the barangays, months, and times with the highest index crime frequency and the general nature of the index crime itself.

41.54% of the suspects are still at large, which is understandable considering the nature of the leading index crimes. However, there should still be a large-scale initiative to decrease the number of suspects who are still at large.

Suspects who are in their 30s are the most dominant age group, notably followed by youth who are 18 to 24 years old. 88.1% of these suspects are male. Understandably, 42.23% of these suspects are unemployed,

however, a huge percentage (26.38%) of suspects are private employees too. It should be noted that in terms of educational attainment, the trend is the higher the educational attainment, the lower the number of suspects for that educational level. Combining the dominant suspect age groups and their educational attainment paints a picture of people who may have resorted to crime due to a lack of knowledge and opportunities. This angle may be a good foundation to initiate education drives for youth and initiate more livelihood projects for people in their 30s to deter them from considering a life of crime.

Most of the index crime suspects have no relations to their victims at 79.35%, however, it should be noted that the next highest relationship is professional. In terms of usage of vehicles and firearms to commit index crimes, most of the suspects never use vehicles (82.9%) or firearms (97.6%). This information may prove to be a solid foundation to initiate wider and more frequent operations to arrest more suspects, considering that more than half of the cases handled by Bacoor PNP are solved.

4. Conclusions

Overall, the frequency analysis on Bacoor index crime data from 2016 to 2020 reveals that the suspect behavior and crime patterns follow a logical fashion, which is evident in the peak and dip of committed crimes in terms of hours, days, months, location, and relationship with victims.

In terms of holistic prevention, initiatives for out-of-school youth and livelihood programs for people in their 30s and above should help reduce the number of index crimes as the suspect profile are typically people with limited educational attainment which subsequently means limited opportunities. In terms of tactical prevention, increasing police presence, police patrol frequency, and surveillance cameras in Bacoor's top 3 barangay crime hotspots should deter most crimes and significantly reduce the number of index crimes further.

Considering that almost all the committed index crimes don't involve the usage of a weapon or vehicle, it is strongly recommended that the Bacoor PNP increase the scale and frequency of its anti-crime operations in terms of the risk-benefit ratio. Addressing the limited manpower of PNP, focusing the bulk of their operations and patrol activities in Molino III, Habay II, and Molino IV during rush hour should lead to more arrests without burdening their manpower resources. Additional focus should be given to business establishments as most of the victims are employees.

The resulting information from frequency analysis on Bacoor's index crimes should serve as a foundational resource for more in-depth data analysis.

5. Acknowledgment

The researchers would like to thank and acknowledge the entire Bacoor PNP team, especially PLTCOL Christopher C. Guste, the Chief of Police of Bacoor, for providing the data, and PCpl Wilson Mendoza, for procuring the data and providing guidance and support.

6. References

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