STRUCTURAL BREAKS IN THE SOCIOECONOMIC DETERMINANTS OF ILLEGAL DRUG USE: EVIDENCE FROM THE 2016 ANTI-ILLEGAL DRUG CAMPAIGN AND COVID-19 PANDEMIC IN NORTHERN MINDANAO, PHILIPPINES

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ABSTRACT: *Illegal drug use remains a significant socioeconomic and public health concern in the Philippines. This study examined the socioeconomic determinants of illegal drug use in Northern Mindanao and assessed whether the 2016 anti-illegal drug campaign and the COVID-19 pandemic generated structural changes in illegal drug use dynamics. Using annual time-series data from 2006 to 2024, the study employed descriptive trend analysis and negative binomial regression with a dynamic specification incorporating structural break terms. Results indicate that a one-percentage-point increase in unemployment was associated with a 49.3% increase in the expected number of reported illegal drug users, whereas a one-percentage-point increase in underemployment reduced the expected number of reported users by 14.2%. Inflation and GDP growth rates were not statistically significant predictors. The anti-illegal drug campaign was associated with an immediate 354.3% increase in reported illegal drug users followed by a 28.2% annual decline in the post-intervention trend. Conversely, the COVID-19 pandemic produced an immediate 92.5% decline in reported illegal drug users, followed by a 172.7% annual increase during the post-pandemic period. The findings indicate that labor-market conditions and major societal disruptions significantly influence illegal drug use dynamics in Northern Mindanao. The study highlights the importance of integrating employment generation, rehabilitation services, and community-based interventions into drug prevention strategies*

Keywords: illegal drug use, structural breaks, negative binomial regression, anti-illegal drug campaign, COVID-19 pandemic, Northern Mindanao.

INTRODUCTION

Illegal drug use remains a significant socioeconomic and public health concern in the Philippines, imposing substantial costs through increased crime, reduced labor productivity, weakened social cohesion, and higher expenditures on healthcare, law enforcement, and rehabilitation services. Despite the implementation of the Comprehensive Dangerous Drugs Act of 2002 (Republic Act No. 9165) and various government-led interventions, illegal drug use continues to challenge national and local development efforts. According to the Dangerous Drugs Board, admissions to Drug Abuse Treatment and Rehabilitation Centers have increased in recent years, with most cases involving economically active individuals and methamphetamine hydrochloride (shabu) remaining the most commonly abused substance [1]. These trends underscore the continuing socioeconomic implications of illegal drug use for labor markets, household welfare, and community development.

The relationship between socioeconomic conditions and illegal drug use has been widely documented in the literature. Unemployment, poverty, economic deprivation, and limited opportunities have been identified as important determinants of substance abuse and drug-related behavior [2-4]. However, these relationships may change over time as major policy interventions and external shocks alter economic incentives, enforcement mechanisms, and social behavior [5-7]. Previous studies have shown that unemployment and economic insecurity increase the risk of substance use, whereas stronger labor-force attachment may help reduce such behavior [29, 30, 31]. Moreover, structural-break literature highlights the importance of accounting for major policy interventions and external shocks that may alter socioeconomic relationships over time [32, 33].

Two major events are particularly relevant in the Philippine context. First, the nationwide anti-illegal drug campaign launched in 2016 intensified law-enforcement operations, community surveillance, and anti-drug initiatives, potentially altering both the supply and demand conditions of illegal drug markets [8-10]. Second, the COVID-19 pandemic in 2020 disrupted economic activity, employment, mobility, and social interactions while affecting drug distribution networks and access to treatment services [11, 12]. International evidence suggests that the pandemic significantly affected illicit drug markets and consumption patterns [13-15]. Both events therefore represent major shocks capable of altering the determinants of illegal drug use.

These developments highlight the importance of structural break analysis. Structural breaks occur when major institutional, policy, or environmental changes alter underlying relationships among variables, resulting in shifts in levels, trends, or behavioral responses [5-7]. Failure to account for such changes may lead to biased estimates and misleading policy conclusions [7, 16].

Despite substantial policy and socioeconomic changes since 2016, empirical evidence remains limited regarding whether the determinants of illegal drug use changed following the anti-illegal drug campaign and the COVID-19 pandemic. Existing studies have primarily focused on drug prevalence, enforcement outcomes, rehabilitation efforts, and public perceptions [17-19], while generally assuming stable relationships between socioeconomic conditions and illegal drug use over time.

This study addresses this gap by examining the socioeconomic determinants of illegal drug use and testing for structural breaks associated with the 2016 anti-illegal drug campaign and the COVID-19 pandemic in Northern Mindanao, Philippines. Using annual data from 2006 to 2024, the study employs a negative binomial regression model with a dynamic specification and structural break terms to evaluate whether the relationships between socioeconomic factors and illegal drug use changed following these major events.

Research Objective

This study examined the socioeconomic determinants of illegal drug use in Northern Mindanao, Philippines, and

assessed whether major policy and public health shocks generated structural changes in illegal drug use dynamics.

Specifically, it sought to:

1. Analyze the trends in illegal drug use before and after the implementation of the 2016 anti-illegal drug campaign and the onset of the COVID-19 pandemic in Northern Mindanao.
2. Estimate the effects of selected socioeconomic factors such as inflation rate, underemployment, unemployment, and gross regional domestic product growth rate on illegal drug use and examine the presence of structural breaks associated with the 2016 anti-illegal drug campaign and the COVID-19 pandemic using a negative binomial regression model with a dynamic specification.

METHODS

Research Design

This study employed a quantitative explanatory research design using annual time-series data from 2006 to 2024 to examine the dynamics of illegal drug use in Northern Mindanao, Philippines. The study combined descriptive trend analysis and econometric modeling to investigate whether major policy interventions and public health shocks altered the trajectory and socioeconomic determinants of illegal drug use. Specifically, the analysis focused on two major events: (1) the implementation of the nationwide anti-illegal drug campaign in 2016 and (2) the onset of the COVID-19 pandemic in 2020.

The analytical framework consisted of two stages. First, descriptive trend analysis was conducted to examine changes in illegal drug use before and after the identified structural shocks. Second, a negative binomial regression model with a dynamic specification and structural break terms was estimated to determine whether the relationships between selected socioeconomic variables and illegal drug use changed following these events. The model incorporated a lagged dependent variable in the conditional mean specification to capture temporal persistence while accommodating overdispersion in the count outcome [36, 37].

Data Sources and Variables

The study utilized annual secondary data covering the period from 2006 to 2024. The dependent variable reflects reported illegal drug users rather than actual drug use prevalence in Northern Mindanao, obtained from records of the Dangerous Drugs Board (DDB), Philippine National Police (PNP), and Department of Health (DOH). The unemployment rate and underemployment rate were obtained from the Philippine Statistics Authority (PSA) Labor Force Survey. Inflation rate data were sourced from the Bangko Sentral ng Pilipinas (BSP), while Gross Regional Domestic Product (GRDP) growth rate data were obtained from the Philippine Statistics Authority (PSA). These variables were selected based on theoretical and empirical evidence linking labor-market conditions and macroeconomic performance to substance abuse and drug-related behavior [2-4]. In addition, structural-break variables were introduced to capture the effects of the nationwide anti-illegal drug campaign implemented in 2016 and the COVID-19 pandemic beginning in 2020.

Data Analysis

To examine the socioeconomic determinants of illegal drug use, this study employed a negative binomial regression model with a dynamic specification. Dynamic count-data models incorporating structural breaks have been increasingly applied to examine changes in socioeconomic and crime-related processes over time [36, 37]. Previous studies have used dynamic count regression frameworks to analyze policy interventions, crime incidence, and public health outcomes in the presence of structural changes and external shocks [7, 16, 20]. Combining a negative binomial regression model with a dynamic specification and structural break terms enables the simultaneous estimation of count outcomes, temporal dependence, overdispersion, and intervention effects associated with major policy and environmental disruptions.

To account for temporal dependence, a lagged dependent variable was incorporated into the model. This dynamic specification recognizes that current levels of illegal drug use may be influenced by previous levels due to persistence in drug-related behavior, social interactions, and institutional factors [36].

Following Hansen [5], Piehl *et al.* [16], Aue and Horváth [6], and Casini and Perron [7], structural breaks were modeled using intervention dummy variables and trend-shift interaction terms to capture both immediate level changes and post-intervention trend changes associated with the 2016 anti-illegal drug campaign and the COVID-19 pandemic. The intervention variables are defined as:

$$Post2016_t = \begin{cases} 1, for\ t \geq 2016 \\ 0, \quad otherwise \end{cases}$$

$$Post2020_t \begin{cases} 1, \ for\ t \geq 2020 \\ 0, \quad otherwise \end{cases}$$

A linear time trend variable $Trend_t$ was generated to represent the passage of time. To assess whether the trajectory of illegal drug use changed after each event, the following interaction terms were constructed:

$$Trend2016_t = Trend_t \times Post2016_t$$

$$Trend2020_t = Trend_t \times Post2020_t$$

The negative binomial regression model with a dynamic specification is specified as follows:

$$IllegalUsers_t \sim NB(\mu_t, \alpha)$$

$$E(IllegalUsers_t | X_t) = \mu_t$$

$$\mu_t = \exp(\beta_0 + \beta_1 IllegalUsers_{t-1} + \beta_2 Inf_t + \beta_3 UndEmp_t + \beta_4 Unemp_t + \beta_5 GRDPGrowth_t + \beta_6 Post2016_t + \beta_7 Trend2016_t + \beta_8 Post2020_t + \beta_9 Trend2020_t)$$

Where:

μ_t = expected number of reported illegal drug users in year t;

$IllegalUsers_{t-1}$ =lagged number of illegal drug users;

Inf_t = Inflation rate;

$UndEmp_t$ = underemployment rate;

$Unemp_t$ = unemployment rate;

$GRDPGrowth_t$ = gross regional domestic product growth rate;

$Post2016_t$ =intervention dummy for the 2016 anti-illegal drug campaign;

$Trend2016_t$ =post-2016 trend interaction term;

$Post2020_t$ = intervention dummy for the COVID-19 pandemic;

$Trend2020_t$ =post-2020 trend interaction term;

α = dispersion parameter of the Negative Binomial model;

$\beta_0, \beta_1 \ldots \beta_9$ = parameters to be estimated.

Within this framework, $Post2016_t$ and $Post2020_t$ capture immediate level shifts associated with the anti-illegal drug campaign and the COVID-19 pandemic, respectively, while $Trend2016_t$ and $Trend2020_t$ capture changes in post-intervention trajectories. Statistically significant coefficients indicate evidence of structural change in the determinants and dynamics of illegal drug use.

All statistical analyses were performed using Stata 19.5. Statistical significance was assessed at the 1%, 5%, and 10% levels.

RESULTS AND DISCUSSION

3.1 Trends in Illegal Drug Use Before and After Major Structural Shocks

Figure 1 presents the trends in reported illegal drug users in Northern Mindanao from 2006 to 2024, highlighting two major structural shocks: the implementation of the nationwide anti-illegal drug campaign in 2016 and the onset of the COVID-19 pandemic in 2020. The solid line represents actual reported illegal drug users, while the dashed line represents model-predicted values. The vertical dashed line marks the implementation of the 2016 anti-illegal drug campaign, while the vertical dotted line marks the onset of the COVID-19 pandemic in 2020.

The figure also compares the actual number of illegal drug users with the values predicted by the dynamic negative binomial model.

Prior to 2015, reported illegal drug use generally exhibited a declining trend, decreasing from approximately 110 reported users in 2006 to fewer than 30 users by 2014. Although minor fluctuations were observed during this period, the overall pattern suggests a relatively low and stable incidence of illegal drug use. This trend may reflect prevailing socioeconomic conditions, law-enforcement practices, and institutional responses prior to the intensified anti-drug interventions introduced in 2016.

A notable increase in reported illegal drug users occurred beginning in 2015, with cases rising sharply to more than 200 individuals. Following the implementation of the anti-illegal drug campaign in 2016, the number of reported users remained elevated and fluctuated between approximately 140 and 270 users through 2018. Contrary to expectations that intensified anti-drug operations would immediately reduce illegal drug use, reported cases continued to increase during the early years of the campaign. One plausible explanation is that intensified law-enforcement operations, community surveillance, and voluntary surrender programs improved the identification and documentation of drug users, resulting in higher recorded incidence rather than an immediate increase in actual drug consumption [8, 9, 21].

Note. The solid line represents actual reported illegal drug users, while the dashed line represents model-predicted values. The vertical dashed line marks the implementation of the 2016 anti-illegal drug campaign, while the vertical dotted line marks the onset of the COVID-19 pandemic in 2020.Between 2018 and 2020, reported illegal drug use declined substantially, reaching its lowest level during the study period in 2020. This decline coincides with the onset of the COVID-19 pandemic, which introduced mobility restrictions,

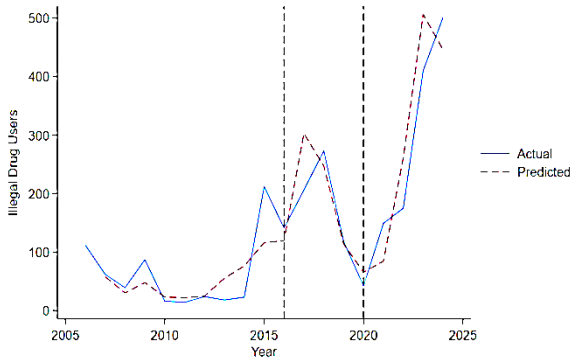

Figure 1:Trends in Reported Illegal Drug Users Before and After Major Structural Shocks in Northern Mindanao, Philippines, 2006–2024

community quarantines, business closures, and disruptions to economic and social activities worldwide [11, 12]. The reduction in reported illegal drug users during this period may reflect disruptions in drug supply chains, restrictions on movement, reduced social interaction, and temporary shifts in law-enforcement priorities during the public health emergency. Similar disruptions in illicit drug markets and drug-related behavior during the pandemic have been documented in several countries [13-15].

However, the decline observed during the initial pandemic period was short-lived. Beginning in 2021, illegal drug use exhibited a strong upward trajectory, increasing from approximately 150 users in 2021 to nearly 500 users by 2024. The rapid increase following the pandemic may reflect the reopening of economic activities, restoration of mobility, recovery of drug distribution networks, and growing socioeconomic pressures. Similar post-pandemic rebounds in illicit drug markets have been documented internationally [14,15,28].

The trend analysis provides preliminary evidence that both the 2016 anti-illegal drug campaign and the COVID-19 pandemic were associated with notable changes in the trajectory of illegal drug use in Northern Mindanao. While the anti-illegal drug campaign appears to have coincided with increased detection and reporting of drug users, the COVID-19 pandemic was associated with a temporary decline followed by a substantial resurgence in reported cases. These observed shifts support the need for formal econometric testing to determine whether the socioeconomic determinants of illegal drug use experienced structural changes following these major events. Consistent with the structural change literature, major policy interventions and external shocks can alter the behavior of socioeconomic processes and generate shifts in underlying relationships over time [5-7].

3.2 Structural Break Models of Illegal Drug Use

Table 1 presents the results of the negative binomial regression model with a dynamic specification examining the

socioeconomic determinants of reported illegal drug users in Region X from 2007 to 2024. The model is statistically significant overall (Wald $\chi^2 = 244.22$, $p < .001$), indicating that the explanatory variables jointly explain variations in reported illegal drug users.

Table 1: Negative Binomial Regression Model with a Dynamic Specification: Estimates of Illegal Drug Users with Structural Breaks, Region X, Philippines, 2007–2024

Variables	Coefficient	Robust SE	z-statistic	p-value
Lagged Illegal Drug Users (t−1)	0.001	0.003	0.26	0.799
Underemployment Rate	-0.153***	0.047	-3.27	<.001
Unemployment Rate	0.401***	0.092	4.36	<.001
Inflation Rate	-0.064	0.054	-1.19	0.236
GRDP Growth Rate	-0.093	0.066	-1.41	0.159
Post-2016 Structural Break	1.514***	0.549	2.76	0.006
Post-2016 Trend Change	-0.331**	0.158	-2.10	0.036
Post-2020 Structural Break	-2.588**	1.304	-1.99	0.047
Post-2020 Trend Change	1.003***	0.281	3.57	<.001
Constant	6.513***	1.314	4.96	<.001
Diagnostic		**Value**		
Observations		18		
Wald $\chi^2(9)$		244.22***		
Prob > χ^2		<.001		
Log Pseudolikelihood		-91.600		
Pseudo R^2		0.143		
Alpha (α)		0.201		
95% CI for Alpha		[0.104, 0.386]		
Mean VIF (Socioeconomic Variables)		1.15		
Maximum VIF (Socioeconomic Variables)		1.27		

*Note***.** Robust standard errors are reported. N = 18. α denotes the overdispersion parameter. Statistical significance levels: *p < .10, **p < .05, ***p < .01

The estimated dispersion parameter (α = 0.201; 95% CI = 0.104–0.386) is significantly greater than zero, confirming the presence of overdispersion and validating the use of the negative binomial specification instead of the Poisson alternative. Furthermore, the low mean and maximum VIF values of 1.15 and 1.27, respectively, indicate that multicollinearity among the socioeconomic variables is not a concern. Alternative model specifications produced qualitatively similar coefficient signs and significance levels, supporting the robustness of the principal findings.

The coefficient of the lagged dependent variable is positive but statistically insignificant (β = 0.001, p = 799), suggesting that previous levels of reported illegal drug users do not significantly influence current levels once socioeconomic conditions and structural-break effects are taken into account. This finding indicates that temporal persistence is not a dominant characteristic of the series after controlling for contemporaneous explanatory variables. Although dynamic count-data processes often exhibit state dependence, the absence of a significant lag effect suggests that fluctuations in reported illegal drug users are more strongly associated with current labor-market conditions and major structural disruptions than with the continuation of past trends.

Among the socioeconomic determinants, underemployment rate exhibits a negative and statistically significant coefficient (β = −0.153, p = <.001), while unemployment rate displays a positive and highly significant coefficient (β = 0.401, p < .001). Converting these coefficients into incidence rate ratios provides a more intuitive interpretation of their magnitude. The coefficient for underemployment corresponds to an incidence rate ratio of 0.858, indicating that a one-percentage-point increase in underemployment is associated with a 14.2% decrease in the expected number of reported illegal drug users. Conversely, the coefficient for unemployment yields an incidence rate ratio of 1.493, implying that a one-percentage-point increase in unemployment is associated with a 49.3% increase in the expected number of reported illegal drug users, holding other factors constant. These findings highlight the role of labor-market conditions in illegal drug use and are consistent with evidence linking unemployment to substance-use problems [2–4,22, 29-31]. They further suggest that labor-force attachment, even under conditions of underemployment, may help reduce engagement in risky behaviors and substance use [3, 22, 31].

In contrast, inflation rate (β = −0.064, p = .236) and GRDP growth rate (β = −0.093, p = .159) are not statistically significant. This suggests that broader macroeconomic conditions do not exert an independent influence on reported illegal drug users once labor-market conditions and structural shifts are considered. While inflation and economic growth capture aggregate economic performance, their effects may operate indirectly through employment conditions rather than directly affecting illegal drug use. Consequently, improvements in economic growth alone may not be sufficient to reduce illegal drug use if such growth does not translate into meaningful employment opportunities or reduced labor-market vulnerability. This finding is consistent with research emphasizing that employment-related conditions are more closely associated with substance-use outcomes than aggregate macroeconomic indicators [19, 23].

The intercept (β = 6.513, p < .001) represents the baseline expected log count of reported illegal drug users when all explanatory variables and intervention indicators are equal to zero. Although statistically significant, the intercept primarily serves as the model's baseline and has limited substantive interpretation because such conditions are not empirically meaningful.

The structural-break variables reveal substantial changes in both the level and trajectory of reported illegal drug users. The post-2016 structural-break coefficient is positive and statistically significant (β=1.514, p=.006). The corresponding incidence rate ratio of 4.543 indicates that the implementation of the nationwide anti-illegal drug campaign was associated with an immediate 354.3% increase in the expected number

of reported illegal drug users relative to the pre-2016 period, holding other factors constant. This immediate increase may reflect intensified surrender, detection, and reporting of drug users resulting from expanded law-enforcement operations and anti-drug initiatives. The estimated post-2016 structural break may partly capture increased reporting, detection, and voluntary surrender associated with intensified anti-drug operations rather than a pure increase in actual drug use. Therefore, the coefficient should be interpreted as an intervention-related shift in reported illegal drug users rather than definitive evidence of increased drug consumption. This interpretation is consistent with policy-evaluation literature emphasizing that major interventions may influence both underlying behavior and the mechanisms through which outcomes are measured and reported [34, 35]. However, the post-2016 trend coefficient is negative and statistically significant ($\beta = -0.331$, $p = .036$), indicating that the expected number of reported illegal drug users declined by approximately 28.2% annually following the initial increase.

Taken together, these results suggest that the anti-illegal drug campaign generated an immediate reporting effect followed by a gradual decline in the post-intervention trajectory. The findings contribute to the broader debate regarding the effectiveness of enforcement-oriented drug policies. While the campaign appears to have increased the visibility and identification of drug users, the continued significance of labor-market variables suggests that the underlying socioeconomic drivers of illegal drug use persisted beyond the initial enforcement response. This interpretation is consistent with studies indicating that the Philippine anti-drug campaign increased state intervention and reporting mechanisms while producing more complex long-term outcomes than those implied by enforcement statistics alone [17, 18, 24-27].

Similarly, the post-2020 structural-break coefficient is negative and statistically significant ($\beta = -2.588$, $p = .047$). The corresponding incidence rate ratio of 0.075 indicates an immediate 92.5% decline in the expected number of reported illegal drug users during the onset of the COVID-19 pandemic. In contrast, the post-2020 trend coefficient is positive and highly significant ($\beta = 1.003$, $p < .001$), implying that the expected number of reported illegal drug users increased by approximately 172.7% annually during the post-pandemic period. These findings suggest that the pandemic generated a substantial short-run disruption in reported illegal drug use, followed by a strong recovery trend in subsequent years.

The observed pattern is consistent with international evidence showing that the COVID-19 pandemic disrupted illicit drug markets, altered drug-use behavior, and affected access to treatment and support services [13-15, 28]. The continued significance of unemployment and underemployment after controlling for structural breaks further suggests that labor-market conditions remained important determinants of illegal drug use throughout the study period. These findings support the view that illegal drug use is closely linked to broader socioeconomic vulnerabilities rather than solely to individual behavioral factors.

The results provide evidence that labor-market conditions and major structural disruptions significantly influenced the dynamics of reported illegal drug users in Northern Mindanao. The significance of both the 2016 and 2020 structural-break parameters demonstrates that the determinants of illegal drug use are not stable over time but evolve in response to major policy interventions and external shocks. This finding is consistent with structural-break literature, which suggests that major institutional and environmental changes can alter underlying socioeconomic relationships and lead to shifts in behavioral outcomes over time [5-7,16, 32, 33].

CONCLUSION AND RECOMMENDATIONS

This study demonstrates that illegal drug use in Northern Mindanao is shaped by both labor-market conditions and major structural shocks, with unemployment, underemployment, the 2016 anti-illegal drug campaign, and the COVID-19 pandemic significantly influencing reported illegal drug use dynamics. The results from the negative binomial regression model with a dynamic specification indicate that unemployment and underemployment are the primary socioeconomic determinants of reported illegal drug users. While unemployment significantly increases the expected number of reported illegal drug users, underemployment exhibits a significant negative relationship, suggesting that labor-market exclusion poses a greater risk than imperfect labor-force participation. In contrast, inflation and GDP growth rates do not exert significant effects, indicating that labor-market conditions are more influential than broader macroeconomic indicators in explaining variations in illegal drug use.

The findings further reveal significant structural changes associated with the 2016 anti-illegal drug campaign and the COVID-19 pandemic. The anti-illegal drug campaign generated an immediate increase in reported illegal drug users, likely reflecting intensified detection, reporting, and enforcement activities, followed by a gradual decline in the post-intervention trend. Conversely, the COVID-19 pandemic produced a substantial short-run decline in reported illegal drug users, followed by a strong recovery trajectory during the post-pandemic period. These results suggest that major policy interventions and external shocks can significantly alter both the level and trajectory of illegal drug use over time.

This study is limited by the use of aggregate annual data and a relatively small sample size (2006–2024), which may not fully capture individual-level behavioral responses, spatial variation, or more complex dynamic relationships. Although the negative binomial regression with a dynamic specification model appropriately addresses overdispersed count data, the findings should be interpreted as associations rather than causal effects. Nevertheless, official government records provide a consistent basis for examining long-term structural changes in illegal drug use dynamics. In addition, the use of reported illegal drug users may be subject to underreporting and changes in reporting practices over time, particularly following major policy interventions and public health disruptions. Future studies may employ panel-data approaches, spatial econometric techniques, or micro-level datasets to provide deeper insights into the socioeconomic mechanisms underlying illegal drug use and strengthen causal

inference. The analytical framework developed in this study may be replicated in other Philippine regions and at the national level to assess whether similar structural changes in illegal drug use dynamics emerge under different socioeconomic conditions.

To address illegal drug use more effectively in Northern Mindanao, policymakers should adopt integrated and evidence-based strategies: (1) strengthen employment-generation, livelihood, and job-quality enhancement programs, particularly in communities with high unemployment and underemployment rates; (2) expand skills development, job placement, entrepreneurship, and economic reintegration initiatives through agencies such as DOLE, TESDA, DTI, and local government units; (3) complement law-enforcement efforts with community-based rehabilitation, mental health services, family support programs, and recovery-focused interventions; (4) integrate drug prevention and rehabilitation services into disaster preparedness and public health response frameworks to ensure continuity during future crises; and (5) strengthen interagency coordination, data monitoring systems, and the capacity of Local Anti-Drug Abuse Councils (LADACs) to support evidence-based decision-making. Such coordinated interventions can contribute to reducing labor-market vulnerabilities, improving rehabilitation outcomes, and promoting more sustainable reductions in illegal drug use in Northern Mindanao.

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