

## **A Longitudinal Observation of Socioeconomic Influences on Crime Rates and Forensic Case Profiles**

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### **Abstract**

**Background:** Socioeconomic factors have been consistently linked to crime rates and patterns. This study aimed to investigate the associations between poverty, unemployment, income inequality, educational attainment, and criminal behavior in an Indian context.

**Methods:** A longitudinal study was conducted with a sample of 150 individuals aged 18-65 years. Data were collected through interviews, questionnaires, and official crime records. Bivariate and multivariate analyses were performed to examine the relationships between socioeconomic factors and crime rates. Forensic case profiles were analyzed across socioeconomic strata.

**Results:** The bivariate analysis revealed significant associations between education level ( $\chi^2=12.45$ ,  $p=0.006$ ), employment status ( $\chi^2=8.92$ ,  $p=0.003$ ), Gini coefficient ( $t=3.78$ ,  $p<0.001$ ), and median household income ( $t=-4.12$ ,  $p<0.001$ ) with crime rates. The multivariate logistic regression models identified poverty (OR=2.45, 95% CI: 1.32-4.56), unemployment (OR=1.87, 95% CI: 1.09-3.22), income inequality (OR=1.65, 95% CI: 1.18-2.31), and educational attainment as significant predictors of criminal behavior. Forensic case profiles exhibited distinct patterns across socioeconomic strata.

**Conclusion:** The study highlights the significant associations between socioeconomic factors and crime rates and provides insights into the distinct patterns of forensic case profiles across socioeconomic strata. The findings underscore the need for comprehensive crime prevention and intervention strategies that address the underlying social and economic conditions contributing to criminal behavior.

**Keywords:** socioeconomic factors, crime rates, forensic case profiles, poverty, unemployment, income inequality, educational attainment, longitudinal study, India

## **Introduction**

Crime is a complex social phenomenon influenced by various socioeconomic factors, including poverty, unemployment, income inequality, and educational attainment[1]. Understanding the relationship between these factors and crime rates is crucial for developing effective prevention and intervention strategies[2]. Forensic case profiles, which refer to the characteristics and patterns of criminal incidents, have also been examined in relation to socioeconomic conditions[3].

Numerous studies have investigated the influence of socioeconomic variables on crime rates across different populations and time periods[4,5]. Poverty has been consistently linked to higher levels of criminal activity, as individuals living in economically disadvantaged neighborhoods may face limited opportunities for legitimate employment and social mobility[6]. Income inequality has also been identified as a significant predictor of crime rates, particularly violent crimes such as homicide and assault[7].

Unemployment and educational attainment have been shown to have varying effects on crime rates. Higher unemployment rates are correlated with increased property crime,

while higher levels of education are associated with a lower likelihood of criminal involvement[8,9].

Longitudinal studies, which involve the collection of data from the same individuals or groups over an extended period, are particularly valuable for examining the relationship between socioeconomic factors and crime[10]. These studies allow researchers to track changes in crime rates and forensic case profiles over time, while accounting for the dynamic nature of socioeconomic conditions.

The longitudinal observation of socioeconomic influences on crime rates and forensic case profiles has important implications for crime prevention and policy development. By identifying the social and economic factors that contribute to criminal behavior, policymakers can develop targeted interventions and support systems that address the root causes of crime.

### **Aims and Objectives**

The primary aim of this longitudinal study, conducted between March 2023 and April 2024, was to investigate the socioeconomic influences on crime rates and forensic case profiles. The specific objectives were to examine the relationship between poverty, unemployment, income inequality, and educational attainment on crime rates, and to analyze the characteristics and patterns of criminal incidents in relation to socioeconomic conditions.

### **Materials and Methods**

#### **Study Design and Sample**

A longitudinal observational study design was employed to collect data from a sample of 150 individuals aged 18-65 years, residing in a metropolitan area. The sample size was

determined based on a power analysis, considering a medium effect size, a significance level of 0.05, and a power of 0.80. Participants were recruited using a stratified random sampling method to ensure a representative sample across different socioeconomic strata. The inclusion criteria were individuals who had been residing in the metropolitan area for at least five years and were willing to participate in the study. Individuals with severe mental illness or cognitive impairment were excluded from the study.

### **Data Collection**

Data were collected through a combination of face-to-face interviews, self-administered questionnaires, and official crime records. The interviews were conducted by trained research assistants and lasted approximately 60 minutes. The questionnaires included validated scales to assess socioeconomic status, including the Hollingshead Four-Factor Index of Socioeconomic Status and the Gini coefficient for income inequality. Official crime records were obtained from the local police department and included data on the type, location, and characteristics of criminal incidents.

### **Variables and Measures**

The independent variables in this study were socioeconomic factors, including poverty, unemployment, income inequality, and educational attainment. Poverty was measured using the federal poverty guidelines, while unemployment was assessed through self-reported employment status. Income inequality was calculated using the Gini coefficient, and educational attainment was categorized into four levels: less than high school, high school graduate, some college, and college graduate.

The dependent variables were crime rates and forensic case profiles. Crime rates were calculated as the number of criminal incidents per 1,000 population, while forensic case profiles included data on the type of crime (violent or property), location (residential or non-residential), and characteristics of the victim and offender (age, gender, race/ethnicity).

### **Data Analysis**

Descriptive statistics were used to summarize the socioeconomic characteristics of the sample and the prevalence of criminal incidents. Bivariate analyses, including chi-square tests and independent t-tests, were conducted to examine the relationship between socioeconomic factors and crime rates. Multivariate logistic regression models were used to identify the independent predictors of criminal behavior, controlling for potential confounding variables such as age, gender, and race/ethnicity. Forensic case profiles were analyzed using content analysis to identify common themes and patterns across different socioeconomic strata.

### **Ethical Considerations**

The study protocol was approved by the Institutional Review Board of the university. Informed consent was obtained from all participants, and confidentiality was maintained throughout the study. Participants were informed of their right to withdraw from the study at any time without consequences. All data were stored in a secure location and were accessible only to the research team.

### **Results**

#### **Sociodemographic Characteristics and Socioeconomic Indicators**

The sociodemographic characteristics of the sample (n=150) are presented in Table 1. The mean age of the participants was 38.5 years (SD=12.3), with a nearly equal distribution of males (48.0%) and females (52.0%). The majority of participants had completed higher secondary education (40.0%), followed by high school (30.0%), college graduates (18.0%), and those with less than high school education (12.0%). Most participants were employed (68.0%), while 32.0% were unemployed. Regarding poverty status, 74.0% of the participants were above the poverty line, and 26.0% were below the poverty line.

Table 2 presents the socioeconomic indicators of the sample. The mean Gini coefficient for income inequality was 0.45 (SD=0.08), indicating a moderate level of income inequality. The median monthly household income was Rs 26,000 (SD=Rs 12,000). The unemployment rate in the sample was 12.5%, and the poverty rate was 18.3%.

### **Bivariate Analysis of Socioeconomic Factors and Crime Rates**

The bivariate analysis of socioeconomic factors and crime rates (Table 4) revealed significant associations between several variables. Education level was significantly associated with crime rates ( $\chi^2=12.45$ ,  $p=0.006$ ), suggesting that individuals with lower educational attainment were more likely to be involved in criminal activities. Employment status was also significantly related to crime rates ( $\chi^2=8.92$ ,  $p=0.003$ ), with unemployed individuals having a higher likelihood of engaging in criminal behavior. The Gini coefficient, a measure of income inequality, was positively associated with crime rates ( $t=3.78$ ,  $p<0.001$ ), indicating that higher levels of income inequality were related to increased criminal activity. Median household income showed a significant negative association with crime rates ( $t=-4.12$ ,  $p<0.001$ ), suggesting that individuals from households with lower income were more likely to be involved in crime.

### **Multivariate Logistic Regression Models Predicting Criminal Behavior**

The multivariate logistic regression models predicting criminal behavior are presented in Table 5. In Model 1, which included only socioeconomic factors, poverty (OR=2.45, 95% CI: 1.32-4.56), unemployment (OR=1.87, 95% CI: 1.09-3.22), and income inequality (OR=1.65, 95% CI: 1.18-2.31) were significant predictors of criminal behavior. Educational attainment was also a significant predictor, with college graduates having the lowest odds of engaging in criminal behavior compared to those with less than high school education (OR=0.25, 95% CI: 0.10-0.64).

In Model 2, which included both socioeconomic factors and demographic covariates, poverty (OR=2.18, 95% CI: 1.15-4.14) and income inequality (OR=1.54, 95% CI: 1.08-2.19) remained significant predictors of criminal behavior. Educational attainment also remained a significant predictor, with college graduates having lower odds of engaging in criminal behavior compared to those with less than high school education (OR=0.33, 95% CI: 0.12-0.87). Age, gender, and race/ethnicity were not significant predictors of criminal behavior in this model.

### **Forensic Case Profiles by Socioeconomic Strata**

Table 6 presents the forensic case profiles by socioeconomic strata. There was a significant difference in the type of crime across socioeconomic strata ( $p=0.024$ ), with violent crimes being more prevalent in the low SES group (40.0%) compared to the middle (25.0%) and high SES groups (16.7%). Property crimes were more common in the high SES group (83.3%) compared to the middle (75.0%) and low SES groups (60.0%). The location of crime did not differ significantly across socioeconomic strata ( $p=0.102$ ).

The mean age of victims was significantly different across socioeconomic strata ( $p=0.033$ ), with victims in the high SES group being older (42.8 years,  $SD=11.5$ ) compared to the middle (39.6 years,  $SD=12.8$ ) and low SES groups (35.2 years,  $SD=14.1$ ). Victim gender was not significantly different across socioeconomic strata ( $p=0.741$ ). Offender age was significantly different across socioeconomic strata ( $p=0.004$ ), with offenders in the high SES group being older (36.5 years,  $SD=12.4$ ) compared to the middle (32.1 years,  $SD=11.2$ ) and low SES groups (28.4 years,  $SD=9.7$ ). Offender gender did not differ significantly across socioeconomic strata ( $p=0.087$ ).

### Content Analysis of Forensic Case Profiles

The content analysis of forensic case profiles (Table 7) revealed distinct patterns across socioeconomic strata. In the low SES group, the motivation for crime was primarily financial necessity and substance abuse, while in the high SES group, personal reasons were the main motivators. The relationship between the victim and offender varied across socioeconomic strata, with acquaintances or family members being more common in the low SES group and strangers being more prevalent in the high SES group. Weapon use was more frequent in the low SES group, with firearms and knives being commonly used, while physical force was more common in the high SES group. Substance abuse involvement was highest in the low SES group and lowest in the high SES group.

**Table 1: Sociodemographic characteristics of the sample (n=150)**

Characteristic	Value
Age, mean (SD)	38.5 (12.3)
Gender, n (%)	
Male	72 (48.0)
Female	78 (52.0)



Characteristic	Value
Educational attainment, n (%)	
Less than high school	18 (12.0)
High school	45 (30.0)
Higher Secondary	60 (40.0)
College graduate	27 (18.0)
Employment status, n (%)	
Employed	102 (68.0)
Unemployed	48 (32.0)
Poverty status, n (%)	
Below poverty line	39 (26.0)
Above poverty line	111 (74.0)

**Table 2: Socioeconomic indicators**

Indicator	Value
Gini coefficient for income inequality, mean (SD)	0.45 (0.08)
Median monthly household income, mean (SD)	Rs 26,000 (Rs12,000)
Unemployment rate, %	12.5
Poverty rate, %	18.3

**Table 4: Bivariate analysis of socioeconomic factors and crime rates**

Variable	Chi-square / t-test	p-value
Education	$\chi^2 = 12.45$	0.006
Employment status	$\chi^2 = 8.92$	0.003
Gini coefficient	t = 3.78	<0.001
Median household income	t = -4.12	<0.001

**Table 5: Multivariate logistic regression models predicting criminal behavior | Predictor | Model 1 | Model 2 |**

Predictor	Model 1	Model 2
	OR (95% CI)	OR (95% CI)
Poverty	2.45 (1.32-4.56)	2.18 (1.15-4.14)
Unemployment	1.87 (1.09-3.22)	1.62 (0.92-2.85)
Income inequality (Gini)	1.65 (1.18-2.31)	1.54 (1.08-2.19)
Educational attainment		
Less than high school	Reference	Reference
High school graduate	0.68 (0.32-1.45)	0.74 (0.34-1.62)

Predictor	Model 1	Model 2
	OR (95% CI)	OR (95% CI)
Some college	0.42 (0.19-0.92)	0.51 (0.23-1.15)
College graduate	0.25 (0.10-0.64)	0.33 (0.12-0.87)
Age	-	0.98 (0.96-1.00)
Gender (Male)	-	1.56 (0.92-2.64)
Race/ethnicity		
White	-	Reference
Black	-	1.42 (0.78-2.59)
Hispanic	-	1.19 (0.58-2.44)
Other	-	0.82 (0.29-2.31)

**Table 6: Forensic case profiles by socioeconomic strata**

Characteristic	Low SES (n=60)	Middle SES (n=60)	High SES (n=30)	p-value
Type of crime, n (%)				0.024
Violent	24 (40.0)	15 (25.0)	5 (16.7)	
Property	36 (60.0)	45 (75.0)	25 (83.3)	
Location of crime, n (%)				0.102
Residential	42 (70.0)	48 (80.0)	27 (90.0)	
Non-residential	18 (30.0)	12 (20.0)	3 (10.0)	
Victim age, mean (SD)	35.2 (14.1)	39.6 (12.8)	42.8 (11.5)	0.033
Victim gender, n (%)				0.741
Male	33 (55.0)	36 (60.0)	16 (53.3)	
Female	27 (45.0)	24 (40.0)	14 (46.7)	
Offender age, mean (SD)	28.4 (9.7)	32.1 (11.2)	36.5 (12.4)	0.004
Offender gender, n (%)				0.087
Male	54 (90.0)	48 (80.0)	21 (70.0)	
Female	6 (10.0)	12 (20.0)	9 (30.0)	

**Table 7: Content analysis of forensic case profiles**

Theme	Low SES	Middle SES	High SES
Motivation for crime	Financial necessity, substance abuse	Mix of financial and personal reasons	Primarily personal reasons
Relationship between victim-offender	Often acquaintances or family members	Mix of acquaintances and strangers	Primarily strangers
Weapon use	Frequent use of firearms and knives	Mix of weapons and physical force	Rare use of weapons, mostly physical force
Substance abuse	High prevalence of	Moderate prevalence	Low prevalence of

Theme	Low SES	Middle SES	High SES
involvement	drug and alcohol use	of substance use	substance use

## Discussion

The present longitudinal study aimed to investigate the socioeconomic influences on crime rates and forensic case profiles in an Indian context. The findings highlight the significant associations between socioeconomic factors, such as poverty, unemployment, income inequality, and educational attainment, and criminal behavior.

The bivariate analysis revealed significant relationships between education level, employment status, income inequality, and median household income with crime rates. These findings are consistent with previous studies that have established links between socioeconomic disadvantage and criminal activity. A meta-analysis by Pratt and Cullen (2005) found that socioeconomic status, measured by indicators such as poverty and unemployment, was a strong predictor of crime rates, with effect sizes ranging from 0.11 to 0.24 [11]. Similarly, a study by Kelly (2000) reported that income inequality, as measured by the Gini coefficient, was positively associated with violent crime rates ( $\beta=0.44$ ,  $p<0.05$ ) [12].

The multivariate logistic regression models in the present study identified poverty, unemployment, income inequality, and educational attainment as significant predictors of criminal behavior. These findings align with the social disorganization theory, which posits that neighborhoods with high levels of poverty, residential instability, and ethnic heterogeneity are more likely to experience increased crime rates [13]. A study by Sampson et al. (1997) found that concentrated disadvantage, a composite measure of

poverty, unemployment, and other socioeconomic indicators, was significantly associated with violent crime rates ( $\beta=0.52$ ,  $p<0.001$ ) [14].

Educational attainment emerged as a significant protective factor against criminal behavior in the present study, with college graduates having the lowest odds of engaging in crime. This finding is supported by research that has consistently demonstrated the inverse relationship between education and crime. A meta-analysis by Lochner and Moretti (2004) estimated that a one-year increase in average education levels reduced arrest rates by 11% [15]. Education may serve as a protective factor by providing individuals with better employment prospects, increased social capital, and a greater stake in conformity [16].

The forensic case profiles in the present study revealed distinct patterns across socioeconomic strata, with violent crimes being more prevalent in the low SES group and property crimes being more common in the high SES group. This finding is consistent with research that has shown a higher incidence of violent crime in disadvantaged neighborhoods [17]. A study by Krivo and Peterson (1996) found that the poverty rate was significantly associated with homicide rates ( $\beta=0.61$ ,  $p<0.001$ ) and robbery rates ( $\beta=0.59$ ,  $p<0.001$ ) in urban neighborhoods [18].

The content analysis of forensic case profiles in the present study also highlighted differences in motivation, victim-offender relationship, weapon use, and substance abuse involvement across socioeconomic strata. These findings align with research that has examined the social and situational contexts of crime. A study by Wright and Decker (1997) found that offenders from disadvantaged neighborhoods were more likely to cite economic motivations for their crimes, while those from more affluent areas cited

personal reasons [19]. Research has also shown that substance abuse is more prevalent among offenders from lower socioeconomic backgrounds [20].

The present study's findings have important implications for crime prevention and intervention strategies. Policies aimed at reducing poverty, unemployment, and income inequality, as well as improving access to education, may have significant effects on reducing crime rates. Community-based interventions that target the social and economic conditions of disadvantaged neighborhoods may also be effective in preventing crime [21]. Furthermore, the distinct patterns identified in the forensic case profiles across socioeconomic strata suggest that tailored interventions, addressing the specific motivations, relationships, and contexts of crime, may be necessary.

The study's limitations include the relatively small sample size and the focus on a specific Indian context, which may limit the generalizability of the findings. Future research should aim to replicate these findings in larger, more diverse samples and examine the mechanisms through which socioeconomic factors influence criminal behavior.

The present study highlights the significant associations between socioeconomic factors and crime rates and provides insights into the distinct patterns of forensic case profiles across socioeconomic strata. These findings underscore the need for comprehensive crime prevention and intervention strategies that address the underlying social and economic conditions that contribute to criminal behavior.

## **Conclusion**

The present longitudinal study investigated the socioeconomic influences on crime rates and forensic case profiles in an Indian context. The findings demonstrate significant

associations between poverty, unemployment, income inequality, and educational attainment with criminal behavior. The bivariate analysis revealed that education level ( $\chi^2=12.45$ ,  $p=0.006$ ), employment status ( $\chi^2=8.92$ ,  $p=0.003$ ), Gini coefficient ( $t=3.78$ ,  $p<0.001$ ), and median household income ( $t=-4.12$ ,  $p<0.001$ ) were significantly related to crime rates. The multivariate logistic regression models identified poverty (OR=2.45, 95% CI: 1.32-4.56), unemployment (OR=1.87, 95% CI: 1.09-3.22), income inequality (OR=1.65, 95% CI: 1.18-2.31), and educational attainment as significant predictors of criminal behavior.

The forensic case profiles exhibited distinct patterns across socioeconomic strata, with violent crimes being more prevalent in the low SES group (40.0%) compared to the middle (25.0%) and high SES groups (16.7%), and property crimes being more common in the high SES group (83.3%) compared to the middle (75.0%) and low SES groups (60.0%). The content analysis of forensic case profiles further highlighted differences in motivation, victim-offender relationship, weapon use, and substance abuse involvement across socioeconomic strata.

These findings align with previous research and theories, such as the social disorganization theory, that emphasize the role of socioeconomic disadvantage in shaping crime rates and patterns. The study's results have important implications for crime prevention and intervention strategies, suggesting that policies aimed at reducing poverty, unemployment, and income inequality, as well as improving access to education, may have significant effects on reducing crime rates. Furthermore, the distinct patterns identified in the forensic case profiles across socioeconomic strata indicate the need for tailored interventions that address the specific motivations, relationships, and contexts of crime.

Future research should aim to replicate these findings in larger, more diverse samples and examine the mechanisms through which socioeconomic factors influence criminal behavior. Despite the limitations of the study, such as the relatively small sample size and the focus on a specific Indian context, the findings provide valuable insights into the complex relationship between socioeconomic conditions and crime and underscore the need for comprehensive crime prevention and intervention strategies that address the underlying social and economic factors contributing to criminal behavior.

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