

The Determinants Of Juvenile Crime In India

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Abstract

This paper empirically analyses the role of various factors in determining the juvenile crime rate by undertaking a cross-sectional study of the 29 Indian states (as in 2016) and Delhi. The focus of this paper is on examining the impact of malnutrition, parental absence and schooling on the development of criminal tendencies among juveniles. After controlling for all the other relevant factors by including adult crime rate in the model, it was found that malnutrition and parental absence have positive, statistically significant relationships with juvenile crime. School attendance ratio has a negative relationship; however, it was statistically insignificant. The association between state per capita income and juvenile crime has also been discussed.

Keywords: Juvenile Crime, Malnutrition, Parental Absence, Schooling

JEL Classifications: I1, I2, K1

Introduction

Addressing the subject of juvenile crime is important not only because it is desirable to keep young people out of crime but also because it provides a vital opportunity. An opportunity to identify antisocial tendencies in the initial stage of their development and avert aggravation through appropriate corrective action. Figuratively speaking, to nip them in the very bud. This thinking is reflected in the terminology used by law enforcement agencies worldwide to describe juvenile convicts- phrases such as "juvenile delinquents" and "children in conflict with law" in place of "criminals". Opining on whether or not should children and adolescents be treated in the same way as adults in the eyes of the law is not the purpose of this study. It instead aims to understand the origins of criminal behaviour in young people.

The relationship between per capita income and crime rate is not absolute. Unlike various indicators of health and education, crime rates do not necessarily improve with economic progress (Drèze and Khera 2000). The same reasoning can be extended to the case of juvenile crime. Moreover, it would be imprudent to base corrective policies on “common beliefs”. Such an exercise may well prove to be futile, if not counterproductive. Thus, an investigation of the determinants of juvenile crime is in order. Researchers have identified several risk factors associated with the development of delinquency. Family, nutrition and education form an important trinity of determinants. In the context of India, this study attempts to explore these linkages using state-level data. The role of income is also examined.

Juvenile Crime in India: An Overview

The National Crime Records Bureau publishes an annual compendium of statistics titled Crime in India. In the year 2016², 33,697 cases were registered against juveniles under the Indian Penal Code (IPC) across India. Among all juvenile crime heads under the IPC, most cases were reported under “Theft” (22.9 per cent of total cases) and “Criminal trespass/Burglary” (8.1 per cent). “Rape” and “Murder” accounted for 5.1 and 2.4 per cent of the cases respectively. Among the states, Madhya Pradesh recorded the highest number of cases while Manipur the least. Delhi accounted for 7.2 per cent of the cases and had the highest juvenile crime rate in the country. Of all juveniles apprehended under the IPC, 73.7 per cent belonged to the age bracket of 16–18 years³.

Review of Literature

Existing literature on juvenile crime is diverse not only in terms of perspective (neuroscience, psychology, public policy) but also methodology (controlled trials, criminal profiling, cohort studies). Studies reveal the existence of several risk factors that are responsible for the emergence of criminal tendencies in juveniles. It is important to note that these linkages are not automatic. Not all children exposed to such risks commit crime while some without a similar history still engage in such behaviour. Persistence and severity of exposure increase the likelihood of crime. Moreover, multiple risk and protective factors interact to produce complex conditions making individual analysis highly context-specific.

Malnutrition in early childhood is related to aggressive and antisocial behaviour in adolescence. Studies have shown that repeat offenders with a criminal history dating back to adolescence display heightened impulsivity, temperamental disorders and structural brain abnormalities. Gesch (2013) conducted a double-blind study on young adult prisoners (18–21 years) to explore the relationship between nutrition and violent behaviour. Those who had received real nutritional supplements for at least 2 weeks committed 37 per cent less violent offences in detention compared to the placebo group. The results were highly statistically significant.

The role of the family in the lives of juvenile delinquents has been studied extensively. While affection and involvement reduce delinquency, parental rejection increases its likelihood. Parental supervision is a key variable in predicting delinquency (Wright and Wright 1994). Episodes of familial conflicts are also similarly linked. The relationship with schooling is often overly-simplified. While dropping out of school and poor academic performance are connected with juvenile delinquency, the “in-school” experience is an equally significant determinant (Institute of Medicine, 2000). Peer-groups, grading and punishment policies exert considerable influence on the development of such tendencies. The propensity to commit crime is also related to exposure and experience of abuse. Abused youth are likely to be more violent and persistent offenders (Criminal Justice 2020).

Dutta, Jana and Kar (2017) found per capita income to be positively linked with juvenile crime rates across Indian states. This stems out primarily from the connection between the incidence of property crimes (such as theft and burglary) and the income of a region. As income rises, the opportunity and return from such crimes also rise⁴.

Conceptual Framework

Variables affecting juvenile crime can be classified into two categories. The first category contains all those variables that impact crime in general such as population density, effectiveness of law enforcement, presence of organised crime. Some of these variables may be hard to quantify. In India’s context, gender and caste inequality have also been found to be important determinants of crime (Drèze and Khera 2000). It is desirable to control for these variables in the model.

The second category consists of variables that are specific to juvenile crime. A trinity of such specific factors has been identified- education, family and malnutrition. High prevalence of malnutrition should be linked positively with juvenile crime. A similar relationship is expected with parental absence. School attendance ratios should discourage crime and thus a negative relationship is expected.

Dutta, Jana and Kar (2017) claim that income has a positive relationship with juvenile crime in India because the bulk of the cases reported under juvenile crime fall under the category of property crime. “Theft” and “criminal trespass/burglary” were indeed the top two IPC crimes committed by juveniles in 2016 (National Crime Records Bureau 2017). This trend has remained consistent over the years. For the purpose of this study, property crime has been defined as the sum total of crimes reported under the crime heads “theft”, “criminal trespass/burglary” and “robbery”. It can be seen from figure 1 that the state juvenile property crime rate has a positive elasticity with respect to state per capita income⁵. Figure 2 shows that the component share of property crime in the total juvenile crime rate of the state also increases with rising state per capita income. Thus, one can expect juvenile crime in India to be positively linked with per capita income.

Figure 1: Annual Juvenile Property Crime Rate and State Per Capita Income 2015-17 for 29 states and MCT of Delhi

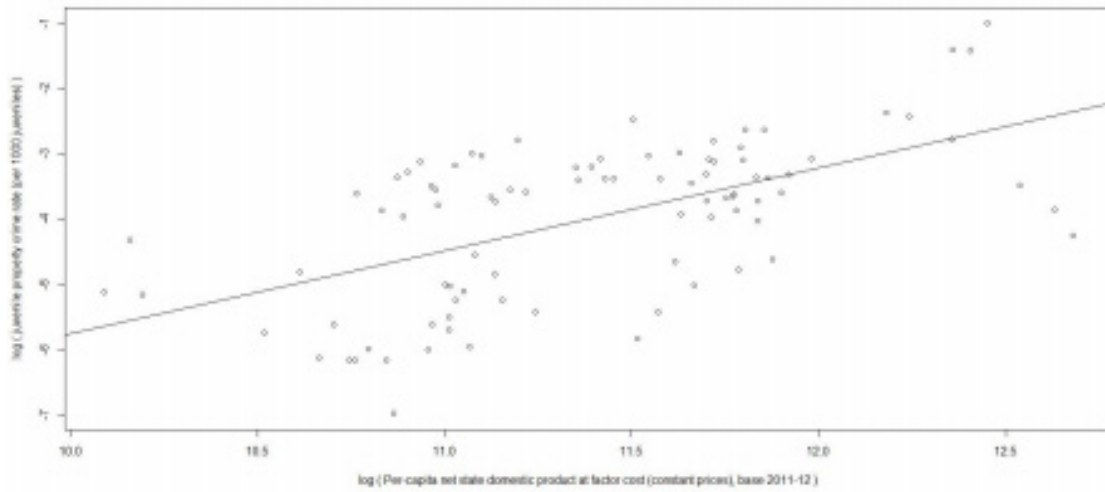
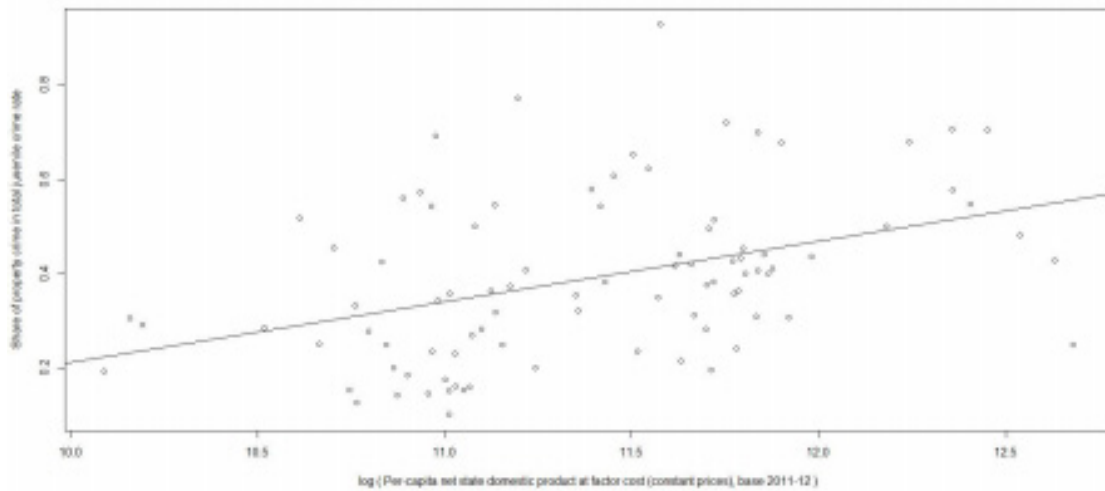


Figure 2: Annual Share of Property Crime in Juvenile Crime Rate and State Per Capita Income 2015-17 for 29 states and MCT of Delhi



Source: Crime Statistics: Crime in India 2015, 2016 & 2017. State per capita income: Reserve Bank of India

Adult crime rate is a good indicator of the prevalence of crime and the effectiveness of law enforcement in a region. It can be used as a proxy for the “generic-to-crime” variables. Generic variables are expected to influence the juvenile crime rate in the same way as the adult crime rate. By including adult crime rate in the analysis, such variables can be effectively controlled while saving degrees of freedom. A positive coefficient of adult crime rate should confirm the belief. Moreover, adult crime rate in itself can be a causal factor. As noted before, exposure to crime can motivate juveniles into crime.

Data and Methodology

This is a cross-sectional study of the 29 Indian states (including the erstwhile state of Jammu and Kashmir) and the National Capital Territory of Delhi for the year 2016. The time period has been chosen keeping in mind the availability of the National Family Health Survey (NFHS) data. Moreover, the new Juvenile Justice (Care and Protection of Children) Act, 2015 came into force on 15 January 2016. Data sources and descriptions can be found in Table 1. Summary statistics of the variables can be found in Appendix A.1.

Table 1. Data Description

Variable	Description	Time Period	Source
JCR	Juvenile Crime Rate, number of IPC crimes committed by juveniles (below 18 years of age) per 1 lakh juvenile population	2016	Crime aggregates from Crime in India 2016, National Crime Records Bureau Population estimates from the Report of the Technical Group on Population Projections, Union Ministry of Health and Family Welfare, July 2020
ACR	Adult Crime Rate, number of IPC crimes committ	2016	
INCOME	Per-capita net state domestic product at factor cost (constant prices), base 2011-12	2016-17	Handbook of Statistics on Indian States (online), Reserve Bank of India

ATTENDANCE	Percentage of household population 6-17 years attending school	2015-16 (Survey period January 2015 to December 2016)	National Family Health Survey 4
INDEPENDENT	Percentage of children under age 18 not living with a biological parent		
	Percentage of children under age five years with weight-for-height ratio below -3 standard deviations (SD) from the International Reference Population median. This criterion is used by the World Health Organisation to identify children with severe acute malnutrition	2005-06 (Survey Period November 2005 to August 2006)	National Family Health Survey 3

IPC crimes committed by adults = Total IPC crimes – IPC crimes committed by juveniles
 blt should be noted that the data corresponding to the variable MALNUTRITION is from the period 2005-06 and not 2015-16. The rationale behind using a lagged variable is as follows. National Family Health Survey 4 provides malnutrition rates for children aged under five years in 2015-16. However, as per the NCRB data 98 per cent of the juveniles apprehended under the IPC in 2016 were aged 12 or above. Therefore, in order to establish a relationship between malnutrition in early childhood and crime in adolescence, we must look at the prevalence of malnutrition ten years before. This data is provided by NFHS 3 (2005-06).

Since the state of Telangana was formed in the year 2014, data for old Andhra Pradesh, assuming it was representative of the entire region, has been used for both Telangana and new Andhra Pradesh.

World Health Organisation. "Management of severe acute malnutrition in infants and children." Accessed December 30, 2020.

https://www.who.int/elena/titles/full_recommendations/sam_management/en/

Previous studies suggest taking the natural log transformation of crime rate because its distribution is usually positively skewed. The data on juvenile crime rate displays the same property. This transformation allows us to “normalise” it. Moreover, a log transformation of the dependent variable (in this case, juvenile crime rates) ensures that the predicted values are non-negative.

Using the method of Ordinary Least Squares (OLS), the parameters of the following equation were estimated.

$$\log(\text{JCR})_i = \beta_1 + \beta_2 \log(\text{ACR})_i + \beta_3 \log(\text{INCOME})_i + \beta_4 \text{ATTENDANCE}_i + \beta_5 \text{INDEPENDENT}_i + \beta_6 \text{MALNUTRITION}_i + u_i \quad \dots (1)$$

Regression Results

Results of the OLS regressions can be found in Table 2. Results of the diagnostic tests for multicollinearity, heteroscedasticity, model misspecification and normality of residuals can be found in Appendix A.2.

Table 2. OLS Regression Results Dependent Variable: log(JCR)		
Independent Variables	Coefficients	
	(1)	(2)
INTERCEPT	-12.1399 (0.0008)***	-12.9269 (0.0002)***
log(ACR)	1.1479 (0.0003)***	1.1887 (0.0001)***
log(INCOME)	0.7397 (0.0320)**	0.5983 (0.0244)**
ATTENDANCE	-0.0245 (0.4963)	-

INDEPENDENT	0.1590 (0.0190)**	0.1563 (0.0192)**
MALNUTRITION	0.0718 (0.0693)*	0.0736 (0.0594)*
R-squared Adjusted R-squared	0.6004 0.5171	0.5924 0.5272
F statistic	F(5, 24) 7.2123 (0.0003)***	F(4, 25) 9.0861 (0.0001)***
Number of observations	30	30
p-values in parentheses		
Significance codes: 0.01 ***, 0.05 **, 0.10 *		
Source: Author's calculations		

Discussion of Results

All the coefficients in Model 1 have the expected signs. The coefficients are also jointly significant. Parental absence, as measured by the variable INDEPENDENT, has a positive relationship with juvenile crime. The coefficient is statistically significant. The family acts as a safety net for children. In its absence, children are left to fend for themselves both financially and emotionally. They are more likely to make regrettable choices with no one to bail them out of the consequences. The coefficient of MALNUTRITION is positive and statistically significant at ten per cent. Malnutrition reduces a person's physical and cognitive capabilities

making them more prone to commit crime. School attendance is negatively linked with juvenile crime however the relationship is not statistically significant. This reinforces the notion that attendance alone cannot prevent crime among juveniles. Their experiences in school, with teachers, peers and the process of learning itself, are equally important determinants.

The elasticity of juvenile crime with respect to per capita income is positive. This is in line with the results of the studies conducted in the past. As discussed before, states with higher per capita incomes experience more juvenile property crimes. In more affluent neighbourhoods, the incentive to commit such crimes is greater. Property crimes have the highest share in the juvenile crime rate.

The coefficient of adult crime rate is positive and highly statistically significant. It however cannot be seen in isolation. It has been used as a proxy for all “generic-to-crime” variables that may not be observed individually. Thus, it can be inferred that those variables affect adult and juvenile crime rates similarly. The R-squared value is considerably high for a cross-sectional study of this nature. Even after dropping ATTENDANCE from the original model, all the remaining coefficients retain their signs and remain significant at the same levels.

Based on the results of the diagnostic tests (see Appendix A.2), it can be concluded that the model is adequately specified and does not suffer from multicollinearity or heteroscedasticity. One would generally expect the presence of heteroscedasticity in a cross-sectional study with such diverse units. It appears that the inclusion of adult crime rate in the model has effectively provided for any state-specific heterogeneity. Given the small sample size, a test for normality of residuals was conducted. It can be concluded that the residuals are normally distributed.

Conclusion

The risk factors associated with the development of delinquency can serve as important predictors of behaviour. The results provide important insights for policy formulation. Juveniles living independently are indeed a vulnerable group. In this context, foster care can prove to be a possible solution. Nutrition can play a significant role in corrective programmes. As past research shows, nutritional supplements can help reduce violent behaviour in young inmates. With regards to education, experts suggest developing alternatives to grade retention and improving learning outcomes. They also recommend against isolating aggressive youngsters or grouping them (Institute of Medicine 2001). Evidence suggests that by assimilating them into prosocial groups, their antisocial tendencies can be subdued.

Appendix

A.1 Summary statistics of the variables

Variable	Mean	Standard Deviation	Minimum	Maximum
JCR	8.43	8.87	0.63	44.27
ACR	346.24	287.80	102.58	1576.10
INCOME	103590.00	62400.00	25820.00	305880.00
ATTENDANCE	88.19	4.77	79.100	97.40
INDEPENDANT	3.93	2.26	1.500	11.30
MALNUTRITION	6.16	3.55	2.100	19.90
Number of observations: 30				
Source: Author's Calculations				

A.2 Diagnostic Tests for Model 1

Regression Diagnostic	Test	Result	
Multicollinearity	Variance Inflation Factors	log(ACR)	1.424
		log(INCOME)	1.992
		ATTENDANCE	1.758
		INDEPENDENT	1.247
		MALNUTRITION	1.099
Heteroscedasticity	Breusch-Pagan Test	p-value = 0.983	
	Abridged White’s Test (squared residuals regressed on fitted values and squared fitted values)	F(2, 27) 0.190 p-value = 0.827	
Model Specification	Ramsey’s RESET	p-value = 0.340	
Normality of Residuals	Jarque-Bera Test	p-value = 0.763	
Source: Author’s calculations			

A.3 Correlation matrix of the regressors

Log(INCOME)	MALNUTRITION	ATTENDANCE	INDEPENDENT	Log(ACR)	
1.000	-0.271	0.618	-0.089	0.320	Log(INCOME)
	1.000	-0.231	-0.085	-0.051	MALNUTRITION
		1.000	0.081	0.000	ATTENDANCE
			1.000	-0.428	INDEPENDENT
				1.000	Log(ACR)

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