

Relevance of the Age of Victims of Sexual Abuse in Indian States: A Case Study

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Abstract

There has been an uptick in recent years, in the number of rape cases in India. According to Human Rights Watch (HRW), India documented 24,206 rape incidents in 2011, which is only the top of the iceberg. Based on data from the National Crime Record Bureau's official website, the current study attempts to create a correlation between rape instances of women and girls in India in the year 2020 – age group wise (above and below 18). For a better data analysis, we employed pie charts. According to the findings, there is no correlation between rape cases involving women over 18-year-old and involving under-18-year-old girls. Furthermore, there is no association between the two. ANOVA is also utilized to obtain information about the relationship between rape instances involving girls and women in various age groups.

Keywords: ANOVA, Correlation, Regression, Violence, Women Victims.

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INTRODUCTION

Gender-based violence (GBV), often known as violence against women and girls (VAWG), is a global scourge that affects one out of every three women. In India, sexual assault against women and girls is a big issue. Domination and masculine entitlement as well as patriarchy, are at the root of sexual assault.

India today is defined by two very different realities: fast economic and technical growth on the one hand, and frequent and savage rapes on the other, which frequently result in the deaths of women and girls. Gang rape instances in India are not unique occurrences, but rather represent the country's systemic gender and caste prejudice.

In India, one female is sexually abused every 20 minutes, according to the National Crime Records Bureau. Assault, acid throwing, dowry killings, honour killings, and the constrained prostitution of little girls are all common kinds of violence against women in India. In India, there is an extreme rate of offenses against females, according to police data. This is the scenario in India, which possesses one of the world's oldest and most diverse civilizations. We hope to portray the current state of women's and girls' safety in our country through this effort.

WHY A STUDY ON THIS?

- The issue of violence against women in India requires more attention and commitment than it now receives.
- Rape and other forms of non-consensual sexual activity account for a significant share of the violence against Indian women.
- According to statistics, women in India are exceedingly vulnerable, and it is the most dangerous country in terms of rape crimes. In India, the rate of violence against women is still high, and it is on the rise. Although policies and programs are being implemented to address the issue, the problem appears to be growing and doubling with each passing year.
- Every woman has the right to a dignified and respected existence. Laws alone will not suffice; authorities must enact laws, and every citizen must promise to help women feel more secure and to respect all women. Women are more than just moms, sisters, and daughters; they are an integral part of our society because of the important roles and responsibilities they fulfil.

OBJECTIVES

- a. A study of rape cases in different Indian states.
- b. Determine whether there is a link between rape cases involving females over 18-year-old and those involving under 18-year-old girls.

- c. Interpret the relationship using regression analysis and ANOVA depending on the given data.

METHODOLOGY

A. Correlation

A procedure for determining the relationships between two variables is known as correlation.

1) Correlation In Statistics

A correlation is a factual proportion of how intently two factors are connected. The action works best with factors that have a linear association with each other. To determine the degree of association between variables, we use Karl Pearson's correlation coefficient (r).

It can go from -1 to +1, with a value of 0 in between.

$r = -1$ denotes a significant negative correlation.

$r = +1$ denotes a strong positive correlation.

$r = 0$ indicates that there is no association.

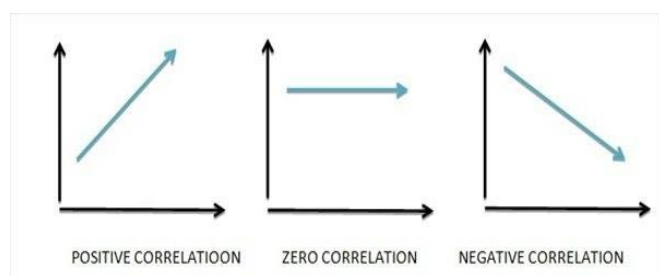


Fig.1. Graphical representation of correlation

2) Significance of Correlation

When we analyse data, there may or may not be a relationship between the data. Most of the factors are connected here and there. We can quantify the level of relationship in one figure exploiting correlation analysis. We can use correlation to make predictions. When the nature of the association between variables is understood, predicting the significance of one variable is simple when the significance of the other variable is also known. We are employing correlation in our case study.

B. Regression

Regression is a statistical technique for determining the strength of a relationship between a single dependent variable (typically indicated by Y) and a set of other variables. (These are referred to as independent variables).

C. Anova

The Analysis of Variables (ANOVA) is a statistical approach for comparing datasets. It lets you to associate more than two groups at the same time to determine whether there is an association amongst them. The null hypothesis is tested using a single factor or one-way ANOVA.

STATISTICAL INTERPRETATION OF DATA

A. Sample Data

In 2020, the complete number of assault cases detailed in India added up to more than 28 thousand. This was a decline in assault cases contrasted with the earlier year. Despite the fact that many assaults are not detailed in the country, an issue constantly stands out as truly newsworthy, a main to public fights.

The data is provided by the National Crime Records Bureau, India.

Table I. Number of Victims in 5 States of India in 2020

STATE	Victims below 18	Victims above 18
Uttar Pradesh	206	2796
Jharkhand	116	1326
Andhra Pradesh	587	1107
Assam	18	1658
Punjab	62	504

B. Pie Charts

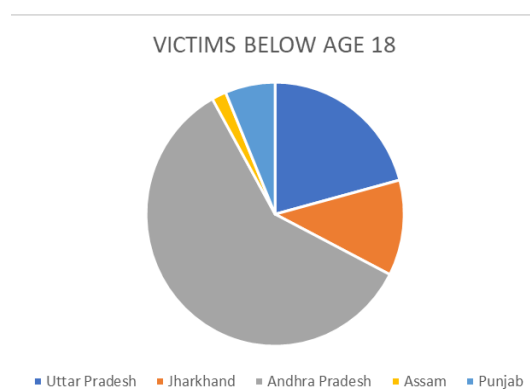


Fig. 2: Pie chart of victims below age 18.

The state with the most victims under the age of 18 is Andhra Pradesh.

Both Uttar Pradesh and Jharkhand have a large number of victims, with Uttar Pradesh having the second highest number.

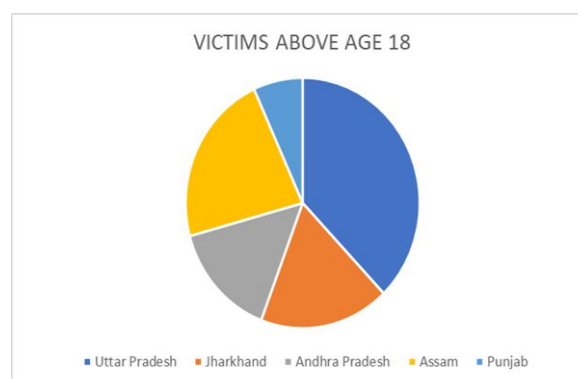


Fig.3. Pie chart of victims above age 18

In Uttar Pradesh, the number of victims above the age of 18 is extremely high. Punjab has an extremely low rate of crime.

C. Correlation Analysis of the Above Data

To see if the number of rape cases involving females over and under the age of 18 is correlated.

TABLE. II. Correlation Analysis of the data

	VICTIMS BELOW 18	VICTIMS ABOVE 18
VICTIMS BELOW 18	1	-0.027
VICTIMS ABOVE 18	-0.027	1

Interpretation

To arrive at our result, we applied the correlation idea. Table II shows that the correlation coefficient for rape incidents involving females over and under the age of 18 in various Indian states in 2020 is -0.027. This number is so near to zero that it could be called a zero correlation. This means that there is no correlation between rape cases involving women over 18-year-old and those involving under-18-year-old girls.

This demonstrates that there is no relationship between rape cases involving women over 18-year-old and those involving under-18-year-old girls in India in 2020.

D. Regression Analysis

TABLE. III. Regression Analysis of the Data

Regression Statistics	
Multiple R	0.027390422
R Square	0.000750235
Adjusted R Square	-0.33233302
Standard Error	979.2488472
Observations	5

Interpretation

$R^2 = 0.00075$, which is about the same as zero. A correlation around zero indicates that there is no linear relationship between two variables. There is no association between rape cases involving women over 18-year-old and those involving under-18-year-old girls.

Scatter Plot

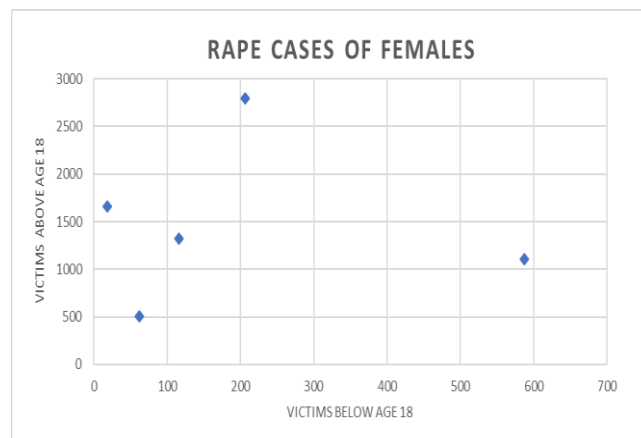


Fig.4.Scatter plot of the above data.

E. Anova: Single Factor

Let Null Hypothesis, H_0 = number of rape cases of women below 18 years is related with the rape cases of women above 18 years.

Let Alternative Hypothesis, H_1 = number of rape cases of women below 18 years is not related with the rape cases of women above 18 years.

Summary Output

TABLE. IV. Analysis of the Data

Groups	Count	Sum	Average	Variance
VICTIMS BELOW 18	5	989	197.8	52251.2
VICTIMS ABOVE 18	5	7391	1478.2	719736.2

Table. V. Anova of the data

ANOVA						
Source of variation	SS	df	MS	F	P-value	F-critical
Between groups	4098560.4	1	4098560.4	10.61820543	0.011552	5.317655
Within groups	3087949.6	8	385993.7			

Interpretation

The F-value is 10.618 at a 5% level of significance. The P-value should be greater than 0.05 to be considered significant. The P-value in the table below is 0.0115, which is greater than the significance level. In addition, the F value is higher than the F critical value. As a result of this finding, we can rule out the null hypothesis. As a result, there is no link between rape cases involving girls over the age of 18 and those involving under-18-year-old girls in India in 2020.

CONCLUSION

We may conclude that all three approaches used – correlation, regression, and ANOVA – yielded similar results. There is no link between rape cases women over 18-year-old and those involving women under the age of 18. However, the number of instances is steadily increasing. We need to think more about how women are treated in our culture. Are they truly secure?

On the basis of an age-old idea, the society assumes that women are inferior to males. Religion is frequently misinterpreted, and women have been the victims of this misinterpretation not only today, but also in the past. Women and girls in schools should feel comfortable and able to express themselves without fear, and we should establish a society where they have equal power and opportunity as males. Women's empowerment is the only way for a society to properly flourish and progress.

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