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## Determining Factors of Crime against woman in India

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### Abstract

In India, crime against women is increasing as a result; India has become one of the dangerous countries for women to live. In order to control the situation, we need to find the factors which affect the crime against women. Paper will attempt to determine the socio-economic factors which affect the crime against women with the help of statistical analysis of data. Paper will also look at the theoretical aspect of crime against women. It will also work upon the social beliefs and practices regarding women and how they impact the crime against women.

Key Words – Crime, Socio-Economic, labor force participation, poverty, literacy.

### 1) Introduction

India is one of the leading economies in the world. Before, the advent of pandemic India's economy was growing at the fastest rate next only to china. Even though India is growing at the economic front, it is still struggling at other ends.

India, if compared with other developing countries, India is ranked very low on social grounds. It is ranked 130th out of 188 countries in HDI Index. According to UN reports, it is expected that India will become the most populated country, surpassing China by 2026. Crime in India is also increasing at an alarming rate. It is ranked 2nd in International homicide issued by United Nation Office for Drugs and Crime. It is ranked 96th as World's Safest Country, which is quite low. "India is ranked as the most dangerous place because of its high incidences of sexual violence, lack of access to justice in rape cases, child marriage, female foeticides and human trafficking" (Thomson Reuters Foundation, 2018).

From these, we can infer that though India is celebrating its success in the economic field, it is yet far behind in providing security to its citizens. Crime is a major problem for India. By Crime, we mean "Any

act carried out with the intention of, or perceived intention of causing physical pain or injury to another person” (M.A. Straus, 1990). Women are 10 times more likely to be raped or sexually assaulted than men (National Research Council, 1996). Women are more likely to be victimized than men. Thus, violence against women is defined by the task force on Male Violence Against Women of the American Psychological Association, “physical, visual, verbal, or sexual acts that are experienced by a woman or a girl as a threat, invasion, or assault and that have the effect of hurting her or degrading her and/or taking away her ability to control contact (intimate or otherwise) with another individual” (Koss, 1994). The term violence against women includes a wide range of acts – murder, rape, sexual assault, physical, mental or emotional abuse, sexual harassment, genital mutilation, and pornography, etc. (National Research Council, 1996). According to the UN, “there is no region of the world, no country and no culture in which women’s freedom from violence has been secured”. Different forms of violence are present in different part of the world, majorly in developing countries. For example, dowry violence and bride burning are prevalent in India, Sri Lanka, Bangladesh and Nepal. Female genital mutilation is found majorly in Africa and to some extent in the Middle East and South Asia (Wikipedia, 2019). In India, child marriage and female foeticides are also included under the violence against women. One-third of girl child in India get married before they turn 18 years.

Crime against women, in India, has gone up in the past decade. The rate of crime against women was 41.7 over 100,000 female populations in 2012 which has gone up to 55.2% in 2016. According to a report by National Crime Record Bureau, the rate of crime reported committed against women every hour has gone up from 21 in 2007 to 39 in 2016. The rate of crime against women within the construct of marriage has also gone up, from 59,595 in 2003 to 137,658 in 2013. The acts of crime against women changes in India from state to state. Even the crime rate is different in each state. Uttar Pradesh is considered to be the most dangerous state when it comes to women safety. “The problem with India is that most of the crimes against women are not even considered as crimes due to social beliefs and culture as a result, a lot of them go unreported and undocumented. 65% of Indian men believe women should tolerate violence in order to keep the family together, and women sometimes deserve to be beaten” (International Center for Research on Women (ICRW) and Instituto Promundo, 2010). Such beliefs increase the crime against women in the form of domestic violence, sexual assault, harassment and emotional abuse etc. Not only that, these beliefs is so deep-rooted in the mind of people, that even the victim does not realize sometimes that she is being abused. Many times, crimes go unreported due to the belief that it will ruin the family name and reputation. These beliefs led to the crime such as honor killing, people kill women in the name of family reputation.

Beliefs like women sometimes deserve to be beaten or due to them, the family reputation might get ruined, are so old and deeply rooted that we are not able to come out it. One way to remove such beliefs is education. With an increase in education, we can create awareness among people. Also, the new era of digitalization is much easier to create awareness among people. But in order to do so, we need to understand the factors which cause the crime against women in India. As it is one of the major problems of the country, it is quite necessary to understand the reasons for their cause because only after that we can find some solution to this problem. As we now understand that crime against women is increasing and we need to understand the reasons which cause the increase of crime in India. Thus, this paper will focus on determining the factors which affect the crime against women in India. Through the paper, we will try to find the reasons which affect the rise in crime against women in India. For example, there is a positive correlation between crime against women and women work participation, which emphasizes that women have probably greater exposure to the risk of violence outside the home, while the ‘high’ crime regions generally with high population density which suggests the presence of geographical factors in the increase in crime against women.

## 2) Literature Review

Crime against women has attained a lot of attention from various scholars, psychologist and sociologists. Psychologists try to analyze the crime against women because they want to understand the psychological behavior of the criminals as well as victims. Sociologists want to understand the cultural and social implications of such crimes. Thus, crime against women has gained a lot of attention. In order to understand all the point of view of scholars, psychologists and sociologists, we will divide them into two approaches – theoretical approach and socio-economic approach. In theoretical approach, we will try to under the social aspect of the crime against women that is what social prejudices, beliefs and practices led to crime against women, While Socio-economic approach will entirely focus upon the Economic factors which led to crime against women, for example, unemployment and women work force participation. It attempts to understand the impacts of such variables on the crime against women.

### 2.1) Theoretical Approach

The theoretical approach tries to understand the social aspects such as male dominance of the society. Indian society is a male dominated society and all the practices of the society are decided by this section of society. Due to this, women are subjected to adverse behaviour(. Himabindu et. al,(2014) According to a report by National Crime Record Bureau, 54.6% of the rape cases are yet to be investigated while around 30% of the cases are yet to go for trial. Such delay in justice also results in an increase in crime against women (Himabindu et. al, 2014).

Gupta, Aashish (2014) discussed the violence against women committed in the households. He talks about the psychological belief men have regarding women. According to Desai (2010) Indian Human Development Survey 2004-05, asked women regarding violence against them in households but did not ask them a direct question regarding their experience. “Two NFHS women surveyors, while discussing their experience in administering the violence module, told me that one of the common responses to a question which asked about the situations in which beating a wife is justified was “If a husband doesn’t hit a wife, then who will?” Indeed, NFHS data reveal that “More than half of women in India (54 percent) believe that it is justifiable for a husband to beat his wife” (Gupta, 2014). This implies that social beliefs are not only ingrained the mind of men but women as well. They do not find it abusive when their husband beat them. This situation is really problematic because it leads to the crime being unreported as the victim itself does not realize that she is being victimized. Thus, by theoretical approach it is quite clear that society being male dominated; suppresses women and women do not realize the same.

### 2.2) Socio-economic Approach

Socio-economic approach analyses the different social economic parameters which affect the crime rate. For example, it is generally believed that with increase in unemployment crime rate increases as people have low income so they turn to crime in order to have some extra income. This also applies to violence against women as with change in different economic variables such as women work force participation, poverty rate, population density etc. crime rate against women also changes.

Various scholars have worked on the relationship between female literacy and crime against women. Dang, Kulkarni and Gaiha (2017), have analyzed the relationship between crime against women, female literacy and female work participation. According to their study, female literacy has a positive impact on crime against women while female work force participation has a negligible negative impact on crime against women as work force participation allows them to resist the sexual and physical harassment by men but it is very small thus negligible.

Mukherjee, Chandan (2001) has worked upon the relationship between state development and crime against women. According to him, state development plays an important role in crime against women. If a state is developing then, then crime against women is likely to decrease But he also states that impact state development also depends upon the state of development that is, if a rural area is developed, then it may raise question towards the traditional gender roles as a result increase in crime such as cruelty by husbands. But if an urban area is developed, then it will reduce the crime rate. Rural and urban area reacts differently to the different variable. In a study, it is stated that “what lends credibility to these maps is the fact that the ‘high’ crime regions generally griddle around the ‘very high’ ones, representing a certain geographical continuity associated with the specific crimes. Apart from such well-marked regional concentrations, there are of districts scattered all over the country, where crime rates are high” (Chandan Mukherjee, 2001). Other variables like unemployment, poverty rates etc. also leave some impact on crime against women. While the poverty rate has a positive impact on crime against women, unemployment has ambiguous results, as one scholar argues that unemployment has a negative impact on crime against women while other opposes the argument stating that there is a positive relationship between two. Cantor and Land (1985) argue that unemployment has a negative impact on crime against women. “Since unemployed individuals are less involved in social concentrations, their probability of being either victims or perpetrators of violent crime is lower” (Cantor and Land,1985) This means that if they are not involved in the society’s work then they are less likely to commit a crime. Hence, there will be negative impact on the crime against women of unemployment. But in contrast to this, another study insists that there is a positive relation between crime against women and unemployment (Caruso, 2014). The difference between the two studies itself implicates the importance of unemployment as a factor that impacts the crime against women. Based on these studies we can conclude that there are various factors which impact crime against women. In order to control the crime rate, we need to determine these variables which have impact on the crime rates. Once we determine these variables, then we can take some preventive measures and reduce the crime against women as they are 50% of our population. In this paper, we will try to determine these variables only with the help of empirical data and statistical tools.

### 3) Objective and Hypothesis

#### 3.1) Objective

The Objective of this study is to determine the variables which have an impact on the crime against women. Based on the previous studies pursued by different scholars it is clear that there are various factors which impact the crime against women. The objective, thus, will be to find out the major socio-economic factors which have an impact on the crime against women.

#### 3.2) Hypothesis

There are two hypotheses of this study-

- The first hypothesis is that there is a significant impact of geographical factors on the crime against women. It means that the geographical factors like the area of the state or population density of the state have some impact on crime against women.
- The second hypothesis is that there is a significant impact of socio-economic factors on the crime against women. It means that socio-economic factor like literacy level, women work force participation, unemployment, sex ratio, poverty rate, per capita income, the number of police station, population per policemen etc. have some impact on the crime against women. All these variables will have either a positive or negative effect on crime against women.

#### 4) Methodology

**4.1 Box Plot:** For some distributions/datasets, we need more information than the simple measures of central tendency (median, mean, and mode). We need to have information on the variability or dispersion of the data. A boxplot is a graph that gives you a good indication of how the values in the data are spread out.

**4.2 Correlation Matrix:** A correlation matrix is simply a table which displays the correlation coefficients for different variables. The matrix depicts the correlation between all the possible pairs of values in a table. It is a powerful tool to summarize a large dataset and to identify and visualize patterns in the given data. A correlation matrix consists of rows and columns that show the variables. Each cell in a table contains the correlation coefficient.

**4.3 Regression Analysis:** Multiple regression is applied to find the determinants of the crime against woman. The model is defined as;

$$Y = \alpha + \beta X_i + \varepsilon$$

Where Y is the dependent variable; the crime against women.  $\alpha$  is constant or intercept term,  $\beta$  is slope coefficient of the independent variables or vectors of independent variables and  $X_i$  refers to the independent variables,  $\varepsilon$  is error term.

**4.4 Log Linear Regression:** The model is defined as;

$$\ln \text{crime} = \beta_0 + \beta_1 \ln \text{unemployment} + \beta_2 \ln \text{density} + \beta_3 \ln \text{area} + \mu$$

The above model explains that crime ( $\ln \text{crime}$  is the natural log of crime against women) is affected by unemployment ( $\ln \text{unemployment}$  is the natural log of unemployment), density of population of the state and area of the state ( $\ln \text{area}$  is the natural log of the area of the state).

#### 5) Data Sources

Data on crime against women state-wise is obtained from data provided by National Crime Records Bureau. This data is a state-wise list of crimes committed against women such as rape, murder, cruelty by husbands, sexual or physical harassment, molestation etc. All the data is combined and a total of crime against women is obtained state-wise.

Data on states' area and population density are obtained from the government site (<http://niti.gov.in/content/population-density-sq-km>). This data includes the states' area and their population density.

The other variables such as literacy level, women work force participation, unemployment, sex ratio, poverty rate, per capita income etc. are obtained from indiastat.com. All the data obtained is from Census 2011. Number of police station and population per police men is obtained from a report published by the Bureau of Police Research and Development. (Deep Chand Sharma, 2011). In this report, all the information regarding the number of police station that exist in a particular state is given as well as the number of how many citizens come under one police officer.

## 6) Analysis and Discussion

### 6.1) Data Description

The acts which are considered to be crime against women include;

- Assault on women with intent to outrage her modesty
- Cruelty by husband or relatives
- Dowry death
- Immoral traffic (prevention) act
- Indecent representation of women (prevention) Act
- Insult to the modesty of women
- Kidnapping & Abduction
- Rape

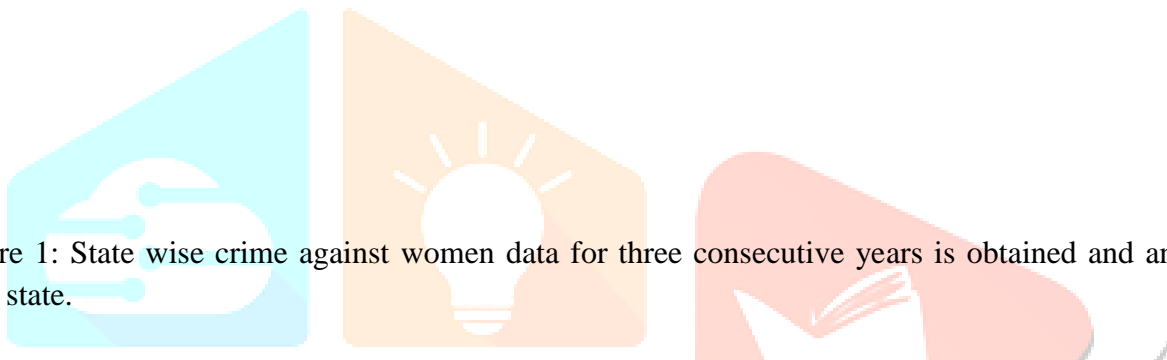
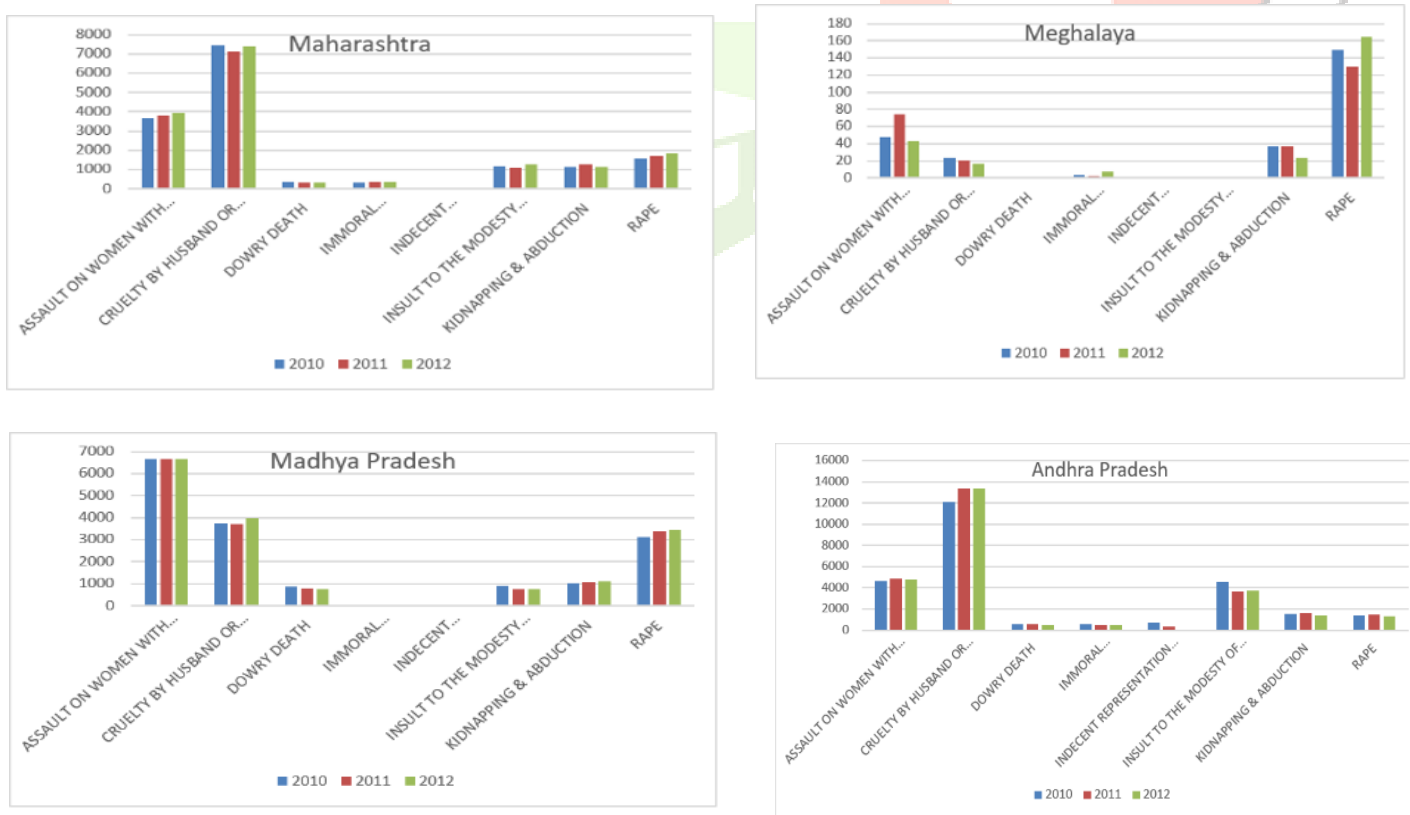


Figure 1: State wise crime against women data for three consecutive years is obtained and analyzed for each state.



Source: Authors computation

It's quite clear from the figure 1 that the nature of crime against women differs across the states of Indian union. For example, assault on women with intent to outrage her modesty is proportionately high in Madhya Pradesh while Rapes cases are proportionally high in Meghalaya. Maharashtra and Andhra Pradesh have more crimes related to cruelty by husband or relatives. When we compare the data for a particular year of all states, it is quite clear that some states have very high crime rates. When we draw a box plot for crime data, observation of three states came as outliers which were removed, to get better and unbiased results. Uttar Pradesh, Andhra Pradesh and West Bengal are three states which are removed. From the box plot(Figure 2), it is quite clear that there are three values which are outliers and with help of sorting, we removed the outliers from the data.

## 6.2) About the Variables

For further analysis and model building, we used crime against women as the dependent variable and various independent variables were obtained based on the theoretical study of the topic. These independent variables are –

- Poverty Population – This independent variable includes the number of people whose income level is below the poverty line. The data is state wise poverty population data. Poverty population is obtained as an absolute number, that is, the total number of people below the poverty line.

**Figure 2: Box Plot**



*Source:* Author's computation

- Number of Literate – This independent variable includes the number of people who have obtained a certain level of education. A state level data describes which state has a high literacy rate and which does not have. A number of literate is also a count of people who have acquired a certain amount of education.
- Per capita income – This independent variable is used to understand the economic condition of the state. As per capita income gives average income earned by people of a certain state, it will help us to understand the economic condition of that particular state.
- Female workforce participation – Female work force participation is data about the total number of female who is working and earning for themselves. This data is also available as the total number.
- Unemployment – Unemployment implies how many people are not working that is they want to work but they do not have any job. Unemployment is also calculated as total unemployed citizens of a particular state.

- Number of Police officer – Number of police officer means that the total number of police officers who are posted in a state.
- Population per Police – Population per police implies that how many people come under one police officer.
- Density – Density is the population density of a particular state.
- Area – Area the total surface area of a state.

All these variables are independent variables and are used to create a model in order to determine the factors which affect the crime against women.

### 6.3) Model Building

After obtaining all the dependent and independent variables, a correlation matrix is obtained, in order to check how each variable is related to each other.

**Table 1: Correlation Matrix**

Variables	Correlation
<b>Crime rate</b>	1.0000
Poverty population	0.6708
Number of literate	0.8788
Per capita income	-0.1895
Female work force participation	0.8145
Unemployment	0.8394
Number of Police Officers	0.6538
Population per police officer	0.8594
Density	0.5576
Area	0.6485

Source: Author's calculation.

From the above correlation matrix (Table 1), we can see that per capita income has a low negative correlation with crime against women, while all other independent variables share a positive relationship with the crime rate.

Based on this information, a multiple cross sectional regression model is created with all the variables. With the help of Stata, results from the regression model are obtained. Robust regression is run on Stata to obtain primary results from the data. The results are as follows-

**Table 2: Multiple Regression**

Variables	Coefficient	P-value
Poverty Population	.0002961	0.527
Number of literature	.0002334	0.323
Per capita income	-.0267824	0.342
Female work force participation	.0006385	0.536
Unemployment	.0007502	0.562
Number of Police Officers	-.2266685	0.052
Population per police officer	-9.421782	0.161
Density	18.33007	0.182
Area	.0550993	0.134
Constant	2140.572	0.360
R-Square = .8802		

Source: Author's calculations.



From the above results (Table 2), we can observed that not a single variable is coming out to be significant. Thus, we have used log to determine the results. With the help of these log-log or level-log models, we computed two models and final results are depicted in table 3 and 4.

### Model 1

$$lgcrime = \beta_0 + \beta_1gunemployment + \beta_2density + \beta_3lgarea + \mu$$

The above model explains that crime (lgcrime is the natural log of crime against women) is affected by unemployment (lgunemployment is the natural log of unemployment), density of population of the state and area of the state (lgarea is the natural log of the area of the state). The results of robust regression are as follows –

**Table 3: Log Linear Regression Result**

Variables	Coefficient	P-value
Lgunemployment	.457767	0.006**
Density	.0031081	0.002**
Lgarea	.8651328	0.004**
Constant	-9.116063	0.000***
R-Square = .845		

Source: Author's calculation.

As from the table 3, the unemployment, Density of the population and area of the state affect the crime against women positively and are significant. From the above results, we can see that with 1percent change (increase) in unemployment will increase the crime against woman by almost .45 percent. This explains that unemployment has a positive relationship with crime against women. In India, unemployment rate is quite high and even those employed the quality of employment is big concern, hence as the result imply that unemployment among the working population is one of the major causes of the crime against the woman. Further, population density and area of the state also have positive and significant impact on the woman crime. This is true with the case of woman as the city's having the dense population are becoming the center of crime especially against woman, an example of Slum area in Mumbai, namely, *Dharavi*, can be noted in this regard. Further, larger the area of the state more difficult it for the policing hence more would be crime. The model explains 84 percent of the variation in dependent variable by the independent variables.

### Model 2

$$lgcrime = \beta_0 + \beta_1lgfwork + \beta_2gunemployment + \beta_3numberofpolice + \beta_4lgpoverty + \mu$$

The above model explains the relationship among crime against women and female workforce participation, unemployment, number of police officers and poverty; where lgcrime stands for natural log of crime against women, lgfwork stands for natural log of female work force participation, number of police stands for number of police officers posted in a particular state and lgpoverty stands for natural log of poverty population of Indian states. A multiple regression model is run with the help of Stata and results from robust regression are obtained with R-squared = 0.924.

**Table 4: Log linear Regression Result**

Variables	Coefficient	P-value
Lgwork	.3500191	0.042*
Lgunemployment	.4413711	0.007**
Number of police	.0000145	0.038*
Lgpoverty	.2050565	0.001***
Constant	-7.031277	0.000***
R-Square = .9241		

Source: Author's computation

From the above table 4, we can see that all the four factors affect the crime against women. All are having positive and significant impact on the crime against woman.

With an increase in female work force participation, there is an increase in crime rates. Similarly, when unemployment increases, the crime rate also increases. Interestingly the number of police officers in a police station is having positive but negligible impact on the crime against woman which signals that crime against woman is not going to be check by mere increasing the police officers whereas the deputation of woman police officers in the police stations need to inquire about. Poverty also increases the crime rate.

Woman work participation in India is lowest in south Asia and woman faces various acts of crime in the work place whereas the most of the crime at home is not reported. Further, owing to masculine mentality the working woman are seen with suspicion which may one of the causes of positive relationship with the crime against woman.

## 7) Conclusion

The factors affecting crime against women can be divided into two parts – first, theoretical factors which could be justified by theories, for example – representation women in Indian cinemas; second, statistical factors which can be proved with the help of data, for example – impact of unemployment on crime against women. The theoretical factors help us to understand the psychology behind the crime as well as the victim's point of view. But statistical factors help us to understand the way through which we can control the crime against women. For example, as we know female work force participation increase the crime against women because now females are more visible in the external world and hence more prone to be a victim. Thus, female work participation will increase crime. So, if we know that female work force participation increases the crime then we can take preventive measures in order to reduce crime against women and also provide them with more opportunities to participate in the labour force.

With the help of the study, we can easily say that crime against women is definitely affected by geographical and socio-economic factors. So, the factors which affect the crime against women are –

- Unemployment
- Female work force participation
- Density
- Area
- Poverty population
- Number of police officers

These variables have an impact on the crime against women. If we find a way to control or we can build some preventive measures for these variables then we can reduce crime against women. For theoretical factors, awareness among the population can only help.

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