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7 February 2018

Online at <https://mpra.ub.uni-muenchen.de/87402/>
MPRA Paper No. 87402, posted 24 Jun 2018 08:08 UTC

‘Women on Top’ and/or ‘Economic Progress’: What affects actual and reported crime against women?

An analysis of socio-economic factors in India¹

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Abstract:

We in this work make an attempt to examine whether having a woman chief minister helps in reducing actual crime and increase reported crime against women. Also we examine whether economic progress affects actual and reported crime against women. We find evidence that having a women chief minister has no effect on actual and reported crime against women whereas economic progress does lead to reduced crime against women. We also examine other socio-economic factors and get that increased female labour force participation, urbanization and policing increases reporting of crime whereas increased female literacy doesn't necessarily lead to increased reporting of crime against women.

Keywords: Crime against women, Economic progress, Women Chief Minister.

JEL Classification: J16, J15, J12, P16.

¹ We thank Ajitava Raychaudhury, Gautam Gupta, Sushil Halder and Vivekananda Mukherjee for their comments and suggestions at various states of this work. I also gratefully acknowledge Centre for Advanced Studies, Department of Economics, Jadavpur University for funding this research. We take responsibility of any errors and omissions.

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1. Introduction:

Crime against women is deeply embedded in our society, cutting across social, cultural and economic groups and situations. Women from every part of the society at every stage of life face it. It can be in the form of rape, murder, eve-teasing, dowry cases, dowry deaths, kidnapping, molestation, torture, outraging modesty etc. It affects women's psychological and overall development. Crime against women is considered to be one of the major obstacles to the achievement of equality and overall development of a healthy society. The recent incidents in Delhi, West Bengal, UP and other states stand testimony to increased violence against women throughout India.

Women are often victims of various types of crime, but crime which are directed specifically against women are generally characterized as 'crime against women'. Broadly, in India crime against women can be classified under two categories:

(1) Crime under the Indian Penal Code (IPC), which include seven types of crimes (i) rape, (ii) kidnapping and abduction, (iii) dowry deaths, (iv) physical and mental torture (includes wife battering), (v) molestation, (vi) sexual harassment and (vii) importation of girls.

(2) Crime under Special and Local Laws (SLL), which include seventeen types of crime of which immoral traffic (1956 Act), dowry demands (1961 Act) and indecent representation of women (1986 Act) are the important ones.

Crime against women is a complex problem caused among others by personal, situational, socio-cultural and probably economic factors and therefore it becomes imperative to examine the relative importance of factors that either positively or negatively influence it. The recent increase in the incidence of crime against women all-over India, not only in West Bengal and Delhi, forces us to look into this issue from a scientific perspective. The objective of this study is broadly two-fold. First we make an attempt to examine whether lack of economic progress leads to increased crime against women, i.e. put differently whether economic prosperity can lead to increased empowerment and therefore reduced crime against women. Second, we examine whether greater political power to women help reduce crime against women. Specifically we examine whether having a woman head of state (chief minister) leads to increased crime

reporting and/or reduced crime against women. To achieve our goal we construct a state level panel dataset taking 24 states from 1994 to 2011. We collect data on different socioeconomic variables and we run several fixed effect regression. Specifically we run two sets of regressions. First we take 17 major states (excluding north-eastern states) and run a set of log-linear fixed effects regression. In the second set we take all 24 states together and run a set of standard linear fixed effects regression as a robustness check. We find evidence that greater economic progress leads to reduced crime against women but greater political power for women at the top doesn't necessarily lead to 'greater reporting' of crime. In addition to this we find some evidence from dowry-death data (which is least contaminated by reporting bias) that the 'women on top' effect is also insignificant in reducing 'dowry deaths' and therefore we can conjecture that greater political power at the top might not lead to reduced crime against women. This forces us to ponder on the larger question of 'whether economic progress can take care of other socio-cultural (and socio-economic) problems', in this specific case crime against women. In addition to this, our work also focuses on other socio-economic variables and its impact on reporting and actual crime against women. **We restrict our analysis till 2011 since the last census was conducted in 2011 and we can only get certain socioeconomic data till 2011.**

The other important paper which focuses on greater political representation and crime against women is Iyer, Mani, Mishra and Topalova (2012). Using state-level variation in the timing of political reforms they find that increased female representation in local government leads to significant rise in documented crimes against women in India. They interpret this greater reporting as 'good news'. They also find that large scale membership of women in local governments affects crime against women more than their presence in higher level leadership positions. It is worth pointing out that this previous stated result is similar to our finding where we find that that a woman 'head of state' (Chief Minister) neither affects actual crime rate nor the reporting of crime. In addition to this our paper focuses on economic factors that might (or might not) affect crime against women in India, specifically whether economic progress can lead to reduced crime (and/or reporting) against crime.

The paper is organized as follows. In section 2 we present a survey of relevant literature and relate it to our work. In section 3 we describe the data with which we conduct our research. Section 4 spells out our empirical strategy and we analyze whether a woman chief minister and/or economic progress leads to reduced actual crime and increased reporting of crime against women. In section 5 we analyze several other socio-economic factors and their impact on actual and reported crime against women. Section 6 concludes the study and points to several future work that can be done.

2. Relationship with the literature:

Our paper can be embedded in the literature on socio-political and economic aspects of crime and development. Quite a few papers have addressed the issue of crimes against women. Miguel (2005) studied how economic shocks led to increased witch-killing in rural Tanzania. Sekhri and Storeygard (2010) examined how natural disasters might affect crimes against women. The impact of divorce laws on violence against women was studied by Stevenson and Wolfers (2006). Aizer (2010) examines the effect of women's relative wages on domestic violence. In a different paper Aizer and Dal Bo (2009) show that no-drop policies which compel the prosecutor to continue with prosecution even if the victim expresses a desire to drop the charges result in an increase in crime reporting. Finally Iyengar (2009) shows that mandatory arrest laws for domestic violence leads to greater under-reporting of less serious incidents which in turn leads to an increased number of homicides. Interesting to note is that the above mention papers doesn't address the issue of political power for women and its impact of crime against women.

Our paper can also be related to the literature on increased political representation of women and its impact on socio-economic policy outcomes. Chattopadhyay and Duflo (2004) show that reservation for women in local panchayats leads to a significant increase in public good provision in that area. Clots-Figueras (2011) show that that politicians' gender along with their social position, (i.e., their caste) affects policymaking and leads to greater investments in health and early education. She also show that female legislators favour "women-friendly" laws more than their male counterpart. Powley (2007) examines 'the impact of women legislators on policy outcomes affecting children and family'.

In addition to this our paper links economic progress and crime against women. Other important papers that address similar kind of issues are Soares (2004), Miguel (2005) and Fafchamps and Minten (2006).

2.1. Crime and Socioeconomic factors: India specific literature:

Few proper empirical studies have been conducted to find out the socioeconomic factors that lead to increased crime against women and many of the studies are descriptive and qualitative in nature. Majority of those studies focus on the link between criminalization of politics and crime against women. Works by Ghosh (1991), Sharma (1994) SHAKSHI (1995), Chikarmane (1999) and Gurumurthy (1998) argue that urban mafias, those behind smuggling, drug, liquor rackets often seek political refuge and are to a great extent responsible for criminalization of politics. Women and the marginalized society often bear the brunt of such violence. Karat and Agnihotri (1993) and Karat (1998) have argued that increased use of caste, religion and ethnic identities for narrow political gains have led to 'criminalization of politics' and have resulted in increased crime against women in India. Moreover, attempts to control and intimidate women associated with decision-making processes are also leading to more violence against women. In this regard one can cite the case of Bhanwari Devi of Rajasthan who was gang-raped for working against child marriage practiced by upper castes in her village. They also argue that increased participation of women in active labor force and politics make them vulnerable to exploitation.

From a different perspective Atrey (1988) and Verma (1990) argue that 'crime against women have roots in the male dominated socio-economic, political and legal order'. In most of the commune, caste or family women are treated as private property. They are supposed to be protected by men as traditional value has been placed upon their virginity and chastity (Kannabiran 1996; Dasgupta 1989).

Violence within the family is another source of crime against women. Although serious research on family violence can be dated back to the early 1980s yet there are few studies which have been published on domestic violence against women. Tellis-Nayak and Donoghue (1982) and Kumagai and Straus (1983) surveyed the urban middle class and focused only on marital violence and conjugal authority in different cultural settings

in India. The estimation by Mohammad (1984) and Sinha (1989) showed a positive correlation between wife-beating and lower socio-economic conditions. In a different paper Sinha (1989) has identified that low self-esteem, gender inequality and economic dependence of wives are some of the reasons behind spouse abuse. In his 'news paper based investigation' Devi Prasad (1994) has concluded that young age of wife, lack of education and dependence on their husbands and in-laws make women too weak to fight any repression against her. He also argued that the growing consumerist approach of marriage and the predominance of dowry within the urban middle class are some of the reasons that contribute to such violence.

Some theoretical approaches to violence against women is worth-mentioning. Goode (1971) suggested in his resource-theoretic approach that a resourceful person plays a dominant role in the family. On the other hand, a limited resourced husband resorts his lack of dominance into violence. The structural-stress theory by Prescott and Letko (1977) suggested that "Violence is a product of socially structured stress resulting from unemployment, social class, economic deprivation, unfulfilled expectations, pregnancy, and the like, and violence is used in such contexts if it is an accepted response to stress."

Most of the crimes against women go unreported for understandable reasons - attached social stigma, distrust in legal mechanisms, fear of relationship related complications and many other reasons. Also institutional indifference makes matters worse as till date it is very difficult to lodge a complaint against the powerful of the society.

It is worth pointing out that all the India-specific papers mentioned above point to socio-economic factors in explaining crime against women and are qualitative in nature. Except Mukherjee, Rustagi and Krishnaji (2001) hardly any paper use proper econometric technique to analyze causes behind crime against women. Also Mukherjee, Rustagi and Krishnaji (2001) doesn't use panel data to study the factors in determining crime against women. In contrast this paper uses a panel dataset of 1994-2011 of 24 Indian states and examines some of the determinants of crime against women focusing on whether having women as a head of state (women chief minister) help in reducing crime against women and also whether economic prosperity leads to reduced crime against women.

3. Data:

The National Crime Records Bureau (NCRB) provides data on different types of crimes in India on an annual basis since 1953. The NCRB has been providing data on rape and culpable homicide not amounting to murder from 1971 and since 1994-95 they are providing data on dowry deaths, molestation, cruelty by husband or relatives and sexual harassment. In this research we use this official NCRB data extensively. Specifically we develop a state level panel dataset with information on crime against women, specifically rape, dowry deaths, torture by husband and relatives and molestation in different states across India from 1994 to 2011. We collect data on all 24 states in our study. These are Andhra Pradesh, Arunachal Pradesh, Assam, Bihar and Region (including Jharkhand after bifurcation of Bihar), Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh and Region (inclusive of Chattisgarh after bifurcation of Madhya Pradesh), Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and Region (inclusive of Uttaranchal after bifurcation of Uttar Pradesh) and West Bengal. We have excluded Jammu and Kashmir in order to avoid some data related problems. We have also not included the union territories in our study. As we will spell out shortly we will run two sets of regression where in one set we will use data from all 24 states and in the other will use 17 major states. One again we **restrict our analysis till 2011 since the last census was conducted in 2011 and we can only get certain socioeconomic data till 2011.**

3.1. Tackling bifurcation of states:

We need to clarify that within our period of study some states were bifurcated and new smaller states were created. In 2000 Jharkhand was created from Bihar³, Chattisgarh was

³ The formation of the new state of Jharkhand, constituting the 18 districts of southern Bihar, was the fulfillment of a fifty-year struggle. The boundaries of Jharkhand consisted of tribal hill areas of Madhya Pradesh, West Bengal and Orissa, in addition to southern Bihar. The new state took 35 percent of the population of Bihar--India's second most populous state--but 65 percent of the state's revenue with its coal mines and steel mills. The division of Bihar was widely believed to be possible because Rashtriya Janata Dal (RJD) (led by Laloo Prasad Yadav with his wife Rabri Devi as state chief minister), the state's ruling party, found it politically advantageous. The RJD had little support in southern Bihar, and the loss of the south (however costly to the state exchequer) enabled Laloo Yadav to secure majority in the state legislature and strengthen his party's position in the state relative to other parties.

created from Madhya Pradesh (MP)⁴ and Uttaranchal was created from Uttar Pradesh(UP)⁵. But for the sake of our study and to construct the panel we have taken the undivided state as a cross section entity. For example after 2000 in case Jharkhand and Bihar we take the cross section unit as ‘Bihar and Region’ and add the reported crime rates of Bihar and Jharkhand to get the ‘Bihar and Region’ data after 2000. Similar thing has been done for UP and Uttaranchal and MP and Chattisgarh. The implicit assumption we make is that mere division of a state doesn’t change the inherent cultural and other cross-section specific factors within a short span of time. Although minor political changes are expected but we conjecture that an undivided Bihar (Jharkhand included) will hardly be different from Bihar and Jharkhand separated in terms of culture and other specific fixed factors. We apply the same argument for UP and Uttaranchal and MP and Chattisgarh.

For data on other socioeconomic explanatory variables we have used various sources namely the census data, the RBI website and the indiastat.com website. It has to be noted that the census data is decennial and therefore we had to use suitable interpolation techniques for values in the intermediate period in order to construct the panel. The variables on which we collected data are given below:

3.2. Variables:

Our dependent variable of interest is reported crime against women. There are several variables through which we can measure reported crime against women. For that we have collected data on four different variables namely total number of rape cases reported, dowry deaths reported, total number of torture cases by husband and relatives reported and total number of molestations reported. We standardize all variables and measure all

⁴ The creation of Chhattisgarh was rooted in caste distinctiveness, with upper peasant Brahmins and Kurmis leading the movement for the creation of a separate state. Madhya Pradesh was reorganized with the creation of Chhattisgarh, constituting the seven eastern districts of the old state. An important rice-producer and rich in mineral wealth, Chhattisgarh has resented its disproportionate contribution in revenues to any return it had received from the erstwhile state. The new state of Chhattisgarh has a substantial tribal population.

⁵ The creation of Uttaranchal, carved from Uttar Pradesh, fulfilled long-voiced demands by the people of Kumoan and Garhwal hills of northwestern U.P. for a separate state based on social (caste), cultural and economic distinctiveness. The hill districts had Brahmin majority, whereas "backward castes" dominated most of Uttar Pradesh. The eleven hill districts and two plains districts that form the new state have long-felt neglected by the U.P. state government.

the above variables per lakh (hundred thousand) population. We run separate sets of regressions on all these above variables.

Therefore the **dependent variables** we take in different models are given below:

(a). **Rape Cases Reported:** We take rape cases reported per lakh (hundred thousand) population for all 24 states from 1994-2011.

(b). **Dowry Deaths Reported:** Dowry death cases reported per lakh (hundred thousand) population for all 24 states from 1994-2011.

(c). **Torture by husband and Relatives:** Torture by husband and relatives reported per lakh (hundred thousand) population for all 24 states from 1994-2011.

(d). **Molestation cases reported:** Molestation cases reported per lakh (hundred thousand) population for all 24 states from 1994-2011.

We should mention the following caveat that the NCRB data gives the number of reported crime against women. Often crime against women goes unreported. Therefore finding out the true relationship between crime against women and different explanatory variables is difficult and therefore remains a challenge. We conjecture that rape, torture and molestation will be under-reported to a large extent. But dowry-deaths will be least contaminated by reporting bias. This is due to the fact that it is easier to hide rape, molestation, torture etc. but whatever be the reason it is not easy to hide death. Therefore whatever conjectures we make about the incidence of actual crime against women (not reporting) will have to be based on the dowry death data and we might have to make rational conjectures about the reporting effect and the true effect after looking at the regression results.

The important explanatory variables that we have taken are

(a). **Yearly Per-Capita Net State Domestic Product** at constant prices (2004-2005 prices) for all 24 states from 1994 to 2011.

(b). **Growth rate of Per-Capita Net State Domestic Product** for all 24 states from 1994 to 2011.

(c). **Male literacy rate** measured as percentage of literate males for all 24 states from 1994 to 2011. These will proxy the male education level of each state for the time period 1994 to 2011.

(d). **Female literacy rate** measured as percentage of literate females for all 24 states from 1994 to 2011. These will proxy the female education level of each state for the time period 1994 to 2011.

(e). **Sex ratio** measured in terms of females per thousand males for each state for the time period 1994 to 2011.

(f). **Number of police stations** per lakh (hundred thousand) population for each state for the time period 1994 to 2011. This variable is taken as a proxy for the law and order situation of a particular state at a particular time point.

(g). **Female labour force participation** measured in terms of percentage of females engaged in the labour force within the age group 18-65 for all 24 states from 1994 to 2011.

(h). **Degree of urbanization** measured in terms of percentage of population residing in urban areas for each state for the time period 1994 to 2011.

(i). A **Woman Chief-Minister dummy** which takes value 1 if the chief minister in a particular state and in a particular year is a woman. It might happen that a chief minister assumes office in the middle of a year. We use the convention that if the woman chief minister is in office for more than six months in a particular year we take the value of dummy to be 1 otherwise it is zero.

In addition to this we will have other state specific factors (state specific cultural and other inherent factors) which will be taken care-off when we do the fixed effects regression. Specifically we will be focusing on whether Per-Capita Net State Domestic Product and Woman Chief Minister dummy has some bearing on the reporting and actual crime against woman.

4. Empirical Strategy and Analysis:

We run two sets of regressions. In the first set of regressions we take 17 major states in India over the period 1994-2011. We run state level regressions on 4 different crime parameters taking the explanatory variables mentioned in section-3 i.e. reported rape cases per lakh (hundred thousand) population, reported torture cases per lakh (hundred thousand) population, reported molestation cases per lakh (hundred thousand) population

and reported dowry deaths per lakh (hundred thousand) population. We run the following fixed effects regression:

$$\ln(C_{ij}) = \alpha_i + \delta.NSDPPC_{ij} + \gamma CMDum_{ij} + \beta'X_{ij} + \varepsilon_{ij}$$

Where C_{ij} is crime against women per lakh (hundred thousand) population, α_i is the fixed effect for the i^{th} state, $NSDPPC_{ij}$ is per-capita net state domestic product of state i at time period j , $CMDum_{ij}$ is the chief minister dummy of i th state at time period j , X_{ij} is the vector of explanatory variables (except the chief minister dummy) mentioned in section-3. One of our main parameters of interest is γ which captures the effect of having a women chief minister in a state on the crime variables. Also we will focus on δ , the effect of net state domestic product on actual and reported crime against women. We will also report whether other socio-economic controls influence the actual and reported crime against women. All standard errors are clustered at the state level. This takes care of possible correlated shocks to state-level crimes over time. The regression results are reported in Table-I to Table-IV.

In the second set of regressions we take all 24 states in India over the period 1994-2011. We run similar state level regressions on the same 4 different crime parameters taking the same explanatory variables as before. But in this case we run the following fixed effects regression:

$$C_{ij} = \alpha_i + \delta.NSDPPC_{ij} + \gamma CMDum_{ij} + \beta'X_{ij} + \varepsilon_{ij}$$

where all the variables have similar meaning. Here we didn't take log of C_{ij} since in some of these additional states in some year certain crime variables take the value zero. Again all standard errors are clustered at the state level to take care of possible correlated shocks to state-level crimes over time. We report the findings of the above set of regressions in Table-V to Table-VIII.

4.1. The 'Women on Top' Effect?

Unfortunately we do not find any evidence that the presence of a women chief minister either leads to an increased reporting of crime and/or a reduction in crime against women. We regress all the above crime variables separately on the female chief minister dummy along with different other socio-economic explanatory variables mentioned above. We

find that in all the above cases the chief minister dummy is insignificant in explaining variation in the reporting of different types of crimes against women and this finding is robust across all regression specifications that we use in this paper. This leads us to conjecture that having a woman at the helm of affairs might not lead to reduced crime against women neither it leads to increased reporting of crime against women. Using the dowry death regression results (Table-II and Table VI) which is least contaminated with reporting bias we can further conclude that presence of a women chief minister might not have any impact on actual crime against women as well. This finding to some extent corroborates the finding of Iyer, Mani, Mishra and Topalova (2012) that the presence of women in higher level leadership positions doesn't affect crime and reporting of crime significantly in India. A woman at the helm of affairs might not have much impact on the law and order situation at the grass root level. Increased political representation of women at the local level might have some impact on the security of women. In fact Iyer, Mani, Mishra and Topalova (2012) provide evidence that increased political representation at the local level leads to increased crime reporting and decreased actual crime against women.

4.2. Economic Progress and Crime against Women:

Does economic progress lead to greater emancipation of women and lead to greater reporting of crime? Is it the case that economic prosperity leads to reduced frustration in the society leading to lesser number to actual crimes against women? Or it might be the case that crime against women is deeply embedded in the male psyche and/or in the Indian patriarchal chauvinist society and has nothing to do with economic progress. From the first set of regression of the 17 major states we find evidence that an increase in the net state domestic product significantly reduces reporting of dowry deaths and molestation cases (Table II and Table IV). Also it has moderate impact in reducing reported torture and rape cases (Table I and Table III). Fall in documented crime against women can be attributed to either less reporting of crimes or less actual crimes. We conjecture that since we get a negative relation between net state domestic product and all of the crime parameters, it is the actual reduction in crime that is probably leading to such a result. Our finding to some extent supported by our second set of regressions where we

find that increased net state domestic product leads to a significant reduction in dowry death cases and reported molestation cases. These are given in Table VI and Table VIII.⁶

5. Other Socio-Economic Factors:

5.1. Do Literate Women Report More?

Literate women are supposed to be more conscious and vocal about atrocities committed against them and we expect literate women to report more. But the evidence we get is mixed. In the regression for 17 major states we get that female literacy is insignificant in explaining reported torture, molestation and rape cases. This points to some sort of diffidence on the part of literate women in reporting crime against them due to various reasons like shame, ignominy and social pressure among others. Whereas in table II we get the evidence that female literacy rate has significant impact in increasing reported dowry deaths. Specifically we get that 1% increase in female literacy leads more than 5% increase in dowry death reporting. But we need to remember that dead people don't report and probably this is the true effect that is kicking in implying that there is a possibility that literate women are subjected to more dowry demands leading to more dowry deaths. This result is puzzling in the sense that probably this reflects the social mindset of a sadistic male dominated Indian society where literate women are subjected to torture and dowry demands. Interestingly in the regression taking all 24 states where we incorporate the northeastern states some of which are matrilineal we do find evidence that increased female literacy leads to significant increase in reported dowry death, reported torture cases and reported molestation cases (Table-VI, VII and VIII). This can be termed as the 'matrilineal' effect where it seems that literate women do report more crimes significantly.

5.2. Female Labour Force Participation and Crime against Women:

Does increased participation in the labour force make women vulnerable to exploitation and crime? Our evidence in this regard is again mixed. In case of dowry deaths where the reporting bias is minimum we find that increased labour force participation do have a

⁶ But we do not find any concrete evidence of the growth rate of net state domestic product having significant impact on the crime against women.

positive impact on reported dowry deaths and we get that evidence in both sets of regressions (see Table II and Table VI). The evidence that we have got point to the fact that increased earning power of women makes them vulnerable to increased dowry demands leading to more number of dowry deaths. This can again be construed as a true effect since women who is dead doesn't have the option of reporting and not reporting. Therefore this effect can be construed as the true effect and not the reporting effect. Regarding reporting of crimes we get strong evidence that increased labour force participation leads to greater emancipation and therefore greater reporting of crime. This is evident from the regression of 17 major states where increased female labour force participation leads to a significant increase in the reporting of torture cases, molestation cases (although moderate) and also rape cases. This is also to some extent corroborated in the regression for all 24 states where we find increased labour force participation leads to significantly higher reporting of molestation cases (Table-VIII).

5.3. Urbanization and Crime Reporting:

It will be of some interest to know whether people living in urban areas report more crime compared to rural people. In our regression results we find strong evidence that increased urbanization leads to greater reporting of crime against women. From the first set of regressions of the 17 major states we find that increased urbanization leads to significant increase in reported rape cases, dowry deaths, torture and molestation cases (see Table-I to Table-IV). In addition to this in the second set of regressions of all 24 states we find that increased urbanization increases reporting of torture and molestation cases significantly (Table-VII and Table-VIII). Overall we conjecture that urban women are more forthright in reporting atrocities against them and one can also attribute this greater reporting in terms of greater overall exposure (including greater exposure to mass media) in the urban areas although we do not take media coverage as a variable in our empirical analysis⁷.

⁷ This is due to data problems.

5.4. Policing and Crime Reporting:

Increased policing do have a significant reporting effect on crime against women. We get this strong evidence in all the sets of regressions that we have run. The result is not surprising since more number of police stations leads to greater reporting of crime and this evidence is very strong in our empirical finding.

5.5. Some Conjectures on Actual Crime:

Separating reporting of crime and incidence of actual crime remains a challenge. But if one has to make some conjecture about what affects actual crime we need to look at the dowry death figures which are least affected by reporting bias. If we look at both the sets of regressions Table-II and Table-VI the interesting result we get is that increased NSDP per capita leads to a significant fall in crime against women whereas increased female literacy rate leads to increased crime against women and these results are robust across specifications. The first finding points to the fact that probably economic prosperity leads to reduced dowry demands and therefore reduced dowry deaths. One can also in essence get this result from the inter-state comparisons where we see that the dowry death intensity is higher in the northern BIMARU states vis-à-vis the rest of India (See the comparative graphs at the end). The surprising result is that female literacy rate seems to significantly increase the incidence of dowry deaths. The result although difficult to comprehend, can be rationalized as follows: educated women have more earning potential and this might make them vulnerable to increased dowry demands. Therefore it is possible that the possibility of torture and consequent dowry deaths increase the more literate women are. Other socio-cultural factors might also lead to increased incidence of dowry deaths among literate women.

6. Conclusion:

We in this paper make an attempt to find out whether women at the helm of affairs can lead to reduced crime against women and/or increased crime reporting but unfortunately we find no evidence of either reduced crime against women or increased reporting of crime against women. Using two separate sets of regressions we find this result to be quite robust and force us to conclude that having a women chief minister at the helm is

no deterrent to crime against women, nor does it give courage to women to report atrocities committed against them.

Second we find some evidence that economic progress does lead to reduced crime against women. We find that increased net state domestic product leads to reduced documented and actual crime against women and this result is also robust across specifications. In addition to this we examine other socio-economic factors that affect crime against women and find strong evidence that increased urbanization and increased policing leads to greater reporting of crime against women. Whereas, the impact of female literacy and female labour force participation on crime reporting and actual crime against women is mixed and moderate. Interestingly, in the first set of regression we hardly find any evidence of female literacy affecting reporting of crime against women. But the moment we incorporate the northeastern states some of which are matrilineal we find evidence that increased female literacy leads to significantly higher crime reporting. One wonders whether the 'matrilineal' effect has something to do with it, but this result is worth reporting.

Our study can be improved upon in several directions. In line with Iyer, Mani, Mishra and Topalova (2012) one can also have a relook at whether greater political representation at the grassroots level lead to reduced crime and/or increased reporting of crime against women. Also one can have a look at whether alcohol prohibition has some effect on the extent of torture against women. But the problem with this is we have very few states where alcohol is prohibited. Therefore we do not get much variation in observations to meaningfully say something about the impact of alcohol prohibition on crime against women. We also couldn't take media exposure as an explanatory variable due to data related problems. We intend to incorporate the above in our future study.

References:

Aizer, Anna. 2010. "The Gender Wage Gap and Domestic Violence." *American Economic Review* 100(4): 1847-1859.

Aizer, Anna and Pedro Dal Bo. 2009. "Love, hate and murder: Commitment devices in violent relationships." *Journal of Public Economics* 93: 412-428.

Atray, J P (1988): *Crimes Against Women*, Vikas Publishing House, New Delhi.

Bloch, Francis and Vijayendra Rao. 2002. "Terror as a Bargaining Instrument: A Case Study of Dowry Violence in Rural India." *American Economic Review* 92(4): 1029-1043.

Chattopadhyay, Raghendra and Esther Duflo. 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." *Econometrica* 72(5): 1409-1443.

Chikarmane, P (1999): 'Too Big for their book? : Women and the policing violence against Women' in Nalia Kabeer and Ramya Subramanian (eds), *Institutions, Relations and Outcomes: A frame work and Case Studies for Gender Aware Planning*, Kali for Women, New Delhi.

Clots-Figueras, Irma. 2011. "Women in Politics: Evidence from the Indian States." *Journal of Public Economics* 95: 664-690.

Dasgupta, Ashish (1989): 'Violence Against Women: Case of Agrarian Section' in Niroj Sinha (ed), *Women and Violence*, Vikas, New Delhi.

Devi Prasad, B. (1994): "Gender and Dowry-related Violence Against Women: Some Case Studies." *Indian Journal of Criminology & Criminalistics* 10 (1-2):33-49

Fafchamps, Marcel and Bart Minten. 2006. "Crime, Transitory Poverty and Isolation: Evidence from Madagascar." *Economic Development and Cultural Change* 54: 579-603.

Ghosh, S K (1991): *The Indian Mafia*, Ashish Publishing House, New Delhi.

Goode, W. (1971). "Force and Violence in the Family." *Journal of Marriage and the family* 33:624-636.

Gurumurthy, Anita (1998): *Women's Rights and Status-Questions of Analysis and Measurement*, Gender in Development, Monograph, Series, No 7, UNDP April.

Iyengar, Radha. 2009. "Does the Certainty of Arrest Reduce Domestic Violence? Evidence from Mandatory and Recommended Arrest Laws." *Journal of Public Economics* 93(1): 85-93.

Iyer, Lakshmi, Anandi Mani, Prachi Mishra, and Petia Topalova. 2012. "The Power of Political Voice: Women's Political Representation and Crime in India." *American Economic Journal: Applied Economics*, 4(4): 165-93.

Kannabiran, Kalpana (1996): 'Rape and the Construction of Communal Identity' in Kumari Jayawardena and Malathi de Alwis (eds), *Embodied Violence: Communalising Women's Sexuality in South Asia*, Kali for Women, New Delhi

Karat, Brinda (1998): *Women and Violence*, AIDWA Publication Series, No. 7, December.

Karat, Brinda and Indu Agnihotri (1993): *Violence against Women*, Sixth National Conference on Women's Studies, Mysore, May 31-June 3.

Kelly, Morgan. 2000. "Inequality and Crime." *Review of Economics and Statistics* 82(4): 530-539.

Kumagai, P., and M.A. Straus (1983): 'Conflict Resolution Tactics in Japan, India and U.S.A' *Journal of Comparative Family Studies* 14 (3) 377-392

Miguel, Edward. 2005. "Poverty and Witch Killing." *Review of Economic Studies* 72(4): 1153-1172.

Mohammad, N., (1984): "Battered Wives: A Study of Socially and Economically Backward People in Slum Areas" *Indian Journal of Criminology* 12(2): 102-107

Powley, Elizabeth. 2007. "Rwanda: The Impact of women Legislators on Policy Outcomes Affecting Children and Families." Background Paper, State of the World's Children, UNICEF.

Prescott, Suzanne, and Carolyn Letko 1977 "Battered women: A social psychological perspective." Pp- 72-96 in Maria Roy (ed.) "Battered Women, New York: Van Nostrand.

Sekri, Sheetal and Adam Storeygard. 2010. "The Impact of Climate Variability on Vulnerable Populations: Evidence on Crimes against Women and Disadvantaged Minorities in India." Working paper, University of Virginia.

SHAKSHI (1995): *Violence against Women* in the Indian NGO's Report on CEDAW, Coordination Unit for the World Conference on Women- Beijing 1995, New Delhi.

Sharma O C (ed) (1994): *Crime against Women*, Ashish Publishing House, New Delhi.

Verma, Usha (1990): 'Crime Against Women' in Sushma Sood (ed) *Violence Against Woman*, Arihant Publishers, Jaipur.

Sinha, N. (1989): "Profile of Marital Violence: Wife Battering," Pp 67-79 in N. Sinha (ed.) *Women and Violence*. New Delhi: Vikas.

Stevenson, Betsey and Justin Wolfers. 2006. "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress." *Quarterly Journal of Economics*, 121(1): 267-288.

Tellis-Nayak, V., and G.O. Donoghue (1982) "Conjugal Egalitarianism and Violence Across Cultures." *Journal of Comparative Family Studies* 13(3): 227-289.

Table A: Descriptive Statistics (Major Socioeconomic Variables)

Calculated on all 24 States (1994-2011)

	Mean	Std. Div	Max Value	Min Value	No. of Obs.
Rape	698.20	844.17	4459	1	432
Dowry Death	285.36	471.76	2405	0	432
Torture	2348.66	3049.99	19772	0	432
Molestation	1368.66	1792.71	8729	0	432
Sex Ratio	943.28	39.43	1084	861	432
Urbanization	27.29	11.88	62.17	9.01	432
Literacy (F)	60.89	6.69	92.07	26.10	432
Literacy (M)	77.86	8.77	96.11	54.85	432
Police Station	51920.975	44143.34	205870	2356	432
W.Pr.L	44.99	13.94	71.74	13.51	432
NSDP Pc	28369.46	15352.54	129397	9836.66	432
NSDP Pc Gr	2.95	4.47	152.05	-237.21	432

Based on all 24 States (1994-2011)

Rape, Dowry Death, Torture, Molestation and Police Station are expressed in Per Lakh (hundred thousand) population.

Sex ratio per thousand population.

Urbanization, Literacy (Male), Literacy (Female) and Female labour Force Participation (W.Pr.L) are expressed in percentages.

NSDP Per Capita is measured in Indian rupees, Yearly.

NSDP Pc Gr: NSDP Per Capita Growth rate, Yearly.

Table-I
Reported Rape and its Determinants (for 17 Major States)

Number of observations = 306 No. of Groups: 17
R²: Within = 0.3604
 Between = 0.1163
 Overall = 0.0400
Prob > F = 0.0000

Dependant Variable: Log of Reported Rape cases (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	-.0177812 (.0509095)	0.727
Sex Ratio	.0029087*** (.0006236)	0.000
Urbanization	.0309812*** (.0084384)	0.000
Female Literacy rate	.0029064 (.0190137)	0.879
Male literacy rate	-.0100523 (.0232241)	0.665
NSDP Per Capita	7.29e-06* (4.14e-06)	0.079
Per Capita NSDP Growth Rate	-.0000291 (.0005785)	0.960
No. of Police Stations (per 100,000 population)	.001519*** (.0003874)	0.000
Female Labour Force Participation	.019271** (.0095087)	0.044
Constant	-3.718606*** (1.393919)	0.008

*, ** and *** indicate significant at 10%, 5% and 1%
Fixed-effects (within) regression with robust standard errors.
(Standard errors in brackets, corrected for clustering at state-level).

Table-II
Reported Dowry Deaths and its Determinants (for 17 Major States)

Number of observations = 306

No. of Groups: 17

R²: Within = 0.2728

Between = 0.2268

Overall = 0.1184

Prob > F = 0.0000

Dependant Variable: Log of Reported Dowry Deaths (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	.0549548 (.0668217)	0.412
Sex Ratio	.003869*** (.0012538)	0.002
Urbanization	.0332098** (.0128491)	0.010
Female Literacy rate	.0564904** (.0219878)	0.011
Male literacy rate	-.0517243* (.0267096)	0.054
NSDP Per Capita	-.0000323*** (5.78e-06)	0.000
NSDP Growth Rate	-.0015345 (.0012595)	0.224
Police Station (per 100,000 population)	.0028149*** (.0006675)	0.000
Female Labour Force Participation	.0232265* (.0125336)	0.065
Constant	-5.274654*** (1.94035)	0.007

*, ** and *** indicate significant at 10%, 5% and 1%

Fixed-effects (within) regression with robust standard errors.

(Standard errors in brackets, corrected for clustering at state-level).

Table-III
Reported Torture Cases and it Determinants (for 17 Major States)

Number of observations = 306.

No. of Groups: 17

R²: Within = 0.6206

Between = 0.0593

Overall = 0.1488

Prob > F = 0.0000

Dependant Variable: Log of Reported torture by husband and relatives (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	-.0118609 (.075158)	0.875
Sex Ratio	.0008012 (.0010332)	0.439
Urbanization	.0338767*** (.0123836)	0.007
Female Literacy rate	-.0282594 (.0282311)	0.318
Male literacy rate	.0801746** (.0343961)	0.020
NSDP Per Capita	.0000133* (6.81e-06)	0.051
NSDP Growth Rate	-.0026358*** (.0008543)	0.002
Police Station (per 100,000 population)	.0024631*** (.0005045)	0.000
Female Labour Force Participation	.045562*** (.0143359)	0.002
Constant	-7.285625*** (2.019444)	0.000

*, ** and *** indicate significant at 10%, 5% and 1%

Fixed-effects (within) regression with robust standard errors.

(Standard errors in brackets, corrected for clustering at state-level).

Table-IV
Reported Molestation Cases and it Determinants (for 17 Major States)

Number of observations = 306

No. of Groups: 17

R²: Within = 0.3967

Between = 0.0792

Overall = 0.0995

Prob > F = 0.0000

Dependant Variable: Log of Reported Molestation cases (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	-.0063849 (.0533436)	0.905
Sex Ratio	.0029881*** (.0007549)	0.000
Urbanization	.0663729*** (.0079138)	0.000
Female Literacy rate	-.0209985 (.0203783)	0.304
Male literacy rate	.0301719 (.0251707)	0.232
NSDP Per Capita	-.0000113** (4.98e-06)	0.023
NSDP Growth Rate	.0004548 (.0004584)	0.322
Police Station (per 100,000 population)	.0034032*** (.0004867)	0.000
Female Labour Force Participation	.0226953* (.0127404)	0.076
Constant	-5.824101*** (1.591364)	0.000

*, ** and *** indicate significant at 10%, 5% and 1%

Fixed-effects (within) regression with robust standard errors.

(Standard errors in brackets, corrected for clustering at state-level).

Table-V
Reported Rape and its Determinants (For all 24 States)

Number of observations = 432 No. of Groups: 24.
R²: Within = 0.2522
 Between = 0.0157
 Overall = 0.0101
Prob > F = 0.0000

Dependant Variable: Reported Rape cases (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	-.0992595 (.1047805)	0.344
Sex Ratio	-.0000369 (.0014764)	0.980
Urbanization	.0277008 (.0207625)	0.183
Female Literacy rate	-.0044945 (.0418393)	0.915
Male literacy rate	.0589592 (.0593823)	0.321
NSDP Per Capita	9.63e-06 (9.01e-06)	0.286
Per Capita NSDP Growth Rate	-.0003717 (.0011479)	0.746
No. of Police Stations (per 100,000 population)	.0015687** (.0006882)	0.023
Female Labour Force Participation	-.015697 (.0139254)	0.260
Constant	-3.004374 (2.368339)	0.205

*, ** and *** indicate significant at 10%, 5% and 1%
Fixed-effects (within) regression with robust standard errors.
(Standard errors in brackets, corrected for clustering at state-level).

Table-VI
Reported Dowry Deaths and it Determinants (For all 24 States)

Number of observations = 432.

No. of Groups: 24.

R²: Within = 0.1903

Between = 0.4069

Overall = 0.3147

Prob > F = 0.0000

Dependant Variable: Reported Dowry Deaths (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	.0521514 (.0531991)	0.328
Sex Ratio	.0001176 (.0002184)	0.590
Urbanization	.0041675 (.0026425)	0.116
Female Literacy rate	.0182704*** (.0065082)	0.005
Male literacy rate	-.0171837* (.0092248)	0.063
NSDP Per Capita	-5.42e-06*** (1.28e-06)	0.000
NSDP Growth Rate	-.0005214* (.0002968)	0.080
Police Station (per 100,000 population)	.0001947*** (.0000553)	0.000
Female Labour Force Participation	.0161322*** (.0040154)	0.000
Constant	-.1994254 (.4732106)	0.674

*, ** and *** indicate significant at 10%, 5% and 1%

Fixed-effects (within) regression with robust standard errors.

(Standard errors in brackets, corrected for clustering at state-level).

Table-VIII
Reported Molestation Cases and it Determinants (For all 24 States)

Number of observations = 432.

No. of Groups: 24.

R²: Within = 0.2091

Between = 0.0065

Overall = 0.0101

Prob > F = 0.0000

Dependant Variable: Reported Molestation cases (per 100,000 population)

Explanatory Variables:	Coefficient (Standard Errors)	P-value
Chief Minister Dummy	-.0848892 (.1481633)	0.567
Sex Ratio	-.0068788** (.0033966)	0.044
Urbanization	.198451*** (.0403875)	0.000
Female Literacy rate	.1751456** (.0687321)	0.011
Male literacy rate	-.1604089* (.0886513)	0.071
NSDP Per Capita	-.0000662*** (.0000148)	0.000
NSDP Growth Rate	.0010147 (.0019225)	0.598
Police Station (per 100,000 population)	.0031057*** (.0009)	0.001
Female Labour Force Participation	-.0646065** (.0265505)	0.015
Constant	10.26831* (5.35203)	0.056

*, ** and *** indicate significant at 10%, 5% and 1%

Fixed-effects (within) regression with robust standard errors.

(Standard errors in brackets, corrected for clustering at state-level).

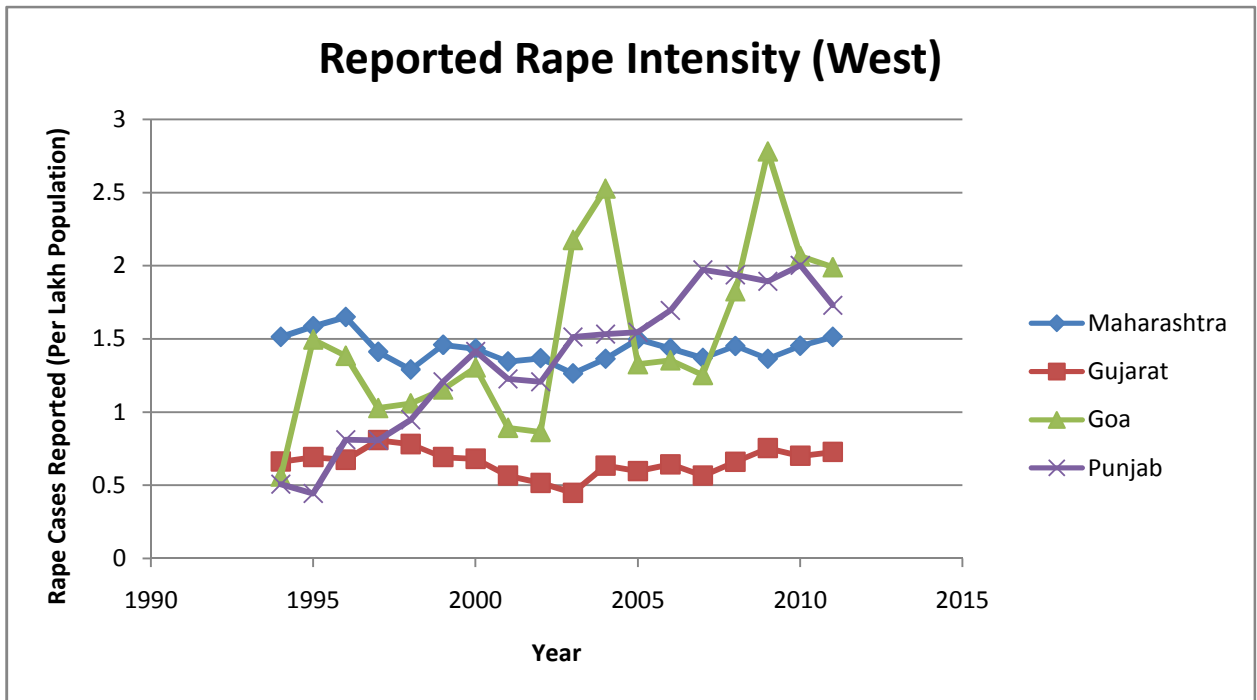


Fig-1

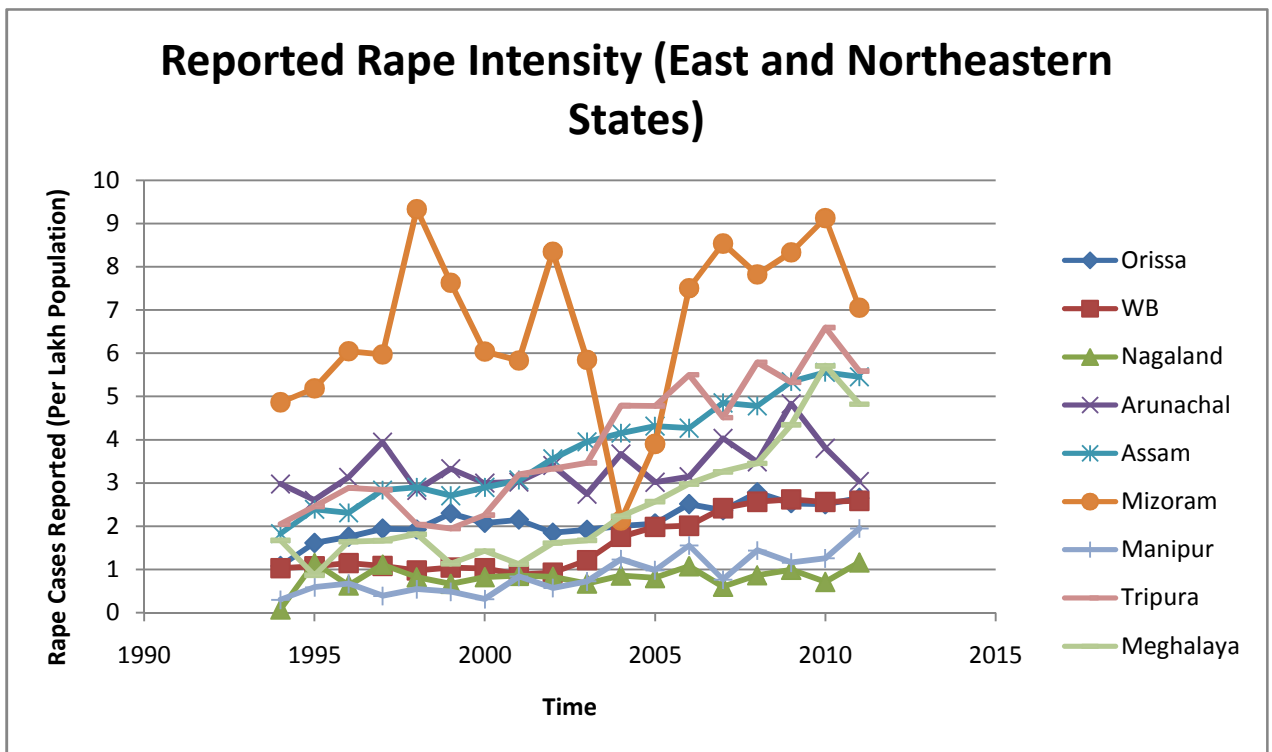


Fig-2

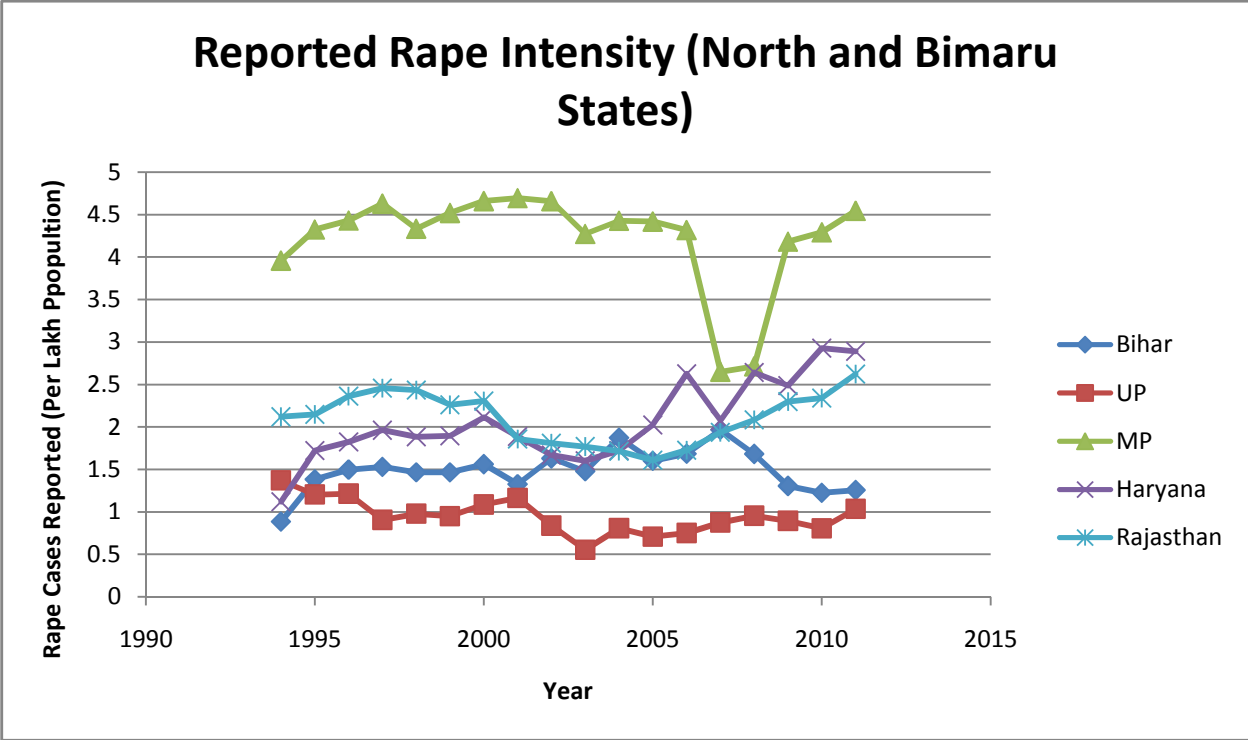


Fig-3

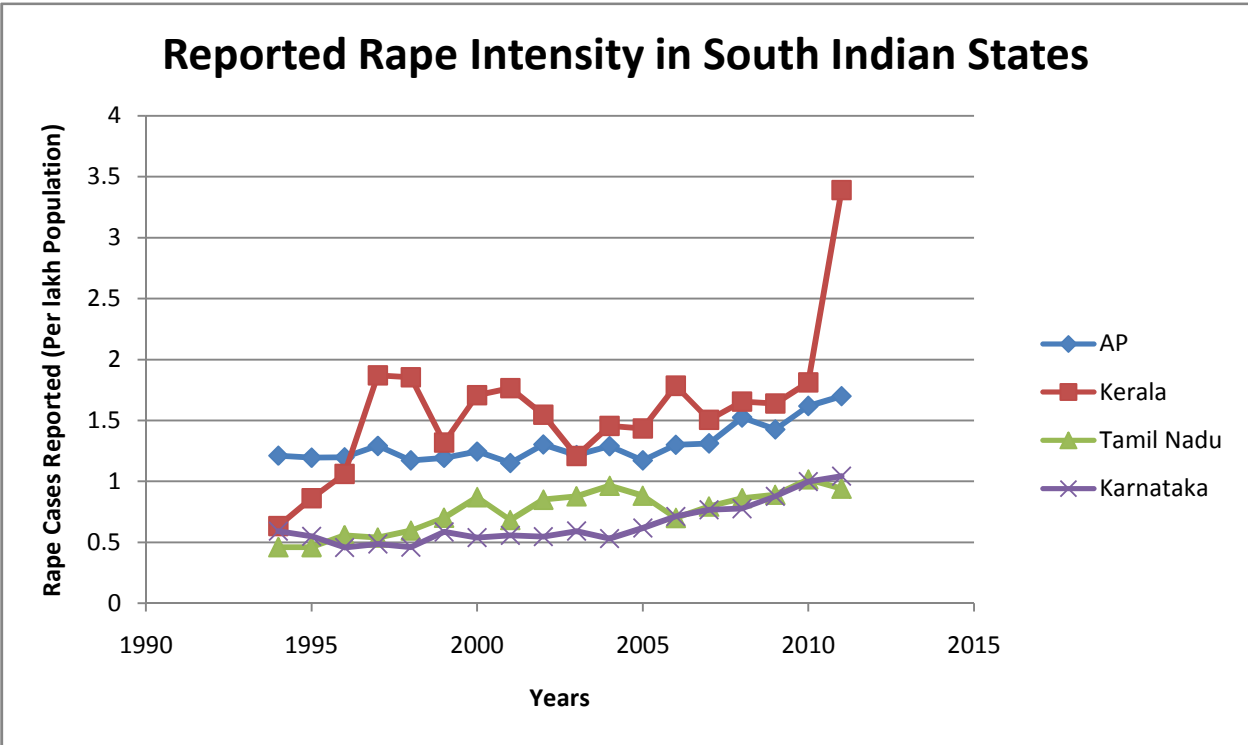


Fig-4

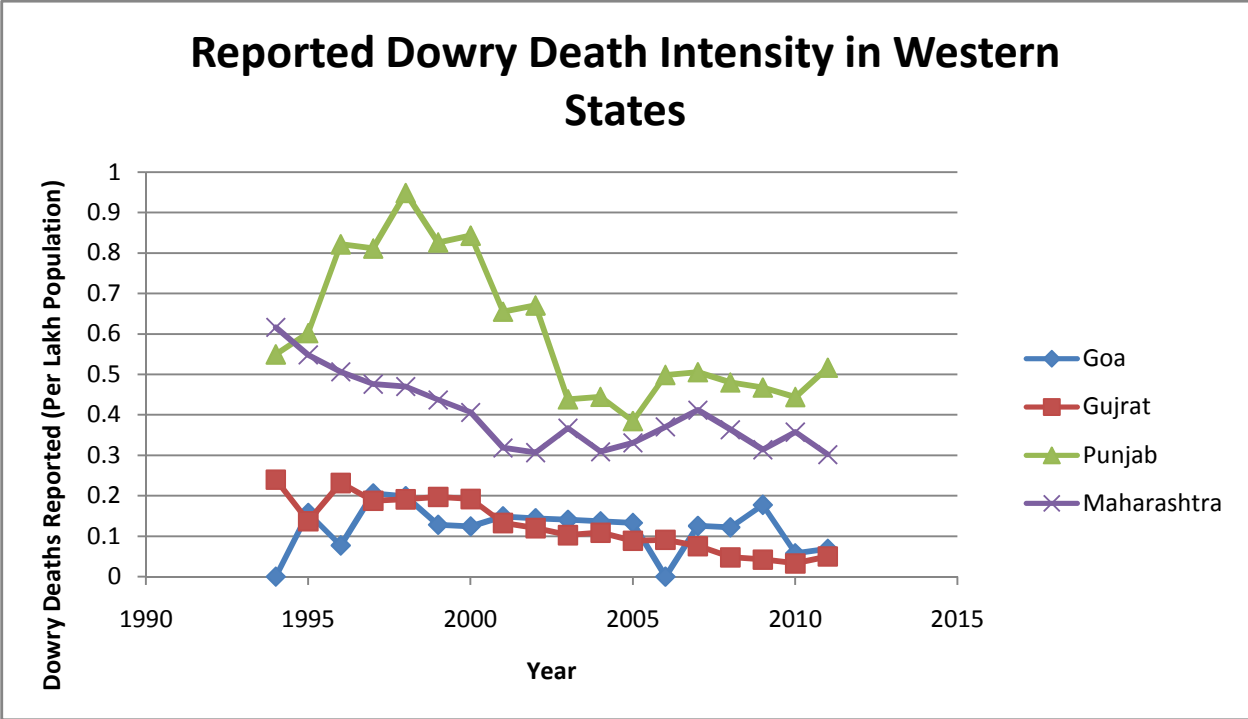


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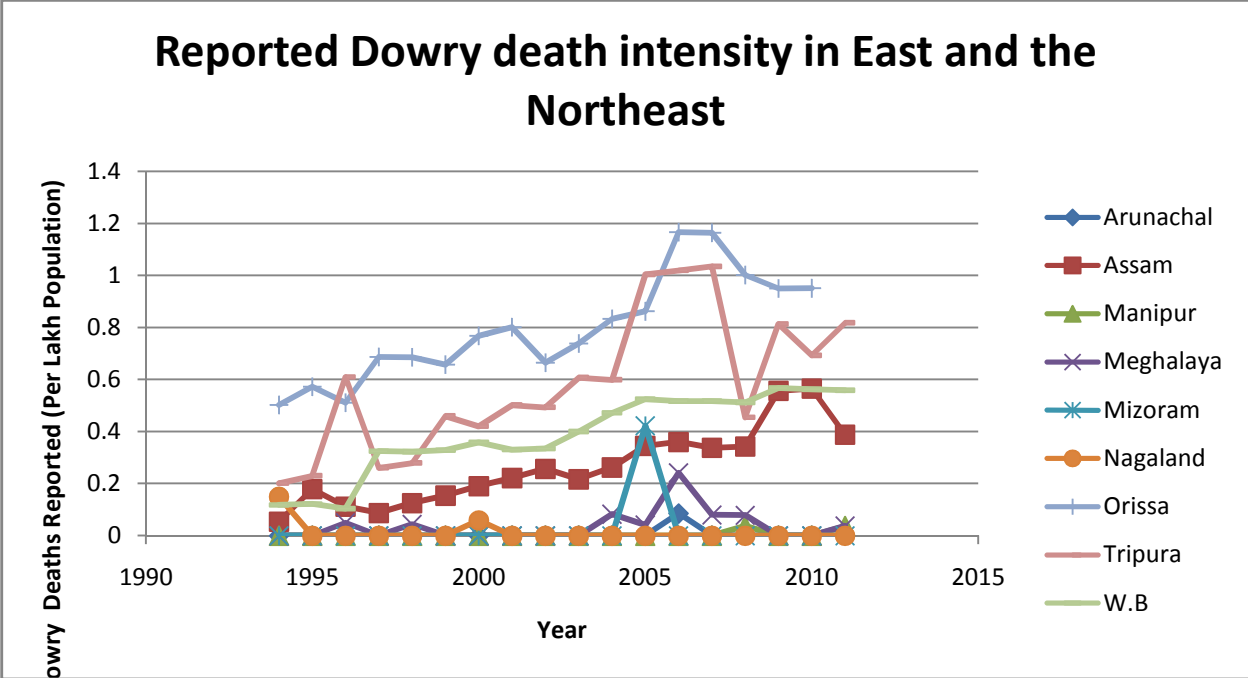


Fig-6

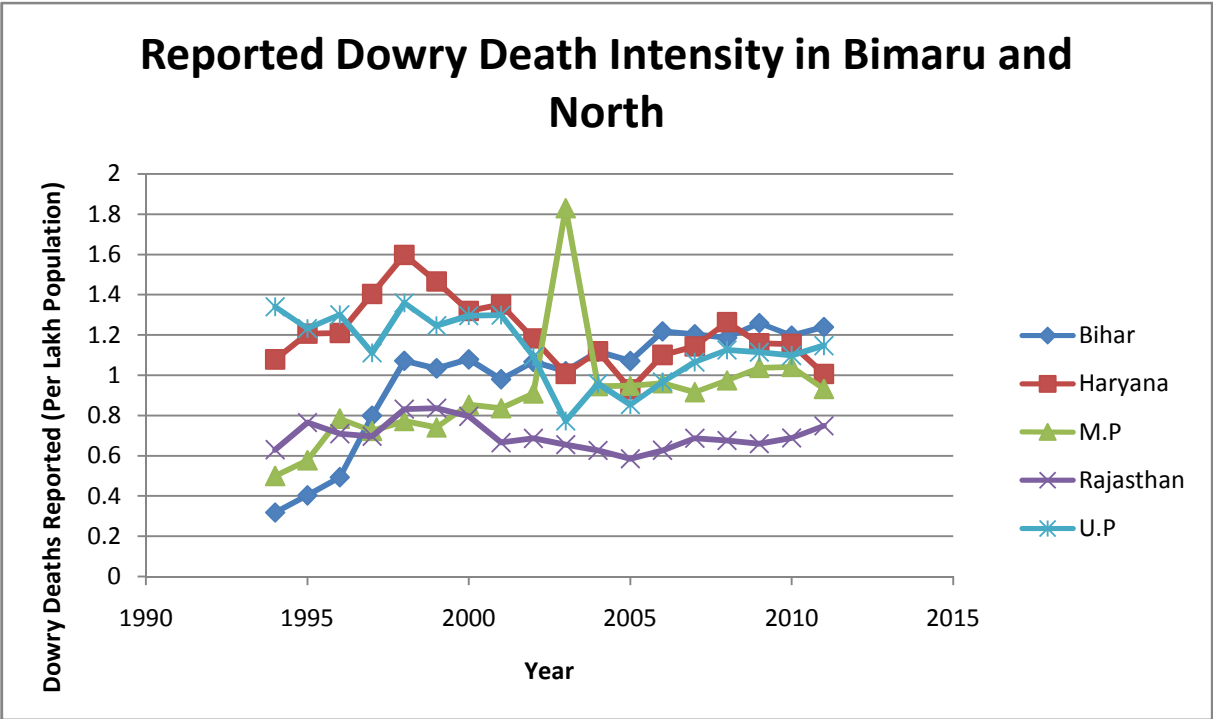


Fig-7

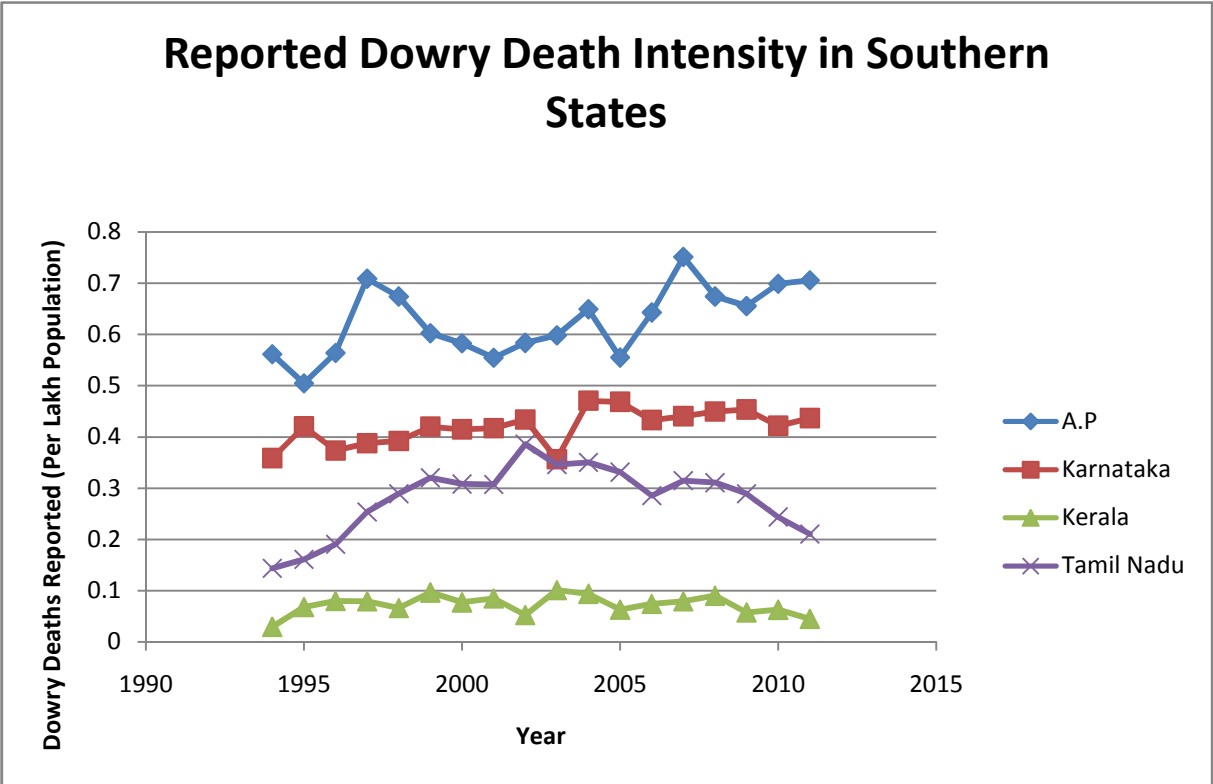


Fig-8

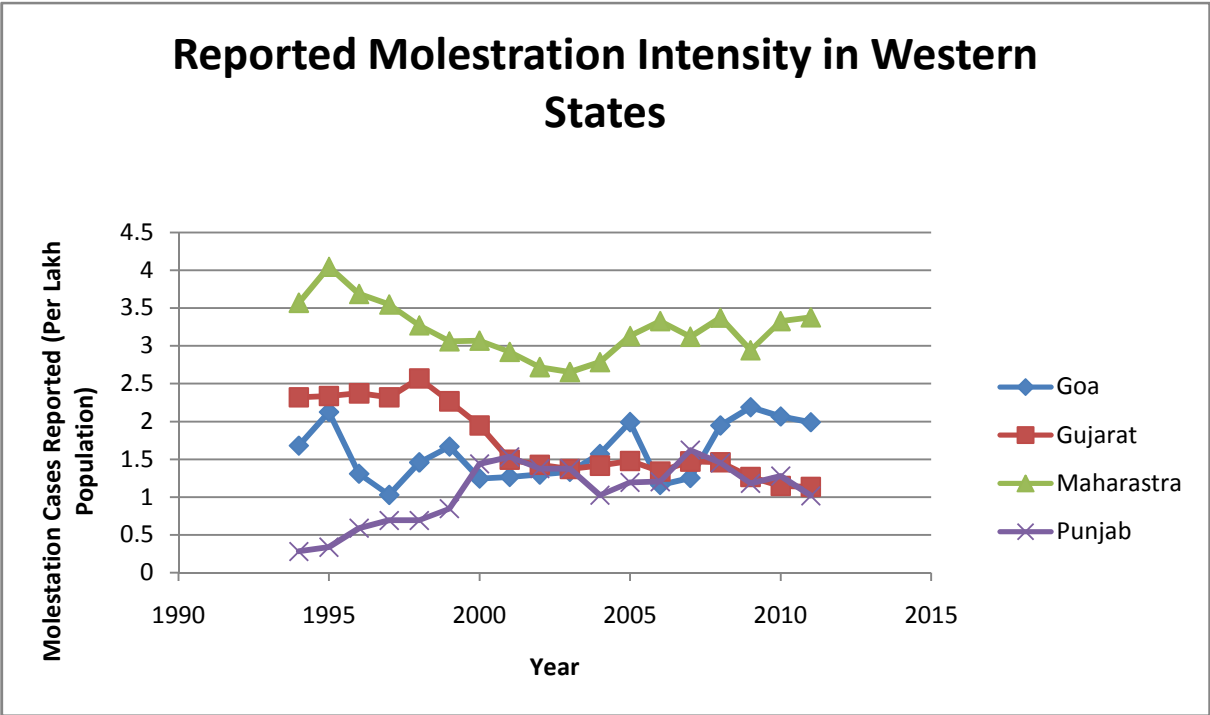


Fig-9

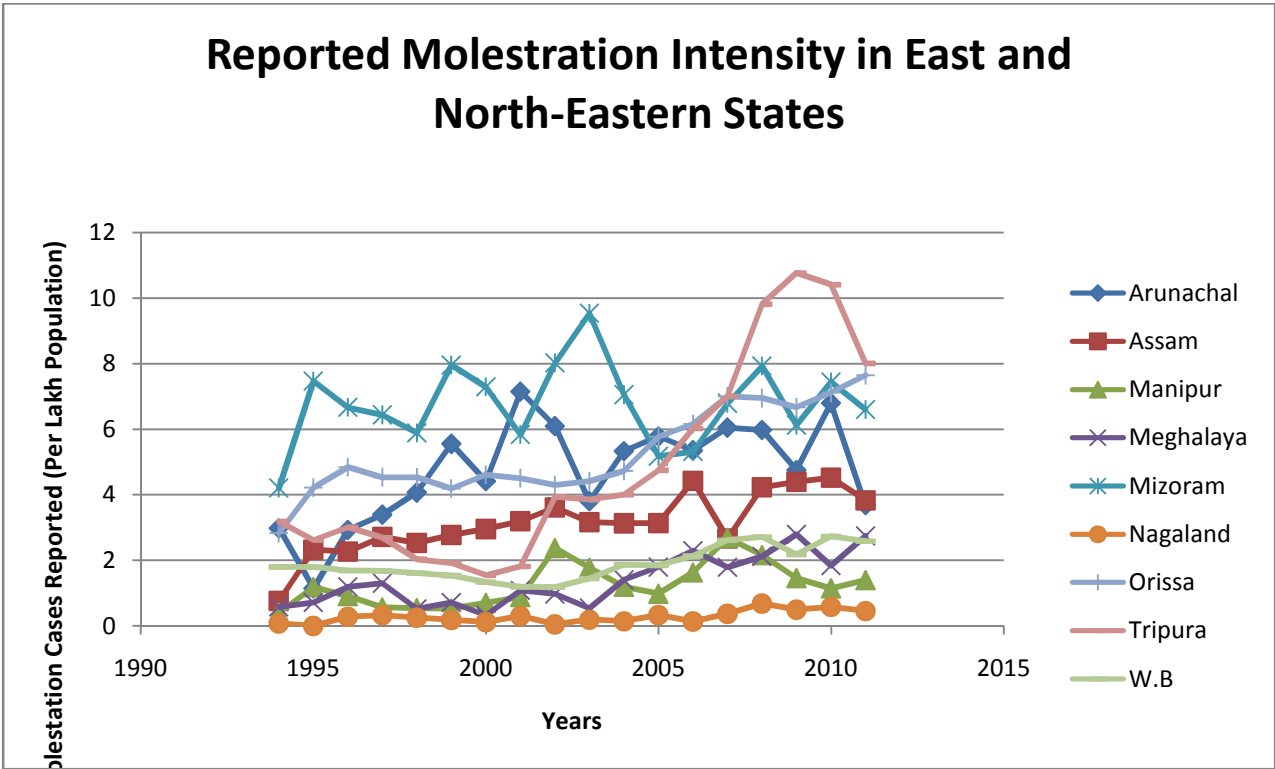


Fig-10

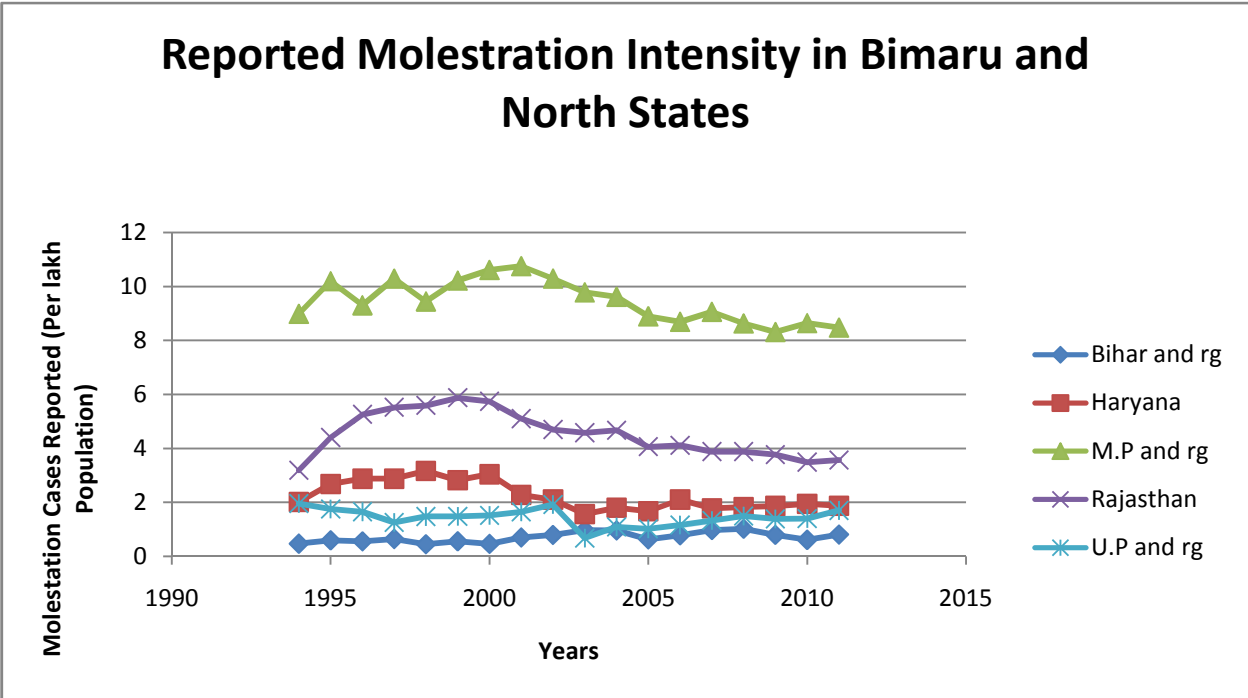


Fig-11

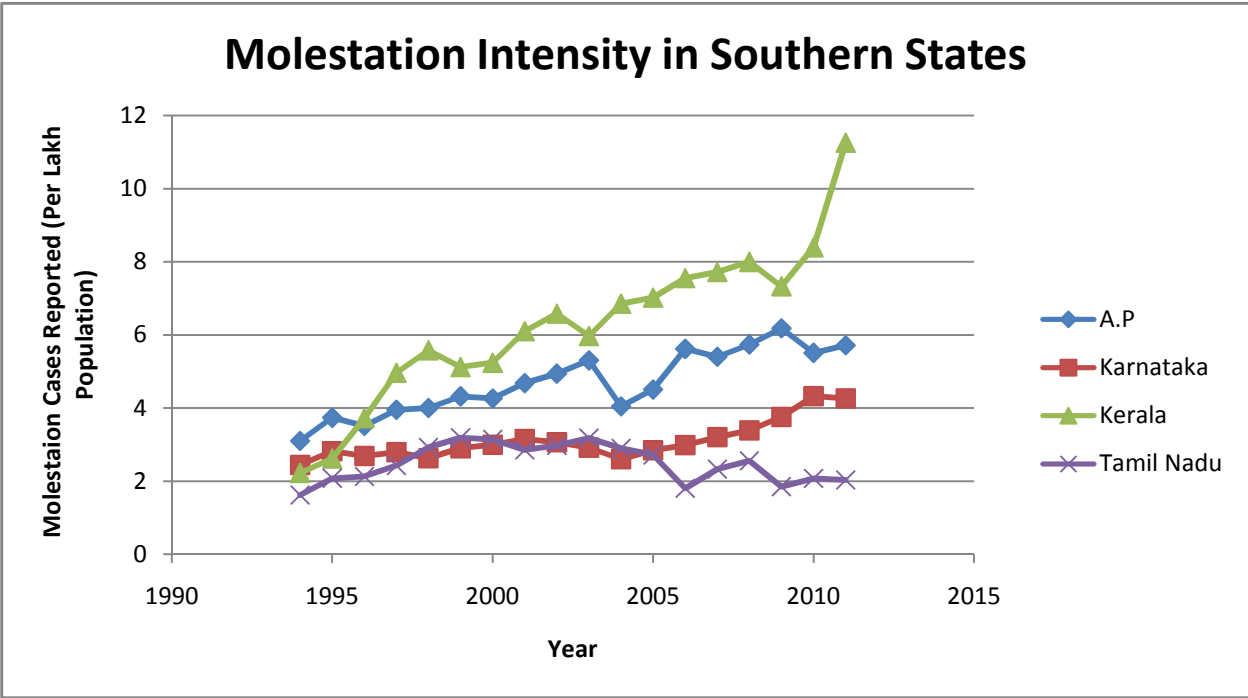


Fig-12

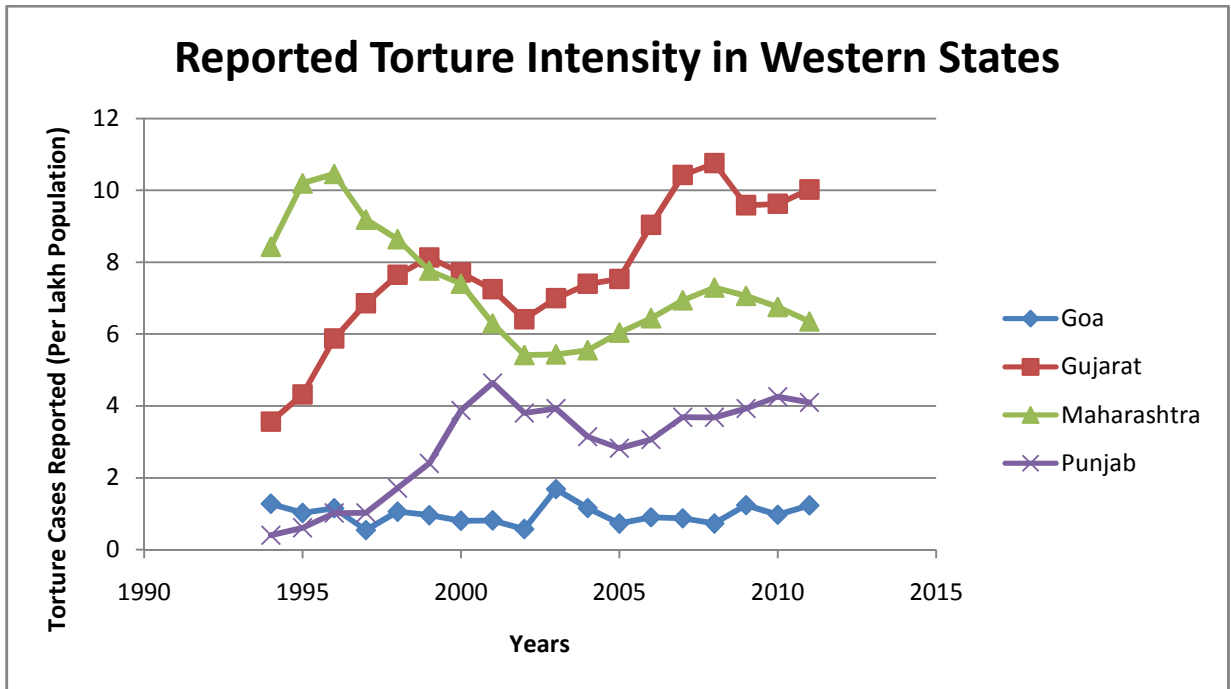


Fig-13

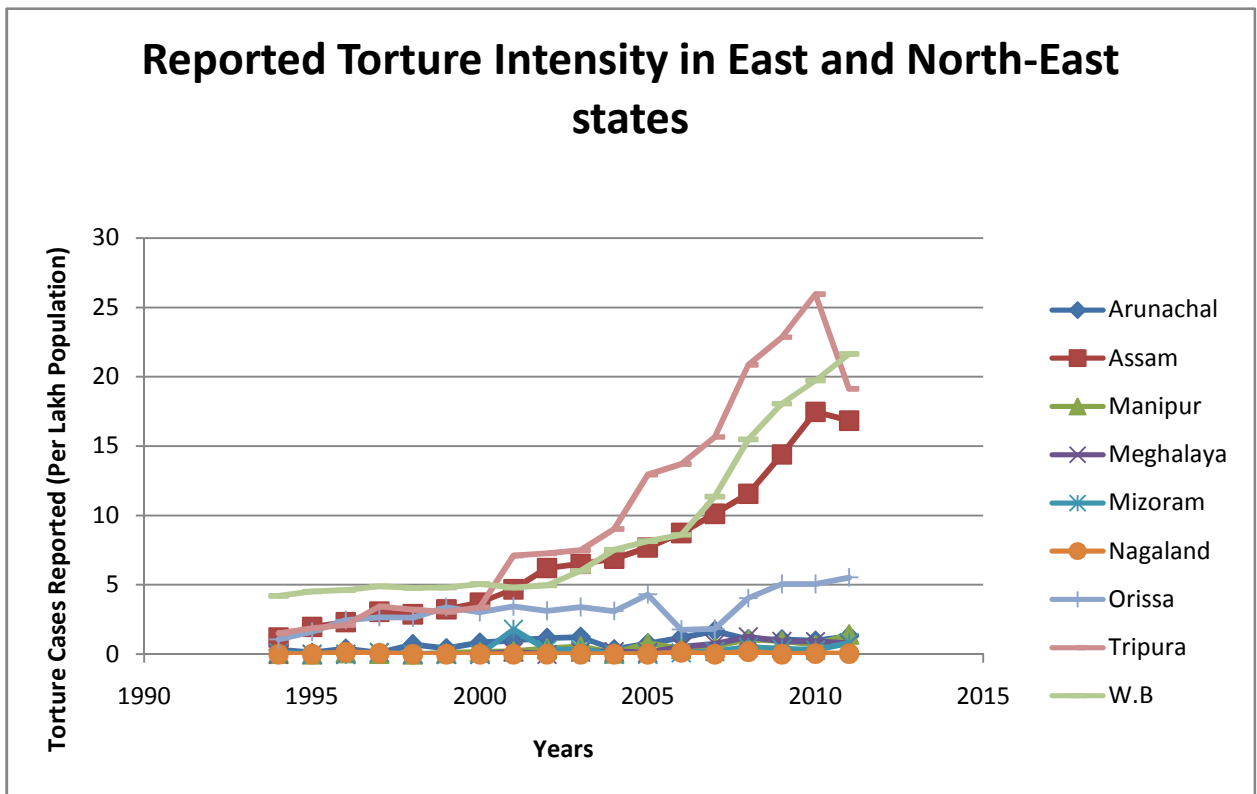


Fig-14

Reported Torture Intensity in North and Bimaru States

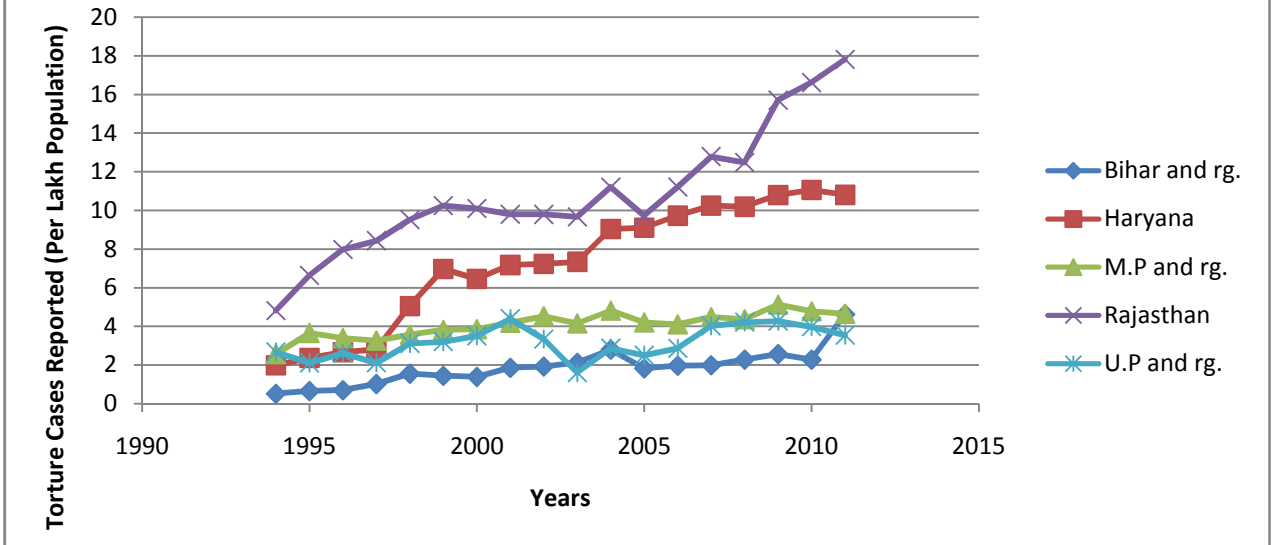


Fig-15

Reported Torture Intensity in Southern states

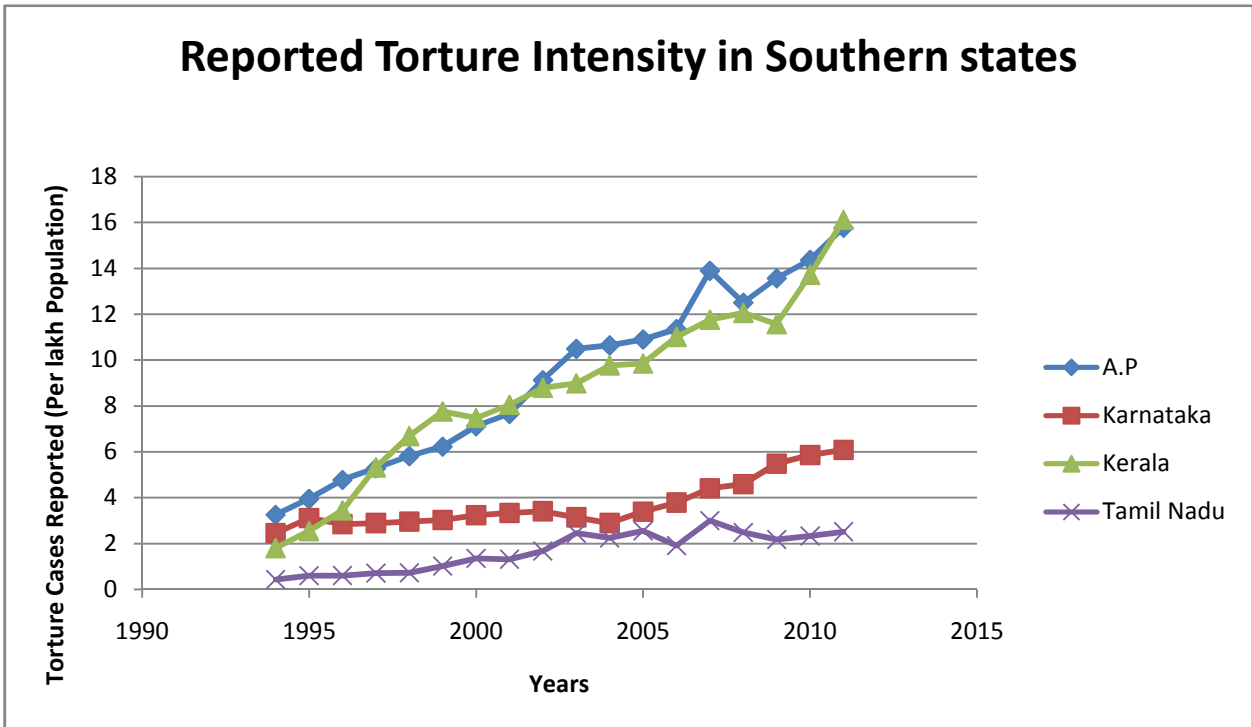


Fig-16