Social Empowerment and Crimes Against Women

Do districts with higher social empowerment of women witness less crimes against women?

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Abstract

This paper studies the impact of social empowerment of women on crimes across districts in India. It uses NCRB-2016 data to study 10different types of crimes divided under 3 heads: domestic crimes, sexual crimes and other crimes. By using NFHS-4 data, it constructs a Social Empowerment Index (SEI) and Economic Empowerment Index (EEI) for women, and also uses Wealth Index (WI) of NFHS and population of districts as controls to study the relation. By using both cross-sectional regression and spatial analysis, it is found that districts with high SEI and EEI score do observe less crimes against women. However, there are important regional patterns at play that require closer attention.Moreover, the issue of underreporting of crimes and its impact on results is also discussed.

Introduction

Despite years of socio-economic progress in India, the country continues to grapple with the persistent and multifaceted problem of violence against women and rising crime statistics.

Crimes against women are often motivated by poor social standing of women in society. In India, it is characterized by a paradoxical coexistence of progress and persistent disparities. On one hand, women have made significant inroads into education, politics, and the workforce, demonstrating their capabilities and potential. Yet, on the other hand, they continue to grapple with deeply entrenched gender biases, limited access to opportunities, and restricted decision-making power in both public and private spheres. This paradox underscores the complexity of the challenges women face, and the need to examine how crimes against women both reflect and reinforce these disparities.

This paper aims to construct an index on the social empowerment of women across districts in India and how it relates to crimes against them. It uses economic empowerment of women, wealth of districts and their population as controlling factors. The hypothesis is that districts that perform better on thesocial empowerment index should record lower crimes against women. Hence, the research question is:

“Do districts with higher social empowerment of women witness less crimes against women?”

Theoretical Background and Literature Review

Crimes Against Women

It is assumed that societies with higher social deprivation of women must also have higher crime rates against them. However, a look at the literature suggests that there are two sides to

this argument. According to one Russell, (1975), crime rate against women in a society depends upon the inter-connection of three hypothesis: “ameliorative hypothesis”, i.e., more female empowerment reduces crimes against women, “backlash hypothesis”, i.e., more female empowerment leads to higher crimes against women and “transitory phase hypothesis”, i.e., societies transition from backlash hypothesis to ameliorative hypothesis. Hence, better conditions for women relating to education, economic empowerment and social status might lead to higher or lower crime rate against women, depending upon the phase of the society.

A number of literature reveals that improved condition of women in society leads to lower crime rate against women (Dhawan et al, 2017). In fact, studies reveal that better sex ratio actually reduces violent crime rates like murder, robbery, etc as well (Dreze et al, 2000; Joshi, 2014). However, these studies have been done at the state-level, which means that spatial trends across smaller regional levels are lost. Although some studies have been done at district-level as well. Lolayekar et al., (2022) study crimes like rape, kidnapping, cruelty, dowry deaths and molestation at district-level, and reveal how poor performance on socio-economic factors generally lead to higher crimes against women. However, these studies use isolated factors rather than a comprehensive index on social or economic situation.

Better socio-economic condition does not necessarily lead to lower crime rate. “Backlash hypothesis” says that men perceive women’s social, political and cultural empowerment as a threat and retaliate (Russell, 1975). In fact, with rise in India’s per capita income, woman empowerment and development indicators over the years, crimes against women have also been rising. This is contradictory since improving social condition is worsening the situation of crimes against women.

Domestic Violence

The nature of crimes against women is different, which is why it is necessary to study them separately, rather than in totality.

In case of domestic violence, a number of factors which causeit have been studied in literature: caste, religion, occupation, education, age of marriage, family size, alcohol consumption, decision-making autonomy and so forth (Ackerson and Subramanian, 2008; Dalal and Lindqvist, 2012; Kishor and Gupta, 2012; Mondal and Paul, 2021). Women who marry younger, have more children, have poor economic status, and are members of marginalized communities have higher odds of experiencing spousal violence (Ahmad et al., 2021).

Domestic violence due to low social status of women can be explained by two broad theoretical narratives: “feminist approach” and “family violence approach” (Hackett, 2011). Under the feminist approach, “women with more assets (property, dowry, education) have more value and power within their family, which leads to less domestic violence”. Whereas under family violence approach, domestic violence occurs due to socially structured stress as a result of inequality in income, wealth and employment opportunities.

However, “backlash hypothesis” argues that better social status of a woman does not necessarily lead to less domestic violence. One study finds that the relationship between female empowerment and domestic violence is contentious (Paul et al, 2022). Another one reveals that women who participate in the labour market are more likely to be subjected to

physical violence in rural areas, compared to non-working women, since women in India have no options outside marriage (Chin, 2012). In fact, evidence from Bangladesh suggests that when it comes to educated and empowered women in Bangladesh, microfinance programmes are linked to a higher exposure to IPV (Dalal et al, 2013).

Sexual Crimes

The debate on sexual crimes and social status of women is divided as well. Feminist theory predicts that better gender equality has both negative and positive effect on rape rate. While Marxist criminologist theory argues that socio-economic status of women rather than gender equality predicts rape rate (Martin et al., 2016). Evidence across Indian states suggests that better social indicators (female education, favourable education, etc) do control rape rate, although not necessarily as evidenced from Kerala, which despite having high social status of women records high sexual assault cases (Maity, 2019).

Improving social status of women allows them to occupy more public spaces. There is a huge debate regarding the spatiality of public/private spaces, and how the transcendence across them is increasing vulnerability of a women in being subjected to sexual crimes. However, Datta, (2016) argues that rape goes beyond public/private spaces and is embedded in the "social power relations" across society. Hence, the debate on this issue is divided as well.

Addressing Literature Gap

Many papers, mostly at state-level and some at district-level, have studied the factors that influence crimes against women- literacy rate, sex ratio, per capita income, FLFPR and so forth. However, no paper has attempted to study how the overall status ofsocial empowerment and economicempowerment of women might influence these crime rates.

Both social empowerment and economicempowerment are not influenced by a few particular factors, but rather depend upon the interaction of a multitude of factors. For instance, even though a woman might not be working, her access to bank, mobile phone and participation in financial decision-making do make her economically empowered to an extent. Hence, this paper tries to amalgamate a variety of social and economic indicators to provide comprehensive data on a woman's status in society.

Moreover, most of the studies on this topic are limited only to a few crimes. In fact, majority of them have studied domestic violence across times, regions and regional levels. However, this paper tries to make sense of NCRB data on 10 different types of crimes against women.

On top of that, this paper not only uses econometric modelling but also uses spatial analysis to make sense of the context that might be driving these crimes. It also considers underreporting of crimes against women to make sense of the results.

Data and Methodology

This paper uses cross-section analysis to find the relationship between social well-being of a woman and crime rate against women in 472 districts of India. The dependent variables are the 10 crimes against women (CAW), the explanatory variable is the social well-being of women measured by the Social Empowerment Index (SEI) constructed in this paper, the control variables are the Economic Empowerment Index (EEI), Wealth Index (WI) and population of a district.

The paper uses National Crime Research Bureau (NCRB)-2016 data for gathering data on 10 types of crimes against women divided into 3 categories- domestic crimes (dowry deaths, dowry prohibition, cruelty by husband and relatives), sexual crimes (rape, attempt to rape, sexual assault, insult to the modesty of women and POCSO crimes) and other crimes (kidnapping and immoral trafficking of women). The data for population of 2016 was taken from population projections by International Institute for Population Sciences. The data for wealth index and construction of SEI and EEI is taken from National Family Health Survey (NFHS)-4 conducted in 2015-16. Despite the availability of NFHS-5 data, the paper only uses NFHS-4 since the 5th round was conducted in 2020, i.e., covid year which affected crime reporting and would have given spurious results.

For the construction of Social Empowerment Index (SEI), 7 indicators are used: education measured by female literacy rate and percentage of women who attended >10 years of schooling, social status of women measured by sex ratio at birth, sexual autonomy measured by any family planning method used by women, social freedom measured by percentage of women who are allowed to go outside alone and access to health and nutrition facilities measured by the percentage of non-anaemic women and percentage of women who gave birth using institutional delivery.

For the construction of Economic Empowerment Index (EEI), 6 indicators are used: FLFPR percentage of women employed in the last 12 months, economic freedom measured by percentage of women who have money of their own, percentage of women who own house or land, percentage of women who have access to bank account, and mobile phone, and financial decision-making power measured by percentage of women who participate in financial decision-making in the household (measured by an average of percentage of women who decide the allocation of husband's money and percentage of women who participate in decision-making in case of large expenditures).

The Wealth Index (WI)constructed by NFHS is used instead of per capita income, since it captures more details on the economic status of households. The wealth index in NFHS-4 is calculated using a set of household assets, amenities, and housing characteristics. It categorises households into different wealth quintiles, ranging from the poorest to the wealthiest. It also uses information such as household assets, and access to amenities like clean drinking water, sanitation facilities, and housing characteristics. Hence, it captures the distribution of wealth and socio-economic disparities among households in India as well. More information on the index is available on the NFHS website.

The following model is used:-

$$CAW_i = \beta_0 + \beta_1 SEI_i + \beta_1 EEI_i + \beta_2 WI_i + \beta_3 Pop_i + \varepsilon_i$$

In the above model, CAW_i stands for crimes against women, SEI_i for Social Empowerment Index,EEI_i for EconomicEmpowerment Index, for WI_i Wealth Index, Pop_i for Population, and ε_i is the error term.

Descriptive Analysis

Descriptive Statistics: Crime against Women

	Mean	Stnd Deviation	Min.	Max.
Dowry Death	12.06	14.40	0	98
Dowry Prohibition	15.08	39.54	0	367
Cruelty	147.05	188.08	0	1247
Rape	55.80	51.78	0	429
Rape Attempt	7.75	19.30	0	250
Assault	116.78	119.02	0	622
Insult	8.09	28.68	0	321
POCSO	49.47	50.53	0	384
Kidnapping	91.68	98.15	0	711
Immoral Trafficking	2.39	10.27	0	205
Total Crimes Against Women	465.69	416.19	1	2610

Table 1: Statistics for Crimes Against Women

Table 1 provides the statistics for crimes against women. In the 472 districts studied for the year 2016, an average of 465 crimes against women were committed in districts across India. However, the standard deviation across districts is very high, ranging from an average of 49 to 881 cases per district. This trend in large standard deviation is observed across all types of crimes.

The first section of the table covers domestic crimes. The most reported crime was cruelty by husband and an average of 147 cases were registered in every district. They ranged from 0 to over 300 per districts. The distinction between cruelty by husband and domestic violence is that the former is a domestic violence law which is registered under IPC and is more stringent, while the latter is covered under Special Local Laws (SLL). Hence, most domestic violence cases are registered under the former category only.

The number of dowry deaths and dowry prohibition cases are almost similar, that is, 12 and 15 per district. However, an average of 0 to 26 dowry death cases, and 0 to 55 dowry prohibition cases were registered per district if we consider the deviation across districts. Note that there is a difference between the nature of these crimes. Dowry Prohibition Act is one of the most stringent laws, especially when it comes to dowry death. In case a married woman dies within the first seven years of her marriage, the onus lies on her husband and in-laws to prove that it was not a dowry-related death. This severity in reporting of this crime gives very reliable figures about the ground reality. Whereas dowry prohibition is registered under SLL crime, and it is up to the woman or her relatives to report it.

The least reported crime was child marriage, which was less than 0.5 per district. This crime is not included in crimes against women figures of NCRB. However, since its social factors and victims largely pertain to the subject of this study, it is included as well.

In case of sexual crimes, an average of 190 sexual crimes were registered per district, but again the deviation wasvery high. Out of these, 56 were rape cases, 117 were assault cases, 8 were rape attempt cases and 8 were insult cases. Note that POCSO crimes, which are sexual crimes against children, are not counted under crimes against women. These figures include crime against both male and female children, however, since the nature and pattern of these crimes are similar, they are included in this study. Around 49 POCSO cases were registered per district.

Other crimes included kidnapping of women, whose motivating factors include kidnapping for murder, ransom, rape, forced prostitution, sale and forced marriage; and immoral trafficking which includes trafficking of women for forced labour or forced prostitution. Around 91 cases of kidnapping of women (ranging from 0 to 190 on average) were registered per district. Although these figures are high, one issue in data here can be that oftentimes, families file their missing daughters under 'kidnapping for forced marriage' even in cases where the girl has eloped. So there could be data issues here.

Descriptive Statistics: Social Empowerment Index (SEI)

Variables	Mean	Stnd Deviation	Min.	Max.
Female Literacy	67.71	14.54	27.1	99.61
Females who attended > 10yrs of school	37.01	20.33	8.97	99.4
Sex ratio at birth	935.19	119.61	616	1596.35
Allowed to go outside	58.65	13.96	25.73	97.42
Any family planning method used	51.16	16.96	8.44	84.81
Anaemia	49.00	12.27	19.21	91
Institutional delivery of birth	79.09	17.29	9.6	100

Table 2: Statistics for the variables of SEI

Table 2 shows variables taken for the Social Empowerment Index (SEI) for women. It shows that the average literacy rate for women belonging to 15-49 years of age-group is 68%. However, the percentage of women who have attended more than 10 years of schooling is less than 37% with very high standard deviation of 21%, revealing that only 20-60% women have received basic education in India. This reveals that there is quite a huge gap in the literacy vs. education of women in India.

Sex ratio at birth is only 935 on average across districts, again with a very high standard deviation of 119, which means it can fall to 815 on average. Hence, social status of women in India is very low. Moreover, only 59% women in India are allowed to go outside alone (for visits like going to the hospital, or market, or outside their village/town), revealing that social freedom and freedom of mobility is also very low for women in India.

With regards to sexual rights of women, only 51% of women are using family planning method. Moreover, only 49% women have access to right nutrition, since 51% of them are

anaemic on average. This figure can fall to 36%, revealing a grave situation. Around 79% of the women give birth through institutional delivery, which reveals that access to healthcare facilities is somewhat better.

Descriptive Statistics: Economic Empowerment Index (EEI)

	Mean	Stnd Deviation	Min.	Max.
Employed in the last 12 months	30.93	12.44	5.56	68.87
Financial Decision-making	72.26	9.40	43.48	99.25
Owns a bank account	50.73	15.15	11.65	85.82
Has money of her own	38.90	11.64	12.5	72.32
Owns a phone	44.21	16.44	10.99	90.66
Owns house or land (alone or jointly)	40.55	17.34	6.37	88.11

Table 3: Statistics for the variables ofEEI

Table 3 shows the variables taken under the Economic Empowerment Index (EEI). It shows that FLFPR is very low in India. Only 30% women had worked in the last 12 months, revealing that FLFPR is indeed quite low in the country. Only 38% had their own money that they could use independently, only 40% women owned house or land, only 44% had their own mobile phone and only 50% had access to a bank account on average per district. This reveals that economic freedom is very low for women in India. However, 72% took household financial decisions either alone or jointly, revealing that financial decision-making power is somewhat better in India.

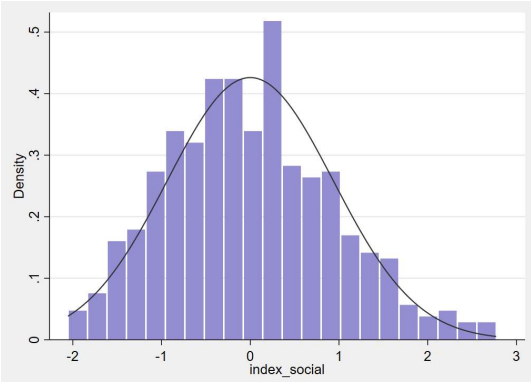
Descriptive Statistics: SEI, EEI WI and Population

Variables	Mean	Stnd Deviation	Min.	Max.
SEI	0	0.78	-1.52	2.79
EEI	0	0.67	-1.96	1.91
WI (per 100,000)	0.04	0.60	-1.04	1.52
Pop (per 100,000)	20.85	15.80	0.08	125.46

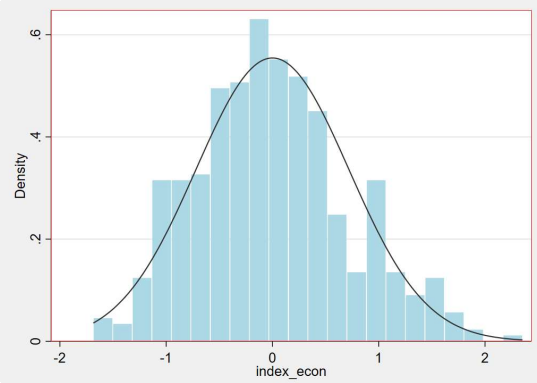
Table 4: Statistics for the variables ofEEI

Table 4 shows the statistics for independent variables. The average population of a district in India was around 21 lakhs in 2016, ranging around 5 to 37 lakhs per districts. Average wealth index score was 0.038 (per 1,00,000), ranging from -1.04 to 1.52. Average SEI was 0, ranging from -1.52 to 2.79, and average EEI was 0, ranging from -1.96 to 1.91.There is a huge variation in population across districts.

Distribution of the Variables



Graph 1: Distribution of SEI

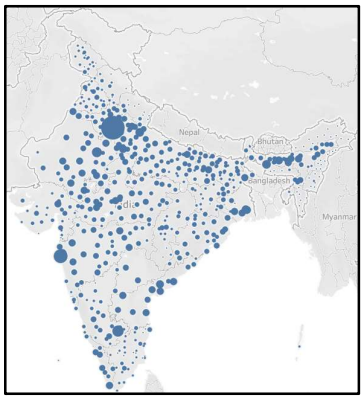


Graph 2: Distribution of EEI

The SEI and EEI follow a normal distribution as shown by the graphs above. WI also follows a normal distribution, along with Population, which is bit left-ward skewed. The graphs are shown in Appendix A.

Absolute crime figures were highly skewed towards the left. Hence, they were converted into logarithmic values so that they followed a normal distribution. The graphs for all 10 types of crimes studied in this paper are shown in Appendix A.

Spatial Analysis



Map 1: Crimes against women across Indian districts

Map 1 above shows the spatial distribution of crimes against women in India across different districts. Appendix B show how crimes and other variables are geographically distributed across the country. A look at these graphs provides more context on the data as compared to just the descriptive statistics. Moreover, these graphs were mapped not just for the year 2016, but for five years ranging from 2016-2020. However, the pattern in spatial distribution remained almost similar for each type of crime across time. Since these crimes and their reporting is influenced by long-term factors rather than short-term fluctuations, these patterns do make sense. Hence, studying cross-sectional analysis for one year would also give significant results.

We take a look at domestic crimes first. The map on dowry deaths reveals that this crime is mostly concentrated in the states of Haryana, Delhi, Uttar Pradesh and Bihar. High cases are also recorded in the districts of other states bordering these states, such as Rajasthan, Madhya Pradesh and Jharkhand; along with high cases observed in some districts of Karnataka and coastal districts of Odisha. Hence, even though there is clustering of these crimes, taking state-fixed effects here might be a problem. This clustering is more regional, rather than fixed on state boundaries.

One would assume that dowry deaths and dowry prohibition would show similar patterns. However, there is slight difference. The reporting of dowry prohibition is high in some areas of Karnataka, Andhra Pradesh and Telangana, along with some cases being registered in Tamil Nadu. However, dowry death cases are very less here. One reason could be high literacy and awareness of rights which is leading to higher registration of the crime here. Another could be that while there is a pressure to give dowry in these regions, it does not take a violent turn in case of non-provision. There was also high registration of dowry prohibition cases in Odisha, Jharkhand, Bihar and northern and eastern Uttar Pradesh, which matches dowry death rates. However, very low cases were observed in Haryana and western UP and the districts surrounding these regions, which indicates that perhaps underreporting is very high here.

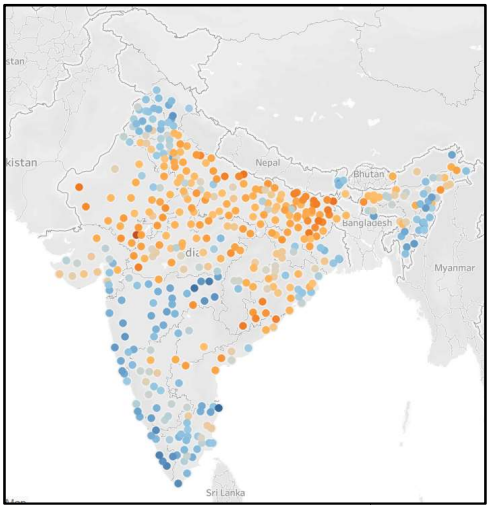
In case of cruelty by husband, a high number of cases were registered in the states of Delhi, Haryana, western UP, Rajasthan and districts in Gujarat and MP bordering Rajasthan, Maharashtra, Telangana, Andhra Pradesh, Kerala, West Bengal and Assam. The surprising aspect here is the case of Kerala. The three states of Kerala, Tamil Nadu and Karnataka border each other and all rank higher on WI and SWI. Is it possible that there is an underreporting issue here or there is some other factor at play?

Now we move on to sexual crimes. One interesting pattern to notice is that the spatial distribution of rape, assault and POCSO cases are almost similar, revealing that perhaps these crimes are driven by similar patterns. Highest rape, assault, insult and POCSO cases are registered in metro cities, revealing that perhaps factors like urbanisation, high population density and more occupation of public spaces by women has led to high incidence of these cases.

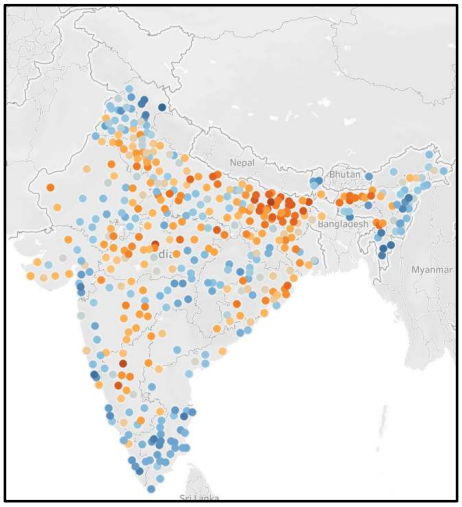
Rajasthan has a large number of cases on rape, rape attempt and assault cases, indicating that sexual crimes are a grave concern there. Similarly, MP and Maharashtra also have unusually large number of cases on rape, assault and POCSO cases, revealing a very dire situation. Odisha and Assam face high incidence of all types of sexual crimes, depicting the worrisome situation. Andhra Pradesh and Kerala have high number of rape cases, but cases of rape attempt, assault and insult are much higher, indicating that perhaps reporting is better in these areas. Rape and POCSO cases are higher in Haryana, Bihar and UP, while others not so much, indicating that there could perhaps be underreporting issue here. One interesting pattern to note here is that while Tamil Nadu and Punjab observe very low incidence of other sexual crimes, POCSO crimes remain very high here.

Lastly, we take a look at other crimes against. Kidnapping of women is highest in Haryana, UP, Bihar, Rajasthan, MP, Assam and coastal regions of West Bengal, Odisha and Maharashtra. It is also especially high in metro cities. Whereas immoral trafficking observes almost a contrasting pattern. A lot of these cases are reported in southern states like Tamil

Nadu, Kerala, southern Karnataka and Andhra Pradesh. These states are facing declining fertility and population rate, so that could be one factor. Cases in Haryana and Punjab were also observed, which have one of the worst sex ratios in India.



Map 2: SEI across Indian districts



Map 3: EEI across Indian districts

A look at the SEI, EEI and WI (in Appendix B) reveals that while regions are overlapping on the three maps, many regions are also not overlapping. Hence, there is regional variation in economic status of women, her social status and the average wealth in the districts.

Results and Discussion

Domestic Crimes

	(1) ln_dowry death	(2) ln_dowry prohibition	(3) ln_cruelty
Social Empowerment Index (SEI)	-0.43***	-0.40	-0.28***
	(0.068)	(0.12)	(0.10)
Economic Empowerment Index (EEI)	-0.54***	-0.18	-0.84***
	(0.08)	(0.11)	(0.11)
Wealth Index (WI)	0.08	-0.81***	0.87***
	(0.09)	(0.12)	(0.11)
Population	0.04***	0.02***	0.04***
	(0.01)	(0.005)	(0.01)
_const	1.10***	0.71***	3.14***
	(0.10)	(0.11)	(0.13)
N	472	472	472

Mean VIF	1.5	1.5	1.5

Table 5: Regression results for domestic crimes
Significance: *** if $p < 0.01$, ** if $p < 0.05$, * if $p < 0.10$

Table 5 shows coefficients for domestic crimes. The coefficient of both SEI and EEI is significant for dowry death. When SEI falls by 1, dowry deaths rise by 43% and when EEI falls by 1, dowry deaths rise by 54% in a district. Hence, better economic empowerment and social empowerment of women are likely to lead to fall in dowry deaths. The coefficient is insignificant for WI.

However, when we take a look at the coefficients of dowry prohibitions, a completely opposite pattern emerges. SEI and EEI have insignificant values, but WI has negative and significant value. A fall in WI by 100,000 leads to 81% rise in cases of dowry prohibitions in a district. It reveals that dowry prohibition cases are not influenced by a woman's level of empowerment, but completely on the economic backwardness of a district.

These results are strange because the factors motivating both dowry death and dowry prohibition are similar. However, these results make more sense when the spatial analysis mentioned earlier is considered to understand the context. Most of the dowry death cases are clustered around northern India. Looking more closely, the biggest cluster is concentrated in Bihar, UP, Haryana, Delhi and districts of MP and Rajasthan bordering these former districts. Another small cluster are around the coastal region of Odisha, and the border region of Karnataka, Andhra Pradesh and Telangana.

Comparing the map of dowry deaths with map of other indices, it seems that there is an overlapping of regions with high dowry death and regions that score worse on both SEI and EEI. However, while there is some overlapping on WI, there is variation in the region of Haryana, UP and district of other states surrounding this region. This region has high WI score but high dowry deaths as well. Hence, it is mostly economic and social deprivation of women that are driving these crimes, rather than simply wealth.

However, comparing the map of dowry deaths and dowry prohibition, while there is overlapping for some regions, there is also complete absence of some other regions from the dowry prohibition map. High number of dowry prohibition cases are registered in the same clusters as dowry death cases- eastern UP, Bihar, coastal Odisha, border region of Karnataka, Andhra Pradesh and Telangana. This is also the same region that fares poorly on all three indices: WI, SEI and EEI. However, it is the Wealth Index (WI) that is the dominating factor here. While SEI and EEI remain negative, they also remain insignificant in dowry. But WI is both negative and significant for dowry prohibition.

On the other hand, the region that is absent on dowry prohibition map is western UP, Haryana, Delhi and other bordering districts. This is also the same that had high score on the Wealth Index (WI). Hence, it is possible that while there are high dowry demand cases here, they are just not registered.

Hence, we can concur from above discussion that while it is the poor socio-economic empowerment of woman that is leading to dowry deaths and even dowry cases at large, it is poverty that is actually driving a woman and her family to file dowry prohibition cases. Another interesting question to consider is: how would the behaviour of these poor districts change once they experience rise in wealth?

Let's take a look at the coefficients for cruelty now. The coefficient of SEI and EEI for cruelty is both significant and negative. A rise in SEI by 1 leads to 28% fall in cruelty cases and a rise in EEI by 1 leads to 84% fall in cruelty cases. This is a significant result since it reveals that empowerment of women, especially economic empowerment might lead to fall in domestic violence by a great extent. However, the coefficient for WI is positive and significant. A 100,000 increase in average wealth of a district leads to 87% rise in domestic violence cases. These results make little sense. This issue is further discussed in the next section under data underreporting issue.

Sexual Crimes

	(1) ln_rape	(2) ln_rape attempt	(3) ln_assault	(4) ln_insult	(5) ln_POCSO
Social Empowerment Index (SEI)	-0.29***	-0.47***	-0.20*	0.16	-0.14
	(0.08)	(0.09)	(0.10)	(0.11)	(0.09)
Economic Empowerment Index (EEI)	-0.31***	-0.14	-0.23*	-0.05	0.09
	(0.09)	(0.09)	(0.14)	(0.10)	0.10
Wealth Index (WI)	0.38***	0.09	0.78***	0.36***	0.60***
	(0.09)	(0.10)	(0.13)	(0.13)	(0.11)
Population	0.03***	0.03***	0.03***	0.02***	0.03***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
_const	2.98***	0.64***	3.25***	0.61***	2.68***
	(0.09)	(0.11)	(0.12)	(0.61)	(0.10)
N	472	472	472	472	472
Mean VIF	1.5	1.5	1.5	1.5	1.5

Table 6: Regression results for sexual crimes
Significance: *** if p < 0.01, ** if p < 0.05, * if p < 0.10

Table 6 shows coefficients for sexual crimes. The coefficient of both SEI and EEI is significant for rape and assault, although at 10% significance level for assault. An improvement in SEI by 1 would lead to 29% fall in average rape cases and 20% fall in average assault cases registered in a district. While an improvement in EEI by 1 would lead to 31% fall in average rape cases and 23% fall in assault cases. However, the coefficient of WI is positive and significant for both rape and assault cases. A rise in average wealth in a district by 100,000 would lead to 38% rise in rape cases and 78% rise in assault cases. This seems bizarre- why is rise in wealth leading to rise in sexual crimes?

Moving on to rape attempt, only the coefficient of SEI is significant for this crime. However, since factors that lead to rape are the same for rape attempt, the behaviour of coefficients for both these crimes should follow similar patterns. However, it is not the case. Looking at the

spatial distribution of rape attempt, most of these cases are recorded in the northern part of India, which also fares poorly on the Social Empowerment Index (SEI).

However, the question is, why are most cases of rape attempt registered in the northern part of India when sexual crimes occur in other parts of India as well? Is it possible that many cases of attempted rape are registered under assault in other parts of India? Or is it possible that the Nirbhaya case of 2012, which led to awareness, reforms in rape laws and increase in reporting of rape, also led to the increase in reporting of attempted rape here?

In case of insult cases, the results seem bizarre at first glance. Women empowerment has no impact on insult cases. However, rise in wealth leads to rise in insult cases. An increase in wealth of a district by 100,000 leads to 36% rise in insult cases. However, looking at the spatial distribution of insult makes the picture clearer. A very high number of these cases were registered in metro cities alone, along with cases in districts of Kerala and Andhra Pradesh (both with high WI). Hence, perhaps it is possible that insult, which is considered a less extreme form of sexual violence is more likely to be underreported. Only 8 cases on an average per district are recorded. This distribution is more skewed towards urban regions. It is probable that women do not report it in other areas, considering it a bad trade-off for the amount of hassle involved in filing FIRs and visiting courts.

The last sexual crime studied here is POCSO, which is sexual crimes against children. POCSO cases are not counted under crimes against women, and they are included in this study to compare the reliability of our results. A look at earlier sections reveals that an average of 49 POCSO cases and 56 rape cases are registered in a district in India. Looking at the spatial distribution, a large number of POCSO crimes are filed all over the country and the pattern is a little similar for rape, assault and POCSO cases. Hence, the issue of underreporting, if it exists, might follow similar pattern for rape and assault.

Basing the analysis on above assumptions, the data shows that coefficients of SEI and EEI are insignificant for POCSO cases. Only WI remains significant and positive, like in other cases. Hence, even though both children and women face sexual crimes, perhaps the factors leading to these crimes are different. In case of women, it is both social empowerment and economic empowerment which leads to fall in sexual crimes in India.

However, the case of persistently positive and significant WI for most sexual crimes is interesting to notice. There are three possible reasons by this. Firstly, perhaps there is underreporting of sexual crimes in under-developed region. Secondly, both wealth and population are positive and significant, meaning urban areas that have higher income and population observe higher incidence of sexual crimes. Thirdly, a lot of economic and sociological literature says that crime rate actually increases with wealth and income. Or it could be a combination of all these three factors.

A final note to take from this section is the very high reporting of sexual crimes in districts across Andhra Pradesh and Kerala. High cases are recorded not just for rape and assault, but for attempted rape and insult as well. In fact, insult, which is likely to be a very underreported crime, sees one of the highest cases recorded in Andhra Pradesh and Kerala among all states. The consistency in reporting of all types of sexual crimes here reveals that reporting of crimes is one of the best in these two states across the country.

Other Crimes

	(1) ln_kidnapping	(2) ln_immoral trafficking
Social Empowerment Index (SEI)	-0.36***	0.06
	(0.09)	(0.07)
Economic Empowerment Index (EEI)	-0.68***	-0.01
	(0.09)	(0.06)
Wealth Index (WI)	0.40***	0.51***
	(0.10)	(0.07)
Population	0.04***	0.02***
	(0.00)	(0.002)
_const	2.95***	0.21***
	(0.10)	(0.05)
N	472	472
Mean VIF	1.5	1.5

Table 7: Regression results for other crimes
Significance: *** if p < 0.01, ** if p < 0.05, * if p < 0.10

Table 7 shows coefficients for other crimes. In case of kidnapping, the coefficient of SEI and EEI is negative and significant. An increase in SEI by 1 would to lead to 36% rise in cases of kidnapping across districts. While an increase in EEI by 1 would to lead to 68% rise in cases of kidnapping, which is almost double than the impact of SEI. Hence, in districts where women are more economically vulnerable, they are also more vulnerable to getting kidnapped. But the coefficient of WI is again positive and significant here. This seems counter-intuitive since a large number of kidnapping cases in women occur for trafficking, and mostly women from socio-economically deprived regions are the victims. However, since a large number of kidnapping cases also happen for ransom, it is possible that such crimes occur more in wealthier regions.

One important thing to note is that the figure for kidnapping of women might be inflated due to overreporting (the only case in crimes against women). Oftentimes, families file their daughters as kidnapped when they have eloped away for marriage. Such overreporting might influence these results.

The result for immoral trafficking is more interesting. Its coefficient of both SEI and EEI are insignificant, while it is positive for WI. This corroborates with the spatial analysis. Most of these crimes are reported in the southern states (Tamil Nadu, Kerala, Karnataka and Andhra

Pradesh), metro cities and regions of Punjab and Haryana. All these regions rank high on Wealth Index (WI).

One of the reasons could be that these cases are registered at the destination location where trafficked girls are found. A large number of girls are trafficked to southern states with the lure of job and better economic prospects, only to be later sold into trafficking (Times of India article). The migration pattern from northern to southern states could be one reason behind this. Many cases were observed in Punjab and Haryana as well. One of the main reasons behind this is the decades of skewed sex ratio, which has led to purchasing of brides in these states after they were trafficked (The Hindu article).

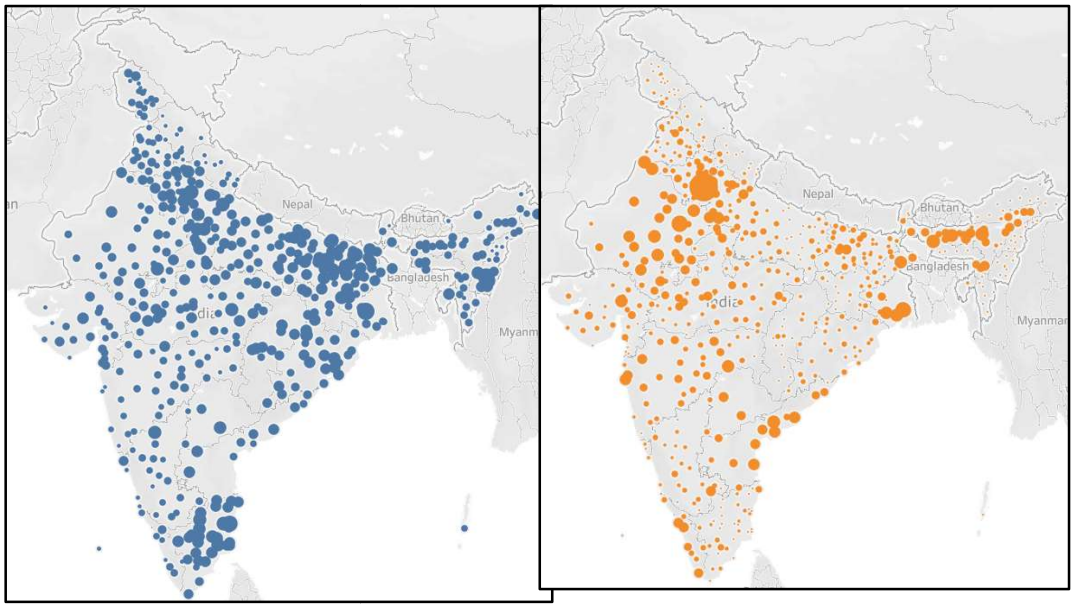
If we consider the results of both these regressions together, then districts where women are less empowered, especially economically are at higher risk of being kidnapped, oftentimes for the purpose of being trafficked for sexual exploitation in wealthier regions across the country (especially in southern states, or Punjab and Haryana).

The case of underreporting?

One of the major issues in using NCRB data to study crimes against women is underreporting of crimes. The issue is both "under-recording by state agencies and under-reporting by women survivors" (Pickup et al., 2001, p. 109). In India, too, it is known that reported crime is lower than the actual incidence (Prasad, 2013; Visaria, 2000).

We can consider dowry deaths as the benchmark for analysis and comparison. Underreporting in dowry deaths is difficult since the burden of proof falls on husband and his relatives that a married woman who died within first 7 years of her marriage did not die due to dowry-related reason (Joshi, 2014). Hence, regression for this crime gives the most reliable results. Moreover, we have already established the issue of underreporting of dowry prohibition crimes in certain wealthier regions.

To test the extent of underreporting of domestic violence, we can use the NCRB data on cruelty by husband and NFHS data on domestic violence. However, an issue in comparing this data is that NFHS is that women who have ever faced domestic violence is counted. It is not limited to domestic violence to that particular year or past year. However, there should be some similarity in regional pattern. Another issue is that NCRB data provides absolute number of victims of cruelty, whereas NFHS provides survey data, so percentage of women who have been victim of domestic violence has been taken. Hence, this analysis should used to understand the regional patterns of domestic crimes rather than for strict numerical comparison of coefficients.



Map 1 Domestic Violence under NFHS-4 Map 2: Domestic Violence under NCRB-2016

Map 4 and 5 show the geographical distribution of domestic violence under NCRB vs. NFHS data. A comparison of these two reveals that there is high incidence of domestic violence in UP, Bihar, Odisha, MP, Karnataka and Tamil Nadu in NFHS data which is missing in the NCRB data. Hence, there is a high underreporting of crimes in these regions.

	(1) ln_cruelty_ NCRB	(2) ln_domviol_ NFHS
Social Empowerment Index (SEI)	-0.28***	-0.023***
	(0.10)	(0.006)
Economic Empowerment Index (EEI)	-0.84***	-0.005
	(0.11)	(0.531)
Wealth Index (WI)	0.87***	-0.052***
	(0.11)	(0.009)
Population	0.04***	0.001***
	(0.01)	(0.000)
_const	3.14***	0.217***
	(0.13)	(0.008)
N	472	472
Mean VIF	1.5	1.51

Table 8: Regression results for domestic violence: NFHS vs. NCRB data
Significance: *** if $p < 0.01$, ** if $p < 0.05$, * if $p < 0.10$

Comparing the regression results for these two in table 8, we see that the coefficient of SEI remains negative and significant for both NFHS and NCRB data. Hence, lower social empowerment of women does lead to higher domestic violence. However, the coefficient of EEI becomes insignificant in the case of NFHS data, revealing that economic empowerment has little role to play with domestic violence. In fact, coefficient for WI becomes negative and significant for NFHS data, while it remains positive and significant for NCRB data. This could be because of high underreporting of crime from many districts in UP, Bihar, MP and Odisha, which fare lower on WI.Hence, this underreporting gives misleading coefficient value for WI in NCRB data. In reality both social status of women and wealth determine domestic violence.

In case of sexual assault, only 15% cases are reported in India (Bhattacharya, 2018). We can again use NFHS and NCRB data for comparison. However, the same data quality issue remains. Moreover, it is possible that underreporting of sexual crime in survey could be very high as well (compared to domestic violence). So, the following discussion should only be taken with a pinch of salt.

Map 1 and 2 in Appendix C show the geographical distribution of sexual violence and rape respectively in NCRB vs. NFHS data. Comparing 'ever forced to perform unwanted sexual acts' under NFHS with rape registered under NCRB, very bizarre results are observed. Bihar, southern Gujarat, Karnataka, Tamil Nadu, and some north-eastern states have very high incidence rate of sexual violence which is not reflected in NCRB data. In fact, these underreporting regions have little in common in terms of WI or SWI. Hence, while many states see high incidence of rape under NCRB, it could simply be due to reporting as well. Reporting rate of sexual crimes is relatively higher in states like Delhi, Assam, Rajasthan, Kerala, Maharashtra and Himachal Pradesh (Joshi, 2014). But these states also have little in common in terms of WI, SWI or even socio-cultural factors like patriarchy.

Conclusion

While it is the poor socio-economic empowerment of woman that is leading to dowry deathsand even dowry cases at large, it is poverty that is actually driving a woman and her family tofile dowry prohibition cases.

Social deprivation of women and poverty are the driving factors behind domestic violence in India.

Both economic and social empowerment of women leads to fall in sexual crimes against women in India. However, wealth is positively correlated with sexual crimes. Andhra Pradesh and Kerala are doing really well in the reporting of sexual crimes- other states could learn from them.

If we consider the results of both kidnapping and immoral trafficking, then districts where women are less empowered, especially economically are at higher risk of being kidnapped, oftentimes for the purpose of being trafficked for sexual exploitation in wealthier regions across the country (especially in southern states, or Punjab and Haryana).

Policy Recommendation

1. No one-size-fit-all approach

While making a policy on crimes against women in India, do not make a policy on crimes against women in India. The spatial analysis revealed that each type of crime has different social, economic and cultural reasons, and varying regional pattern. Understanding the context and patterns behind these crimes would make for a better policy. For instance, more targeted focus on dowry deaths is required in Bihar and Haryana rather than Karnataka. Moreover, social empowerment of women should be targeted in Haryana, whereas both social and economic aspects must be focused in the case of Bihar.

2. Policy recommendation for each crime

Both social and economic empowerment of women should be improved. Along with that,

a) Dowry crimes- Stringent policies and monitoring for poorer regions should be adopted.Social nudging in unacceptability of dowry and encouraging reporting in wealthier regions should be done.
b) Domestic violence- Social empowerment of women, such as improvement in awareness of women's rights, higher education, improvement in social status of women, etc should be focused upon.Nudge in reporting of crimes needs to be done, especially in underreported regions such as Bihar, Tamil Nadu, north-eastern states, etc.
c) Sexual crimes- The link between wealth and sexual crimes requires more understanding and analysis.While reporting of rape is still higher, reporting of other sexual crimes like assault and insult need more nudging. States should follow the example of Andhra Pradesh and Kerala in that regard. Reporting of all types of sexual crimes are underreported in some regions like Bihar, Tamil Nadu, Odisha, north-eastern states, etc which require dire attention.
d) Kidnapping and trafficking- More economic opportunities for women in poorer areas should be provided to reduce their vulnerability to kidnapping. Moreover, stringent monitoring of female migrants requires a new policy focus. Also, more rescue operations in most trafficked locations (Tamil Nadu, Kerala, Karnataka, Andhra Pradesh and Punjab) should be done.

3. Fund a study to understand the reasons behind underreporting of crimes in certain region

States like Rajasthan, Delhi, Himachal Pradesh, Kerala and Assam have little in common in terms of social setting, economic conditions or even historical and cultural backgrounds. But reporting remains higher in these states. Whereas, again, states like Bihar, Tamil Nadu and other North-eastern states have little in common socio-economically or culturally. But underreporting remains high here. Hence, a proper study should be conducted that looks at the regional patterns in reporting of crimes. And regions with high underreporting should be targeted in separate policy that addresses this issue. Because the ultimate point of this study and similar studies is to find the best way to deter crimes against women. But how will these crimes be deterred if people are unable get basic access to reporting them only?

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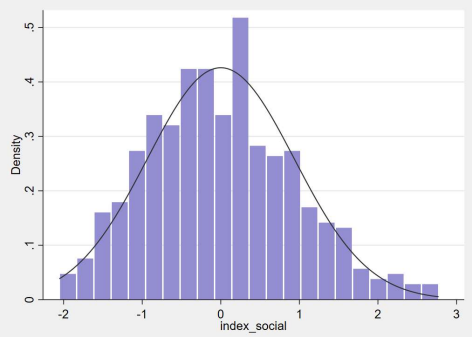
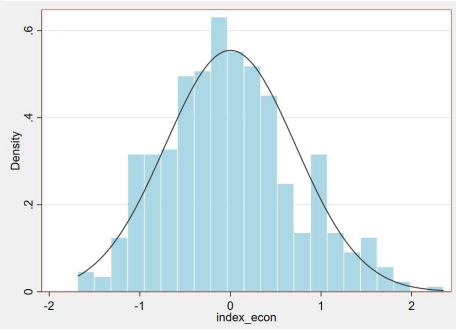
Appendix A: Histograms

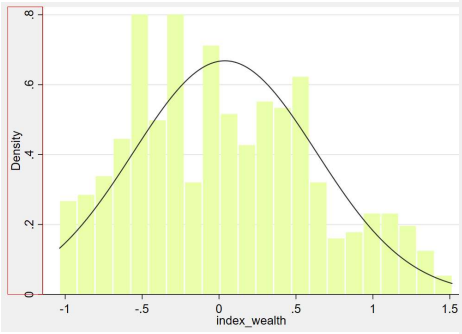
Graph 1: Distribution of SEI



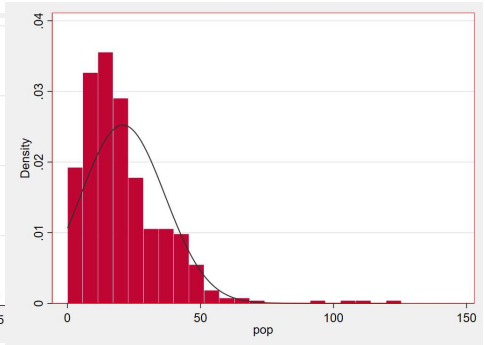
Graph 2: Distribution of EEI



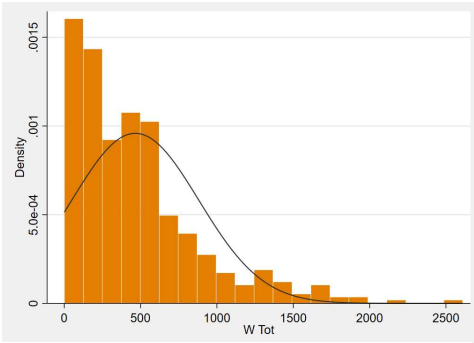
Graph 3: Distribution of WI



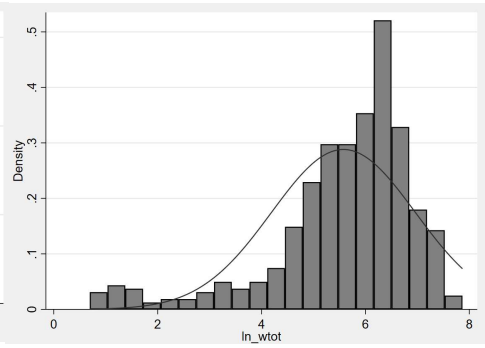
Graph 4: Distribution of Population



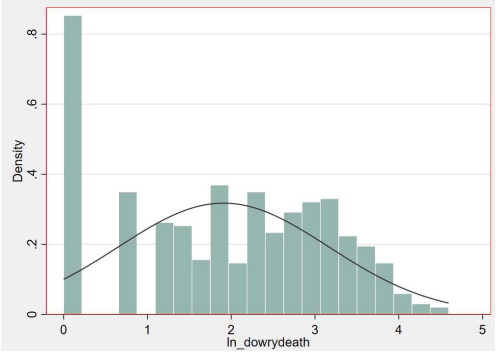
Graph 5: Distribution of Crimes against Women



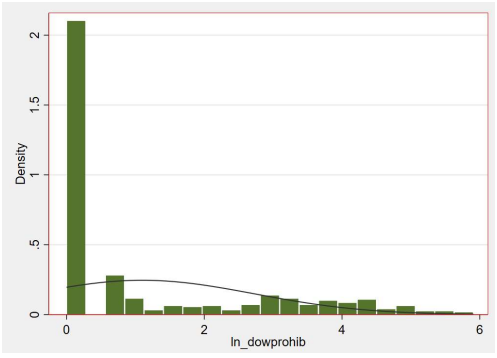
Graph 6: Distribution of log of Crime Rate



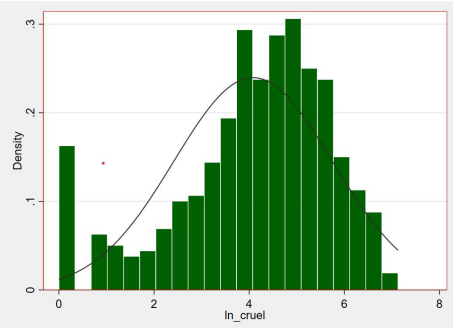
Graph 7: Distribution of log of dowry deaths



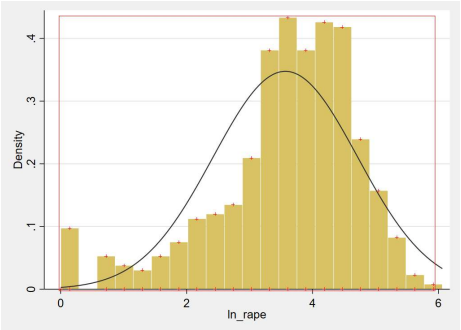
Graph 8: Distribution of log of dowry prohibition



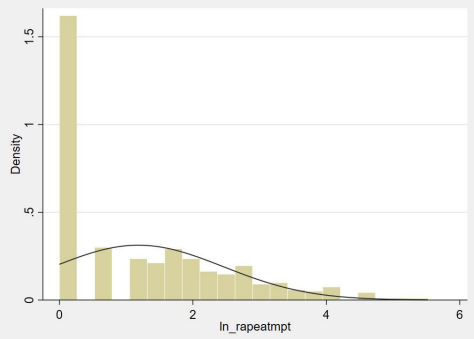
Graph 9: Distribution of log of cruelty



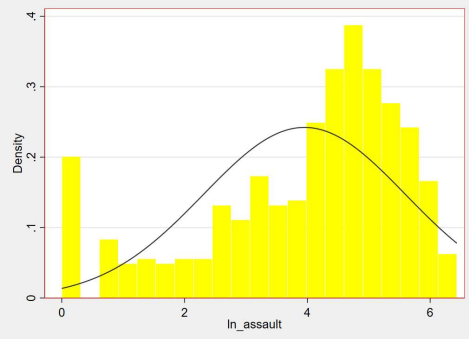
Graph 10: Distribution of log of rape



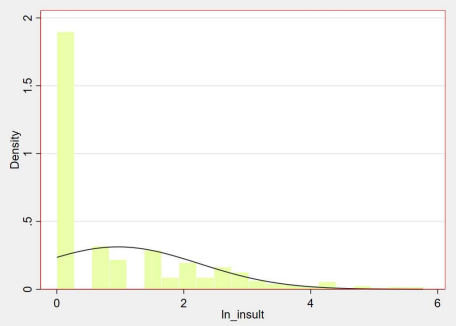
Graph 11: Distribution of log of rape attempt



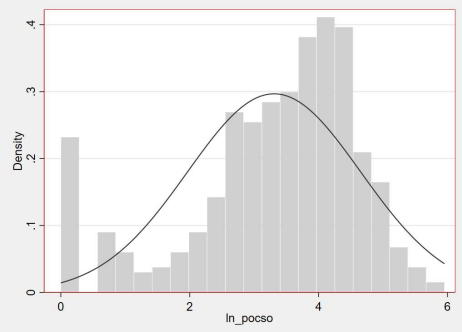
Graph 12: Distribution of log ofassault



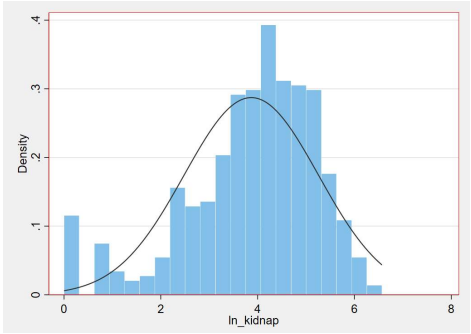
Graph 13: Distribution of log of insult



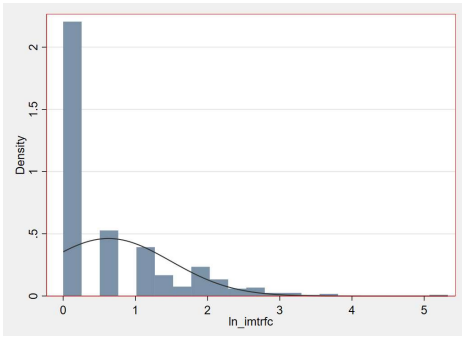
Graph 14: Distribution of log of POCSO



Graph 15: Distribution of log of kidnapping

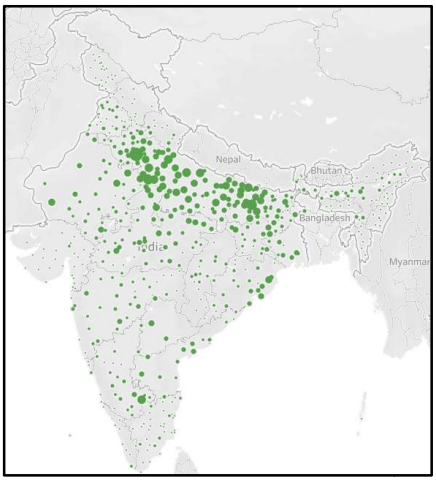


Graph 16: Distribution of log of immoral trafficking

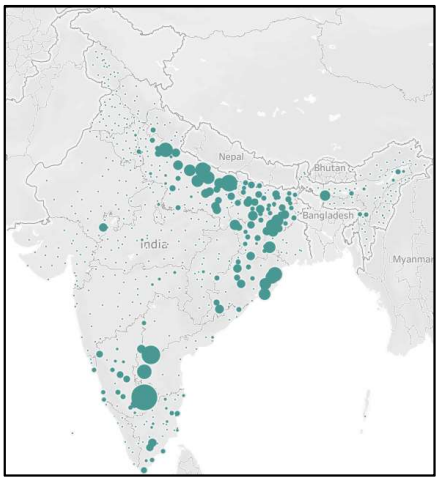


Appendix B: Maps

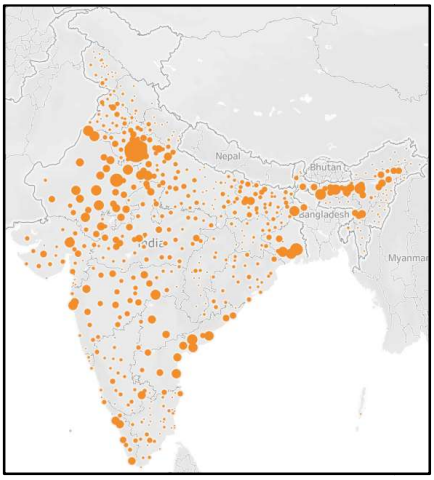
Map1: Dowry Deaths



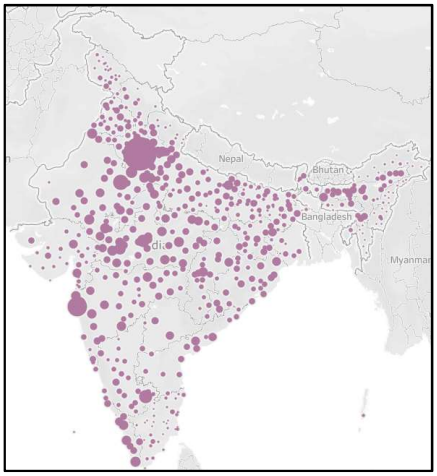
Map 2: Dowry Prohibition



Map 3: Cruelty

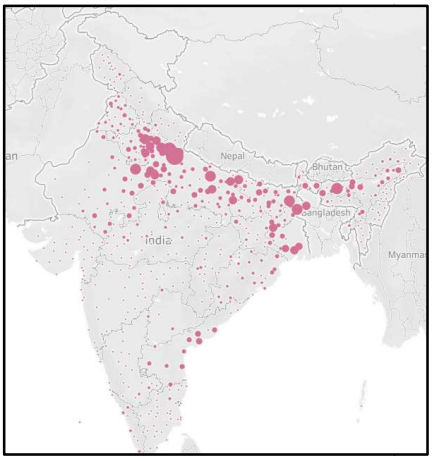


Map 4: Rape

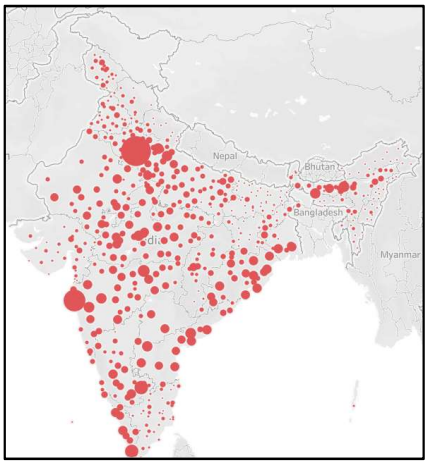


Map 5: Rape Attempt

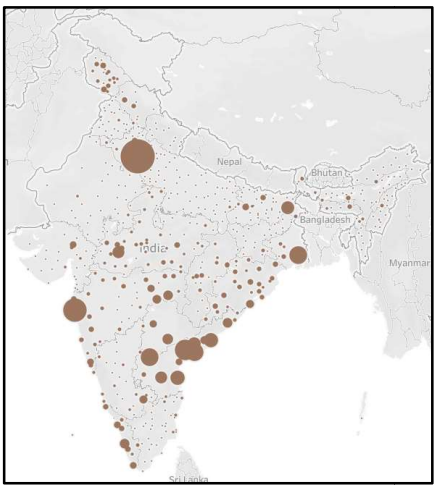
Map 6: Assault



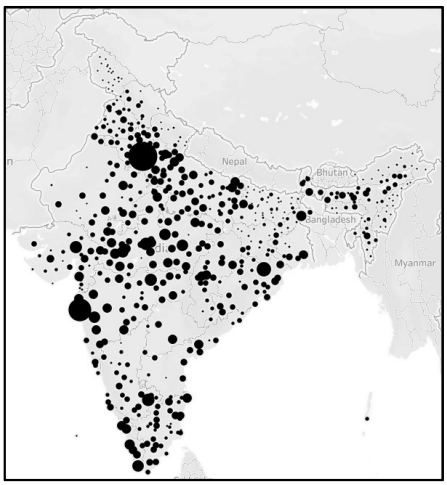
Map 7: Insult



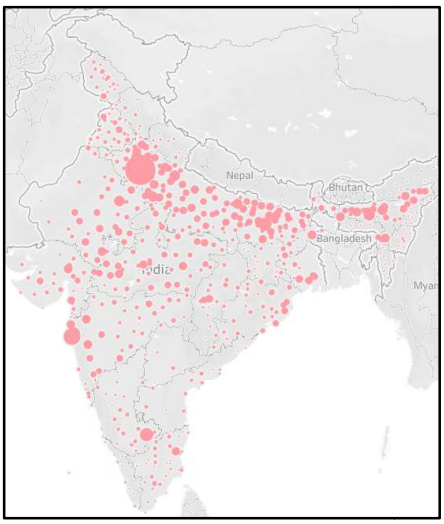
Map 8: POCSO



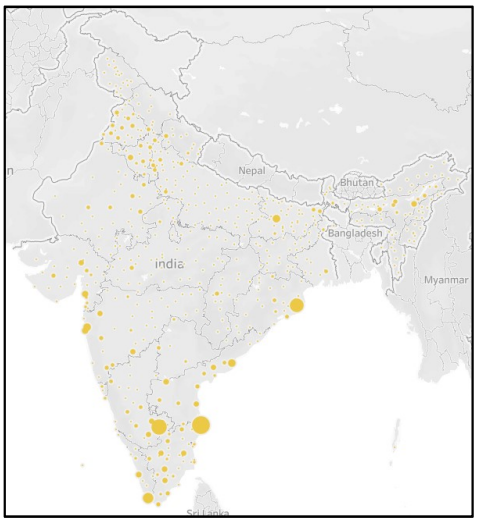
Map 9: Kidnapping

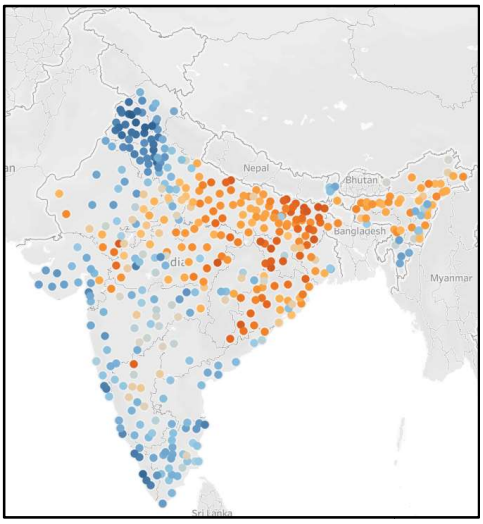


Map 10: Immoral Trafficking



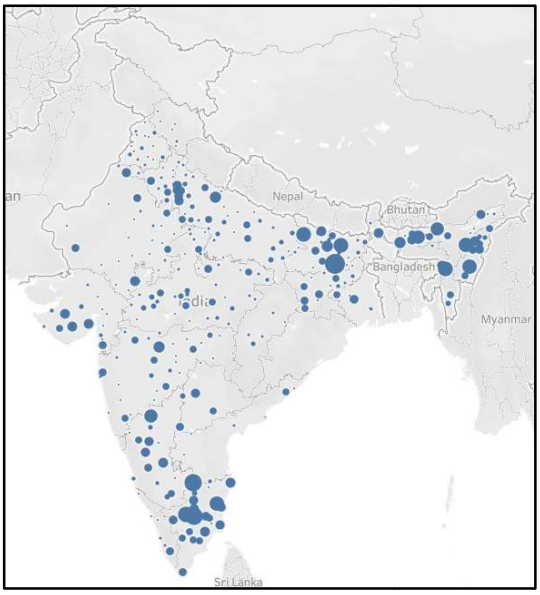
Map 11: Wealth Index (WI)





Appendix C

Map 1: Sexual Violence under NFHS-4



Map 2: Rape under NCRB-2016