Minahil Fatima

Professor Ayesha Ali & Saher Asad

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Mor and *Tor*: Does Exposure to Conversations on Gendered Injustices Help Target Reported VAW Crimes?

ABSTRACT

Despite the pervasiveness of crimes pertaining to Violence Against Women (VAW) in Pakistan, they remain drastically underreported partially owing to the stigma that circumvents, shames, and ostracizes women who report said incidents. This paper examines whether the existence of an exogenous national shock can lead to a change in reported incidents for socially sensitive crimes against women, such as rape. It does so by analyzing a quasi-experimental setting morphing after novel filmmaker Sharmeen Obaid-Chinoy, won the Golden Globe Award in 2012 for her documentary, *Saving Faces*, which spotlights stories of acid attack survivors in Punjab. Owing to the documentary's ability to prompt national conversation after winning a prestigious award and receiving global coverage, this paper exploits said incident as a '*social shock/intervention*' to conduct a Difference-in-Difference analysis in reported crime incidents across districts in Punjab.

MOTIVATION

At the juxtaposition of culture and religion, Pakistan has a rigid patriarchal structure that constrains women's quality of life. The most recent Global Gender Gap Report places Pakistan as

the third from last in place of gender inequality. In such an event, women are extremely likely to experience incidents of VAW, without expecting or receiving protection from their perpetrators, who mostly tend to be their male family members. A major reason for women's conformity to protecting and not reporting their perpetrators is the social, familial, and/or religious expectations that are levied on them from their birth. This further evolves into a culture of being shamed and/or ostracized in the rare occasions when VAW incidents are reported by women, leading to two key events: firstly, these incidents repeat, often increasing in severity as time progresses; secondly, criminal databases under-report crimes pertaining to VAW, which affects policy decisions at a national level. Motivated by the prevalence of gendered crimes in Pakistan and their inability to reflect in official crime reports, this paper attempts to understand whether a social shock leading to increased conversation around VAW can encourage women to file formal complaints against instances of VAW.

LITERATURE REVIEW

As defined by the United Nations, Violence Against Women (VAW), also referred to as Gender-Based Violence (GBV), is an act "that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or private life" (1993). Although the frequency, form, and extent of VAW varies from one region to another depending upon its punishability with regards to legal, cultural and/or religious implications and the skewness of existing gender roles, it engenders harmful and long-lasting emotional, physical, and psychological trauma for its victims (Ali & Gavino, 2008).

Since time immemorial, women have been conditioned to position themselves as inferior to their male counterparts (Bhattacharya, 2020). Due to unequal power dynamics that exist

between women and men in most societies, acts of aggression are frequently carried out by men owing to the protection afforded to them by virtue of their sex, followed by their position in society at large. This can be seen by the inverse relation between VAW crimes and the status of women in society; in patriarchal societies where women are more frequently objectified, domesticated, and less autonomous, violence against them is omnipresent and acts of aggression are considered less punitive (Bhattacharya, 2020). Gender-based violence incurs spill-over harmful effects including trauma extended to the victim, restricting their access to education/workplace, increased medical costs, lower productivity, and/or physical and mental charge to children (Lari, 2011). However, it is not only the prevalence of VAW crimes that is alarming, but also the tolerance extended towards them (Chapman, 1990). This widespread occurrence and social tolerance of VAW constitutes a major breach of human rights, which are frequently unacknowledged because of "official propensities to, at best, conceive the problem as a series of individual complaints and, at worst, to tolerate it as the rightful consequence of being female" (Chapman, 1990).

According to a study conducted by Bleck et al. (2014), merely 7% of women who experience violence report to a formal source and 37% of women report to informal sources including close friends and family. However, despite the calls to prompt comprehensive data collection and faster delivery systems, the magnitude of VAW crimes remains unknown, especially in areas which are more underdeveloped in terms of legal, social, and urban infrastructure and institutional support provided to women (Bleck et al., 2014). This is an important acknowledgement because evidence-drawn suggestions to support victims of VAW draw from a sample pool of local reported cases who are comfortable disclosing victimization (Cohen & Green, 2012). Owing to the nature and extent of underreported VAW crimes, there is a high likelihood that individuals who report VAW crimes may systematically differ from those who do not or

cannot. If policy is designed keeping in mind the characteristics and experiences of the former group, then the latter group may remain unsupported, unrepresented, and deprived from measures to support VAW survivors given that their socioeconomic backgrounds, access to resources, and support structures may differ from intended policy targets (Bleck et al., 2014). Adding to this, if support programs for survivors of VAW are designed based on reported crimes and profiles of victims who launch formal complaints, they may be under-resourced and unable to meet demand. Therefore, understanding the proportion of individuals who experience VAW (as opposed to solely those who report VAW) is imperative to design support programs that target the relevant population while having adequate funding and resources, whereas understanding the characteristics of individuals who do not report VAW may allow governments to create programs that encourage survivors of VAW to come forward and receive granular support when they decide to.

In the context of Pakistan, gender is an organizational principle that is encoded by local customs, culture, and social assignments by virtue of sex (Bhattacharya, 2020). Owing to the sexual division of labor that exists, men often assume responsibility as financial providers and protectors while women are confined to reproductive labor and household care. A woman is considered a "social captive" (Bhattacharya, 2020) of her father, brother, husband, and in some instances, son, while a man assumes his role as the guardian of female members in his family. Therefore, women are not only excluded from knowledge bases to practice their "basic rights, recognition and respect" (Jamal), but also from "the mechanisms, procedures and processes they could access and use for their own benefit" (Lari, 2012). As a consequence, Pakistan has shown dismal performance in establishing gender parity and creating an equitable policy design in

physical and social infrastructures for its population of over 220 million people, from urban design to education reform and healthcare programs (Ahmed, 2020).

In the most recent Global Gender Gap Report 2021, the World Economic Forum quotes Pakistan as one of the top 3 countries in gender disparity in social and economic verticals. Over 67% of the literacy gender gap remains unbridged in Pakistan, alongside prominent health gender gaps due to access and resource problems, high infant mortality rates owing to gender-biased sex selection practices, and alarming economic gender gaps of over 30%. Women are not only underrepresented in labor markets and have difficulty accessing their rights to education and healthcare, they also have to address normative, legal, and cultural barriers while doing so. Given that structural imbalances exist to prevent women from exercising their rights, there are additional barriers in place for women who want to report instances when their rights are denied and/or violated.

The aforementioned barriers that impede women's ability to report crimes committed against them include institutional bias (Belknap 2010), stigma and ostracism (García-Moreno et al., 2005), lack of awareness (Casey et al., 2011), procedural imbalances and access problems (Hossain et al., 2010), financial dependence on male providers (Wold et al., 2003), threat of losing children (Ellsberg et al., 2005), and fear of retaliation by the perpetrator (García-Moreno et al., 2005). In addition, many women, especially in countries where roots to culture and religion are intrinsically tied, simply do not seek formal care or launch complaints because they believe that the violence is normal, justifiable, and not serious enough (Heimer et al., 2001). This takes place in either of the three situations: when the victim has seen repeated and unaccounted violence against their close ones, therefore normalizing the notion of violence instead of viewing it as a denial of their right; or when aggression is normalized through media, literature, and arts, therefore

creating a culture of acceptance towards violence; or when interpretations of religion, and culturally binding gender-roles create a hybrid justification and provide allowance for acts of aggression under the guise of tradition. This is true especially in the case of Pakistan, where most people derive their interpretation of women's rights in accordance to Islam from social and cultural norms, as opposed to the *Shariah* itself (Ibrahim, 2005). Therefore, even if some customs and traditions are practiced against Islamic law, such as physical violence against wives and sexual violence/assault, they are not questioned and/or penalized owing to an embedded fear of catechizing Islamic principles and being accused of blasphemy or violating familial 'honor' (Bhattacharya, 2020).

Considering the gap in reported VAW crimes due to cultural, social, and institutional barriers that exist for women in Pakistan, as well as the lack of local literature that explores (i) whether reporting behavior for VAW crimes has changed overtime; (ii) whether support (normative, educational, and otherwise) can change reporting behavior; (iii) how the change (if any) in reported VAW crimes compares to changes in non-gendered/neutral crimes exposed to the same shock.

Context (a): The incident and its aftermath

We achieve this by conducting a Difference-in-Difference (DiD) analysis in a quasi-experimental setting that arose after Pakistani filmmaker, Sharmeen Obaid-Chinoy, won the Golden Globe Award (2012) for directing a moving documentary that features two acid-attack survivors in South Punjab in their struggle for justice. Garnering critical acclaim, broadcasts, and features, *Saving Face* was not only the first Pakistani movie to win an international prestigious award, it also became the voice of under-reported acid violence against women in Pakistan. As a result of this Award, said documentary received global media attention and sprouted public

conversation around VAW crimes in Pakistan, prompting legislative reforms in the shape of "The Acid and Burn Crime Bill" (2017) passed by the National Assembly to fast-track the criminalization of acid/burn attack, offer free medical treatment and rehabilitation for victims, and design programs to reintegrate them in society (Jamal, 2018). Since the Award pushed *Saving Face* to the forefront of sprouting global conversation on VAW acts in Pakistan, it initiated local conversation on the prevalence of acid-attack and pushed legislative reforms to protect women, whereby demarcating the transformability and exogeneity of a social shock.

Context(b): Our Contribution

This paper makes three key contributions to the breadth of literature that exists in VAW literature. Firstly, it suggests that a social shock that evokes conversation around VAW crimes can change the number of crimes that are registered under said category. There have been studies that correlate women's political representation (Amaral et al., 2018; Kavanaugh et al., 2019) and participation (Iyer et al., 2012), higher educational attainment (Aydin et al, 2019), and self-defense training (Mohamad Azemi et al., 2019) to lower rates of VAW crimes. However, existing literature fails to identify how mainstream discourse through an exogenous social shock can suggest a shift in reported VAW crimes, and how this can be leveraged to understand the role of semantics, open discourse, and mainstream media in normalizing the discussion of socially taboo topics and helping women access platforms in case they need help.

Secondly, although the objective of this study is similar to nascent academic literature where the global #MeToo movement has been studied pre and post intervention as a measure of a social shock, it is contextualized to the data available in Pakistan. Since the #MeToo movement was imported in Pakistan after singer and actress, Meesha Shafi, accused popular singer, Ali Zafar, of sexual harrasment in 2018 (BBC, 2018), there is insufficient data post-intervention to explore

the consequences of this movement on VAW crime reporting patterns. Therefore, this paper substitutes existing literature on the #MeToo movement with a social shock that is true only in the context of Pakistan, since *Saving Faces* was directed in Pakistan and the award recipient was a Pakistani filmmaker based locally, as opposed to an expat living abroad. The *localness* of this documentary scores relevance because Pakistanis were able to connect with the contents of the documentary and felt visible in the process of the Award - which pushed the transformative power of the shock.

Lastly, this paper attempts to make an empirical contribution to generate evidence on crime reporting that is entirely new to Pakistan. For instance, McDougal et al. (2018) use spatial mapping techniques to provide evidence that reported rapes in India increased after the Delhi Rape Case (2012). Similarly, Bhatnagar et al. (2019) employ a synthetic controls method to prove that reported rapes increased in India after the Delhi rape case incident. While these studies establish an empirical foundation to study these events, they have not been replicated or reinvented from the lens of social shock in Pakistan, nuanced to include local events. By using a quasi-experimental setting and examining the effect of placebos compared to our treatment variables, we are able to convert qualitative or survey-based studies on socially sensitive topics, for instance VAW in Pakistan, to empirical, data-driven studies that have spillover, top-down implications, discussed in the next few sections.

The rest of this paper is segmented into five sections: the next section explains our data, followed by an understanding of our framework, analysis of our findings, discussion and limitation of results, and scope for future projects based on our findings.

DATA

District-Level Crime Data

We use the official crime data published by the Punjab Bureau of Statistics to create our crime dataset. The raw data we received was in PDF format, compiled separately for each year from 2007 to 2017. The data under each report is aggregated from individual cases reported in police stations at a district level, for all districts in Punjab, for each type of crime at the end of every calendar year. Therefore, we converted said pdf format to tabular form and manually entered data for every type of crime for each district from 2007 up to 2017 and aggregated it to receive data that: (i) segmented crime by type for each district in Punjab; (ii) aggregated total crimes for each district every year; (iii) compared crimes across districts in Punjab within one year, or compared aggregated crimes across years for one district.

Due to the nature of crime data that was available, we could identify primarily one category of VAW namely rape, which although constitutes a significant degree of VAW, omits other forms of VAW for instance kidnapping of girls, sexual assault, dowry deaths, physical/verbal assault by male household member etc. Therefore, due to lack of available data on other forms of VAW, we are assuming rape to be a proxy for all VAW crimes. This has been recognized as a limitation of our study, which we hope advanced data collection methods, at a granular level, are able to overcome for future event studies. Furthermore, to conduct placebo checks, we use data on gender-neutral crimes that were available in said dataset, for instance, robbery/dacoity, murder and riots, to understand whether a change in reported VAW crimes is a consequence of our social shock alone, or an outcome of a general change in crime climate which impacts all crimes. We substantiate our results by testing for parallel trends assumption to fully legitimize our case.

The key outcome variable is rate of crime, which is calculated as the number of crimes per 100,000 population across districts. District population values were obtained from the 2017 Census Data.

Data and Construction of Exposure Index

To measure the treatment intensity, we construct an exposure index made from 9 baseline district-level indicators. We extract this data from the Pakistan Social and Living Standards Measurement (PSLM) 2014-2015; the construction of variables included in the exposure index is as follows:

Variable	**Description**
Media Coverage	
Television	Percentage of Households that own a Television
Radio	Percentage of Households that own a Radio
Mobile	Percentage of Households that own a Mobile
Computer	Percentage of Households that own a Computer
Demographic Characterstics	
Literacy	Percentage of Literate Population
Currently Married Women	Proportion of Currently Married Women
Divorced Women	Proportion of Divorced Women
Urban Population	Percentage of People who live in Urban Areas
Young Population	Percentage of people in the age group 18-40 years old

Table.1 - Source: Pakistan Social and Living Standards Measurements Survey, 2014-2015.

The aforementioned 9 indicators have been aggregated to create the exposure index. As shown below, the index comprises an unweighted averaged of the normalized variables as follows:

$$Index_d = \frac{1}{9}\sum_{j=1}^{9}(Indicator_j)$$

Furthermore, drawing from Sahay (2021), the construction of the exposure index is made up of two main components:

- *Penetration of information:* This component measures coverage of household-level assets, including radio, mobile, and computer, that serve as junctions for people to receive information on VAW incidents before and after our social shock. Prat and Kennedy (2019)

conducted an extensive survey including 72,000 respondents across 36 countries to inquire about their source of news and information, and found that over 80% of their subjects worldwide prefer traditional channels of news transmission including television, radio, and newspapers, 40% prefer only newspaper, and 30% use pure internet. Similarly, Ejaz and Ittefaq (2020) executed a field study in Pakistan and concluded that, in a sample of 530 respondents, traditional sources of information (including TV and newspaper) garnered the greatest amount of public trust after scientists and the government. Owing to the transmissibility and penetration of information mediums to share information on current events, awareness on education, health, and legal procedures, and media entertainment, we include this component to gauge district-wide access to information.

- *Socioeconomic connectedness*: By using demographic indicators, such as the literacy rate, marital status of women, and proportions of young and/or urban population, this component draws from literature on VAW crimes to gauge whether certain districts stand at a greater likelihood of changing the reported accounts of VAW crimes after the social shock.
    - *Literacy rate*: A study conducted by Maity and Roy (2021) across 19 Indian states between 2001-2015 reported a significant and strong negative correlation between educational attainment and employment to VAW crimes. Similarly, Rakshit and Neog (2019) investigate the impact of educational attainment across 33 states from 2001-2013, and their empirical findings revealed that a 1% increase in gross enrolment ratio causes crimes to reduce by 8%.

- *Marital status of women*: According to estimates, between 70-90% of women in Pakistan experience domestic violence - from honor killing, marital rape, and acid attacks to burns, beatings, and verbal abuse (Bhatti and Fikri, 1999). In Pakistan, domestic violence is considered a private matter and therefore, "not an appropriate focus for assessment, intervention or policy changes" (Bettencourt 2005) to an extent that wife beatings, verbal abuse, and violence is considered normal. In developing countries where women are not afforded protection, their marriages predispose them to violence by their partner; studies have found a positive and significant correlation between women's early marriages to their abuse in husband's homes (Jejeebhoy 1998), economic disempowerment (Kadir et al., 2003), and lack of educational attainment/continuation (Ali & Gavino, 2008) among others.
- *Young Population*: There are two reasons why this is an important indicator in consideration. Firstly, most victims of VAW happen to be younger women who are susceptible to crimes, both, inside and outside their household. Similarly, a study that leveraged a country-level panel dataset from Europe found that most perpetrators of crime fall under the profile of young, unemployed, and less educated men (Altindag 2012). Secondly, youth tend to be more active in responding to social changes through access to web sources, online networks and support groups, and reacting to shocks (Acemoglu et al., 2018). Thus, we hypothesize that districts that are weighted towards younger populations will be more exposed to the shock.

Summary Statistics: Exposure Index and its Components

	Mean	SD	Median	Min	Max
exposure index	.312	.043	0.300	.239	.423
Demographic Characteristics					
Literacy	.033	.014	0.028	.018	.071
Young Population	.321	.022	0.323	.244	.365
Currently Married Women	.371	.013	0.371	.335	.403
Divorced Women	.003	.001	0.003	0	.007
Urban Population	.356	.126	0.317	.219	.846
Media Coverage					
Television	.632	.15	0.681	.338	.869
Radio	.177	.084	0.153	.059	.37
Mobile	.845	.055	0.847	.697	.939
Computer	.069	.042	0.053	.019	.2

Table. 2 - Source PSLM 2014-15

EMPIRICAL STRATEGY

Given the documentary consequenced into a country-wide national shock, and impacted all cities and locations to a varying degree, we cannot have a binary treatment assignment on districts. As such, this paper adopts a treatment intensity approach, where treatment takes values on a continuum between 0 to 1, based on district exposure to the shock. Our paper estimates the following Diff-in-Diff equation:

$$y_{dt} = \beta\,(Exposure_d \times Post_t) + \sigma_d + \delta_t + \mu_t + \varepsilon_{dt}$$

Where y_{dt} is the outcome variable, that measures the rate of Rape, i.e. the number of cases reported per 100,000 population in district d in year t. $Exposure_d$ is the main variable of treatment intensity which varies at the district level, and takes values between 0 and 1. $Post_t$ takes up a value of 1 if the year is between 2012-2017 and 0 otherwise. Furthermore, σ_d and δ_t are district and time fixed respectively. ε_{dt} is the idiosyncratic error term that is clustered at the district level. Each of our observations are recorded at the district-time level, where for effective comparison across models of coefficient estimates, we have used *standardized coefficients*.

In our analysis, district fixed effects are crucial because they absorb any unobserved characteristics, such as religion-political climate, gender norms, and district administrative and

police capacity. Year fixed effects further help account for any time-varying unobserved characteristics, for example economic shocks and political and policy fluctuations. We consider a specification with robust as well as clustered standard errors. In order to check the impact of individual components of our exposure index we also run our DiD on each component.

As a further robustness check, we also collapse our treatment intensity variable into a binary assignment which uses the median value of the exposure index as a threshold, where districts that are below the median are the control group and districts at or above the mean are in the treatment group, where $Treat_d$ = 0 for control and $Treat_d$ =1 for treatment.

$$y_{dt} = \beta\,(Treat_d \times Post_t) + \sigma_d + \delta_t + \mu_t + \varepsilon_{dt}$$

We extend the analysis further with some identification checks, namely the Parallel Trends Assumption and a placebo check on gender neutral crime to further substantiate our findings.

RESULTS

Main Estimation - Continuous Treatment

Table 3 presents our main DiD estimates, where column 1 shows the specification with robust standard errors and column 2 illustrates the same specification with clustered standard errors. Here, we are discounting any bias that could be a consequence of unobserved heterogeneity associated with specific districts characteristics, by incorporating district as well as time fixed effects. For both models, we observe that for districts that are 1 standard deviation (SD) more exposed to the shock experienced a 0.203 standard deviation decrease in reported rape, post shock, with both of results being statistically significant at 0.01%.

Effect of Shock on Violence Against Women Crimes (Rape)

	(1) Model 2 Robust Standard Errors	(2) Model 1 Clustered Standard Errors
Post × Exposure	-0.203***	-0.203***
	(0.0403)	(0.0612)
Observations	420	420
District FE	Yes	Yes
Time FE	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: These results are for continuous treatment assignment.

Table. 3 *– Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Summary Statistics: Crime Types

	Mean	SD
Violence Against Women Crimes		
Rape rate	2.271	1.499
Placebo Crimes		
Rioting rate	.117	.463
Murder rate	5.008	1.845
Burglary rate	9.035	5.301
Vehicle Theft rate	9.433	10.617

Table. 4 *– Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Table 5 reports the effect of individual components of exposure index on reported rape. With the exception of the components, Proportion of Currently Married Women as well as proportion of Radio in households across districts, all coefficients are significant at either 0.01% or 0.05%. Where 1 SD increase in the concerned exposure index component, leads to 0.05–0.22SD decrease in reported Rape.

Effect of Shock on VAW Crimes (Rape) from Single Components of Exposure Index

	(1) Cluster Standard Errors
Post × Literacy	-0.175***
	(0.0610)
Post × Currently Married Women	-0.0671
	(0.0744)
Post × divorced Women	-0.116**
	(0.0534)
Post × Urban Population	-0.111**
	(0.0501)
Post × Television	-0.206***
	(0.0414)
Post × Radio	-0.0865
	(0.0872)
Post × Mobile	-0.223***
	(0.0785)
Post × Computer	-0.180***
	(0.0640)
Post × Young population	-0.143***
	(0.0464)
Observations	420

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table. 5 *– Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Secondary Estimation - Binary Treatment

Table 6 estimates the DiD using an alternative treatment assignment as a robustness check. The results are now being reported based on a binary treatment, where column 1 shows results with Robust Standard Errors and column 2 depicts the same specification with clustered standard errors. Estimates from DiD indicate a significant (at 0.01% and 0.05% respectively) decrease in reported Rape crime, with an estimated drop of 0.36SD.

Effect of Shock on VAW Crimes (Rape) using Binary Treatment

	(1) Model 3 Robust Standard Errors	(2) Model 4 Cluster Standard Errors
Post × Exposure	-.362***	-.362**
	(.0872)	(0.1466)
Observations	420	420
District FE	Yes	Yes
Time FE	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: These results are for binary treatment assignment.

Table. 6 *– Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Summary Statistics: Crime Types by Binary Treatment Assignment

Control Group

	Mean	SD
Violence Against Women Crimes		
Rape rate	2.851	1.662
Placebo Crimes		
Rioting rate	.041	.089
Murder rate	4.435	1.888
Burglary rate	8.234	3.587
Vehicle Theft rate	5.379	3.009

Treatment Group

Violence Against Women Crimes		
Rape rate	1.657	.988
Placebo Crimes		
Rioting rate	.197	.649
Murder rate	5.615	1.59
Burglary rate	9.883	6.555
Vehicle Theft rate	13.724	13.679

Table. *7 – Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Placebo Check

For the placebo check this paper replicates the primary DiD analysis and investigates the effect of the shock on gender neutral crimes. We conduct this exercise to show that the primary effect of the shock is not attributed to any other change in the overall crime situation in the country. Estimates from Table 8 indicate our shock has no significant impact on gender-neutral crimes indicating that our primary estimation is not a consequence of a change, if any, in the general crime atmosphere.

Placebo Checks - No Effect on Gender Neutral Crimes

	(1) Rioting	(2) Murder	(3) Burglary	(4) Vehicle Theft
Post × Exposure	-0.162	-0.0666	0.315	0.0206
	(0.147)	(0.0890)	(0.198)	(0.0310)
Observations	420	420	420	420

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table. 8 *– Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Satisfaction of Parallel Trends

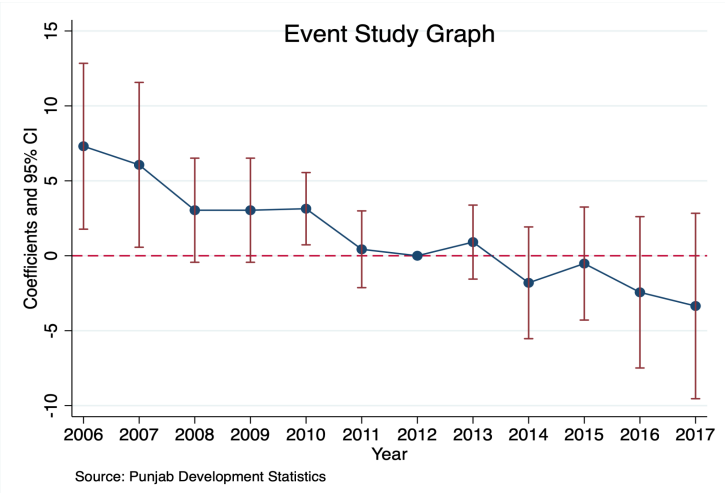
Satisfaction of the parallel trends assumption legitimizes any DiD analysis, and as such for the purposes of this project, we conduct parallel trends tests across both continuous treatment assignment as well as binary treatment assignment. Here it is important to note that the documentary is a social shock, which is both exogenous and unanticipated, so it can be assumed that it could not have possibly impacted reporting and/or crime occurrence behavior prior to the assumed shock. Further still, treatment intensity is based on socio-economic indicators which are generally slow moving and are not subject to drastic changes, and as such can be discounted from changing within districts.

To test the parallel trends assumption formally for our continuous treatment assignment, we ran an event study with the following specification:

$$y_{dt} = \sigma_d + \delta_t + \mu_t + \sum_{T=1}^{m} \pi_{-T} \left(Exp_d \times T_{t-T}\right) + \sum_{T=1}^{n} \pi_{+T} \left(Exp_d \times T_{t+T}\right) + \varepsilon_{dt}$$

For parallel trends assumption to hold, coefficients for lead dummies (i.e. period before the incident) should be generally insignificant. This insignificance implies that our primary estimation is not attributed to any pre-existing difference in registered VAW between less or more exposed districts. Lag dummy coefficients (post-shock years) then indicate the effect of the policy as time

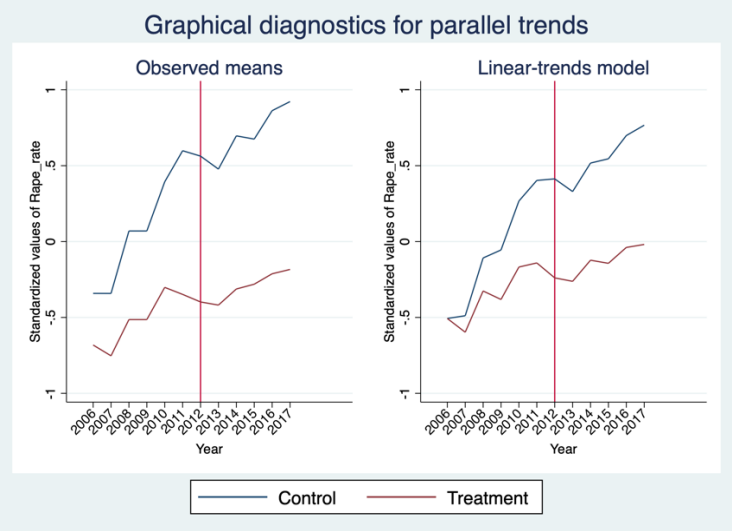
passes. Graph 1 plots the π coefficients over time. From this we can see some pre-trend for years 2006-2007 but in the years right before the shock, the parallel trends assumption is somewhat satisfied. It is crucial to note here that we only have Rape data as our VAW crime. Our results are expected to reap more concrete results if we have data on all VAW crimes.



Graph. 1– *Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

To test the parallel trends assumption for binary treatment we do statistical analysis as well as graphical representation and tabulation to present our case. For the parallel trends test (Figure 9) we were unable to reject the null, that linear trends are parallel at 0.01% but can reject it at 0.05%. From the granger-causality test (Figure 9) we observe no behavior change in both treatment and control groups prior to the shock, that is, we fail to reject the null at 0.01% that there is no effect on anticipation of the event, which supplements our exogeneity assumption. This does not mean that the parallel trends necessarily holds, only that there is insufficient evidence to reject the null hypothesis. Indeed the graphical representation in Graph 2 does not indicate an explicit parallel trend and neither is there an entirely constant difference in means in pre-shock periods except for years 2008-09 with 2010 being close by, an observation that matches our event study graph as well. However, it's again imperative to recognize here that a) our primary analysis is meant for continuous treatment assignment and a binary treatment analysis is not necessarily

empirically sound in our case, and is meant as just a secondary robustness analysis b) as stated above, we have limited data for only one type of VAW crime i.e., rape. In addition to rape crimes being severely unreported and unregistered, we have this data for only one province i.e. Punjab. Nonetheless, at this point we are hesitant to make a claim that parallel trends assumption stands for our paper but we do not want to discard the assertion regardless.



Graph. 2 *– Source PSLM 2014-15 and Pakistan Bureau of Statistics, Punjab*

Parallel-trends test (pretreatment time period)

H0: Linear trends are parallel	
F(1,34)	4.66
Prob > F	0.0380

Granger causality test

H0: No effect in anticipation of treatment	
F(1,34)	1.18
Prob > F	0.3425

Figure. 9

Descriptive Statistics: Difference of Means Across Years of Rape Rate

	Control Mean	Treatment Mean	Difference of Mean
	Pre-Shock		
2006	1.759	1.249	0.510
2007	1.759	1.142	0.616
2008	2.376	1.501	0.875
2009	2.376	1.501	0.875
2010	2.861	1.819	1.043
2011	3.168	1.749	1.419
	Post-Shock		
2012	3.115	1.675	1.440
2013	2.987	1.644	1.343
2014	3.315	1.802	1.513
2015	3.283	1.85	1.433
2016	3.564	1.953	1.611
2017	3.654	1.996	1.658

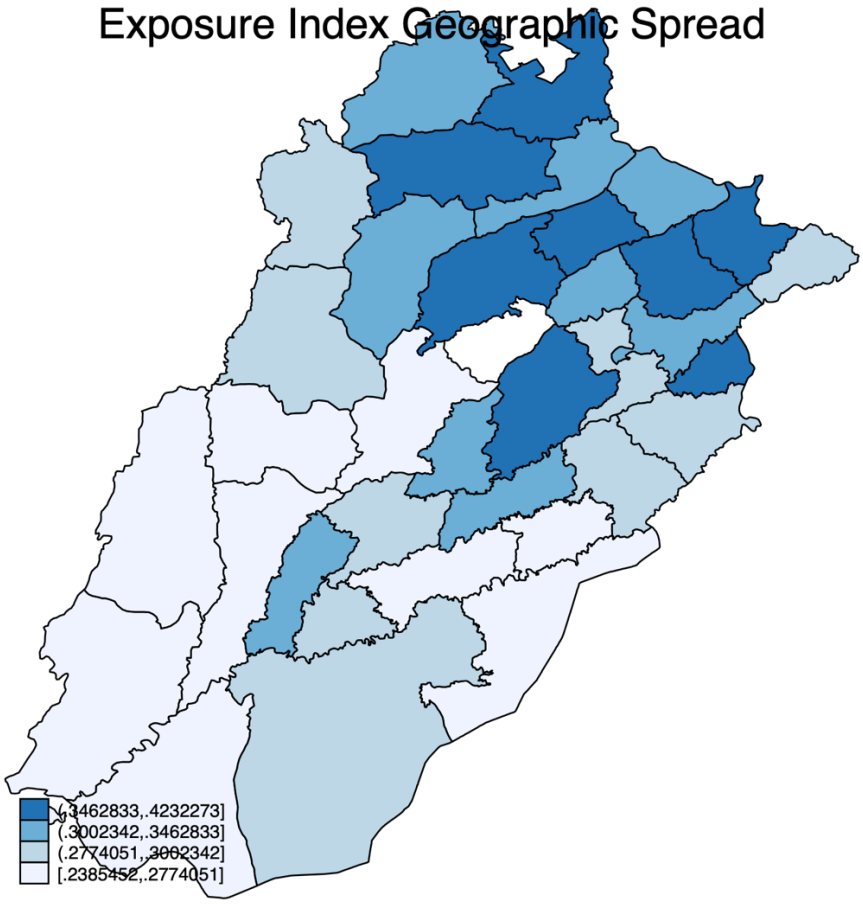
Figure. 10

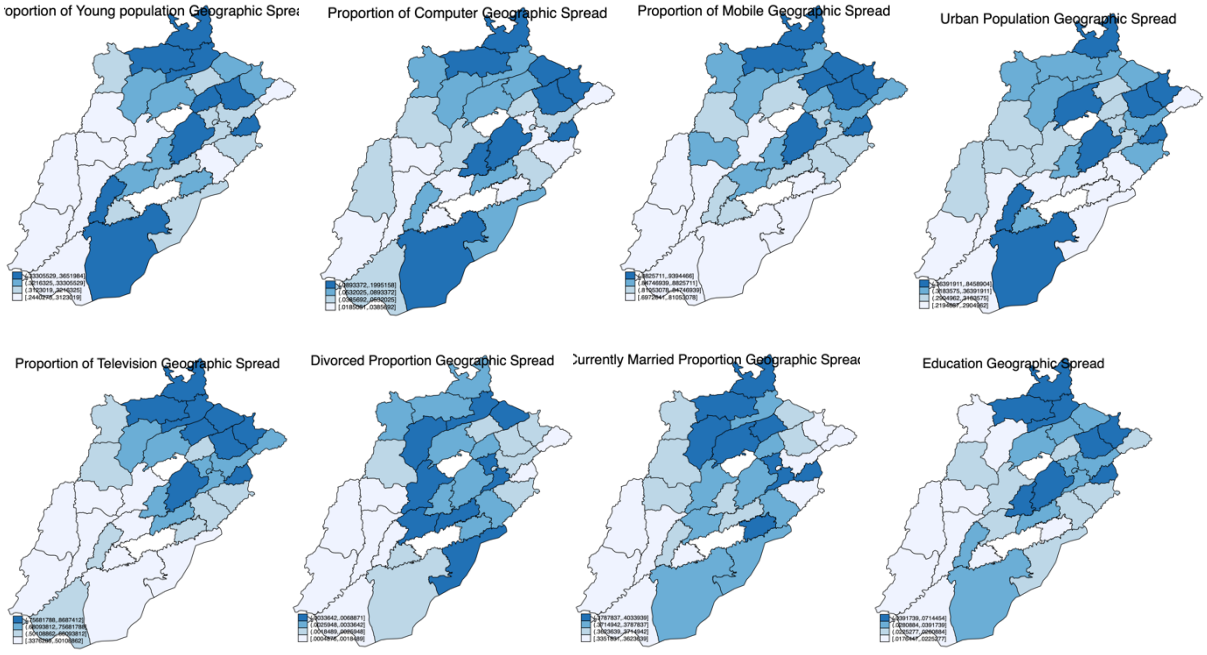
Spatial Spread Interpretation

To fully substantiate our analysis, it's important to note the variation in how the exposure index is experienced in districts. As seen in Graph 3 below, there is a visible and consistent difference between the exposure index across North and South Punjab; areas falling in Northern Punjab have greater exposure with regards to overall literacy, availability of information mediums, and prevalence of urban and young population. This spread of data has also been validated by Khan et al. (2020) who conducted a study across 450 respondents spread equally over North, South and Central Punjab. They noted that religio-cultural factors including "male control over decision powers, feudalistic nature of society, misinterpretation of religious knowledge" increased from North to South Punjab while economic factors including credit services, job security, and educational attainment decreased along the map. Furthermore, the two acid attack survivors featured in said documentary, *Saving Face*, belonged to small villages in Southern Punjab. Thus, we expect that the likelihood of districts in Southern Punjab to be more exposed to the social shock by virtue of their physical connectedness/proximity.

While reflected in our findings, where if graphs 2 and 3 are jointly viewed, we can see our controls mainly consist of districts in South Punjab and our treatment constitutes districts in the north, our results could have been more robust if we could include North and South Punjab fixed effects, and a physical proximity measure as controls. A further robustness check in this capacity is set as a future target for this paper.

Exposure Index Geographic Spread:





Graph 3.

DISCUSSION & LIMITATIONS

Our results demonstrate that the social shock in-consideration i.e. Sharmeen Obaid-Chinoy winning the Golden Globe Award was able to change the registered rape cases per 100,000 population per district. This means either of the following scenarios: (a) there was a *decrease in occurrence of rape cases* after the social shock (b) that the shock resulted in a *change in reporting behavior for women* who experienced act(s) of aggression, violence, and violation. While we lack sufficient data to test which of these hypotheses is true in the context of this study, we hope to explore the implications that both of these explanations pose for the future of policy decisions in Pakistan. We pitch this as the future scope of this project, i.e., to identify *why specifically* there was a fall in registered rape cases after *Saving Faces* won the Golden Globe Award in 2012.

In the case where there has been a general reduction in the occurrence of crime, further statistical analysis is needed to investigate why this took place and whether police and administrative reforms accompany this change. Given our placebo checks on gender-neutral crimes it can be inferred that if the drop in registered rape was owed to an improvement of police and administrative reforms post 2012, then we would have observed significant coefficients for our placebo crimes as well. Since we do not, we can make a correspondence that the drop in registered rape crimes is owed to our social shock. A more thorough investigation is needed to fully affirm this assertion. A major source of concern that arose in our study was ensuring that we have adequate data from official sources to validate our research question. While we reached out to entities including Punjab police, Pakistan Information and Technology Board (PITB), The Punjab Commission on the Status of Women, Bureau of Statistics, and organizations including CERP and Gallup Pakistan, we were unable to access digital crime records - primarily because they did not exist. Additionally, for the crime data that existed in official records, it was

incomplete. For instance, we noticed that the only VAW crime listed in official records was under the category of rape, which is severely underreported owing to the social stigma and religious repercussions attached to it in the context of Pakistan. Furthermore, the data we received was prematurely aggregated at district level; there was no data available on the FIRs that were reported and/or gender, age, and characteristics of the perpetrator or the target, which restrained us from profiling the victims and/or the perpetrators.

Alternatively, in the case where the social shock led to a decrease in women reporting VAW crimes, this could have to do with the fact that the documentary was "being seen as damaging the reputations of their [women's] attackers and perhaps even their communities" (Naili, 2012). To the extent that filmmaker Chinoy was accused of being a traitor by Pakistanis for "showing a negative image of Pakistan for fame and posterity" (Naili, 2012), the documentary sparked protests and rage, garnering outright condemnation locally, especially after it gained global appreciation. We hypothesize that the hostility of the reaction to this social shock in its home country might have further ostracized women who came forward with case(s) of abuse by viewing them as "disrespectful to their family" (Agha & Ahmed, 2018) and society at large. Estimates quote that 93% of Pakistani women experience sexual violence at least once in their lives (Kazi, 2017). Additionally, the concept of *honor* is highly regarded in the context of Pakistan, signified broadly as *mor* and *tor* in Punjab. *Mor* are "pious, sanctified pure women" (Bhattacharya, 2020), however, when their chastity is challenged and honor of their male counterparts/head of family is compromised, they are considered *tor* i.e. broken, and in *tor* cases, women are either banished or killed by their closest male relatives. Thus, for women who reported VAW crimes, the threat of affecting the *honor* of their male kin and thus being banished, hurt, or killed may have aggravated even more after the global screening of *Saving Faces.* While the documentary

showcased the commoditization of women i.e., their disfiguration takes place at the wrath of their male kin, it aggravated the fear of retaliation that women would have after they reported crimes against them.

CONCLUSION

Our paper investigates the effect of an exogenous social shock, i.e. *Saving Faces* winning the Golden Globe Award and garnering global attention, on reported VAW crimes across districts in Punjab. We use a Difference-in-Difference methodology in a quasi-experimental setting and find significant evidence that the reported rape cases between our treatment and control have reduced after the intervention, suggesting either of the two possibilities: there has been a change in occurrence of rape, or that women's reporting behavior to prime has become more apprehensive. Given that our placebos indicate that the reduction in registered rape cases cannot be attributed to a change in crime climate, we can attribute our results to the social shock, which leads us to define the trajectory of this study as follows:

Future Steps: In our discussion, we built upon whether a fall in crimes could be attributed to a change in reporting behavior by women owing to greater ostracism after the social shock. Therefore, we scraped news headlines from web sources and cleaned our data to segment gendered and neutral crimes for 6 months before and after said intervention. Our next line of action will be to pursue this field of analysis and test whether this hypothesis stands true. We hope to pursue this over the summers and build conclusive results. We would also like to reevaluate our findings with North and South Punjab fixed effects as well as physical proximity measure for the shock (that is closeness to the village in South Punjab where the documentary is based) as further controls and retest our identification tests, mainly the Parallel Trends assumption. We would also like to expand our analysis to all of Pakistan rather than just Punjab.

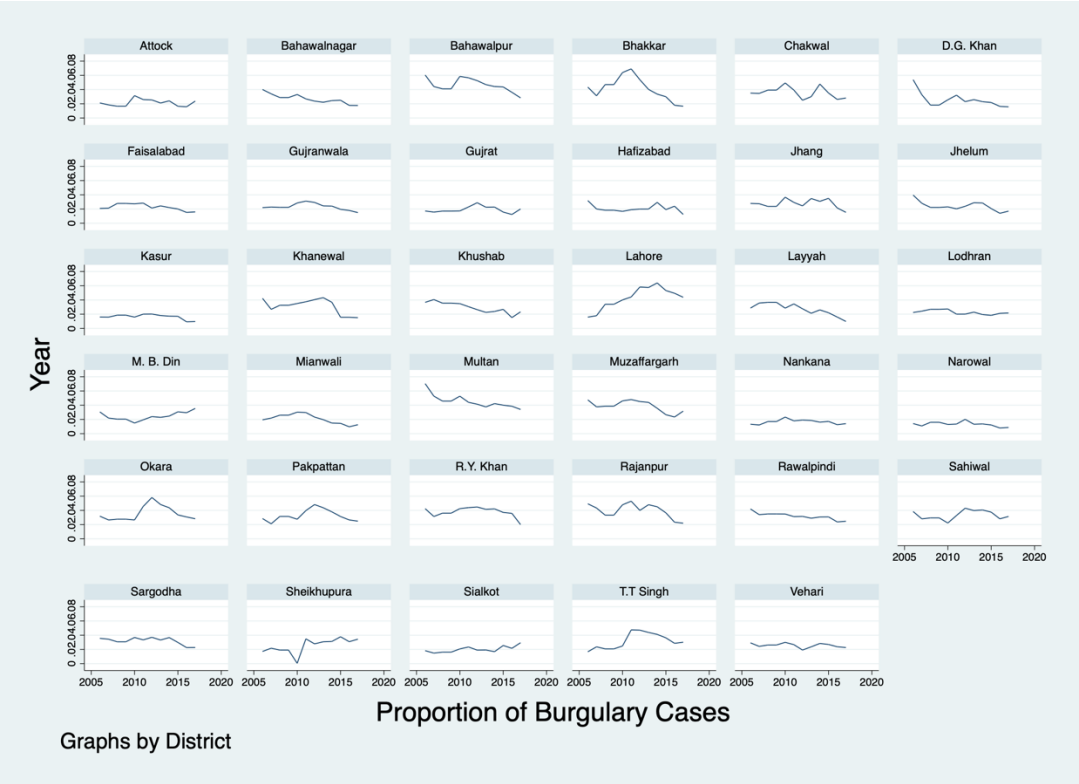
APPENDIX

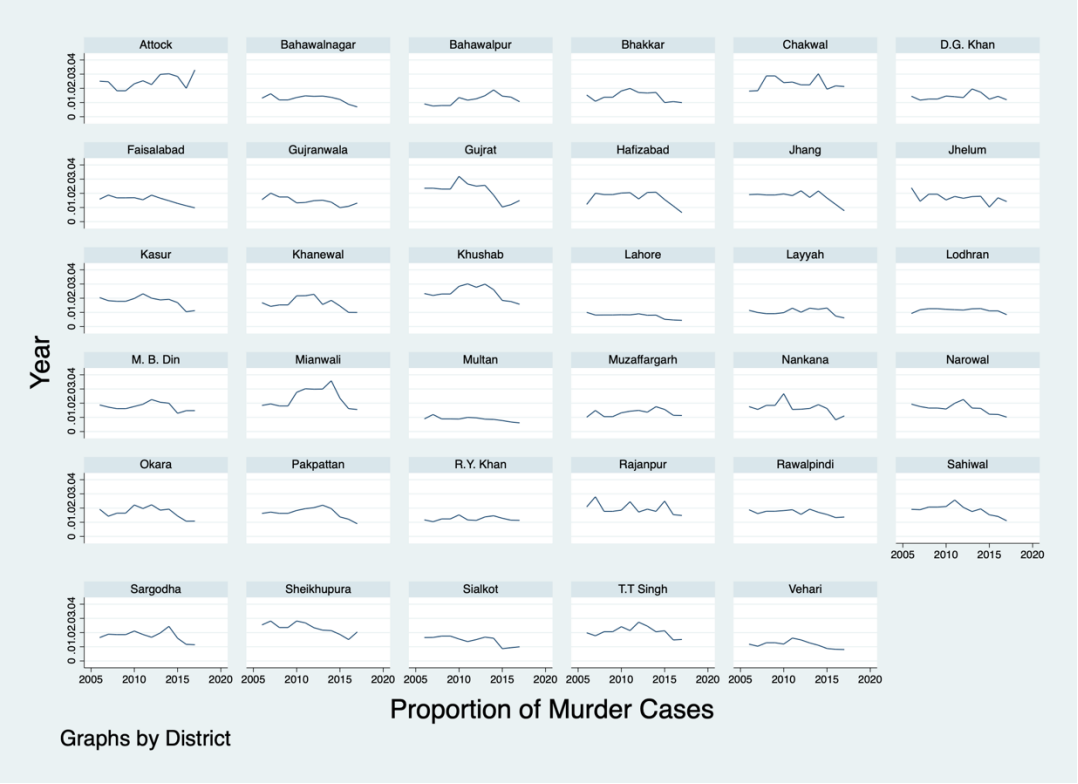
Additional Summary Statistics

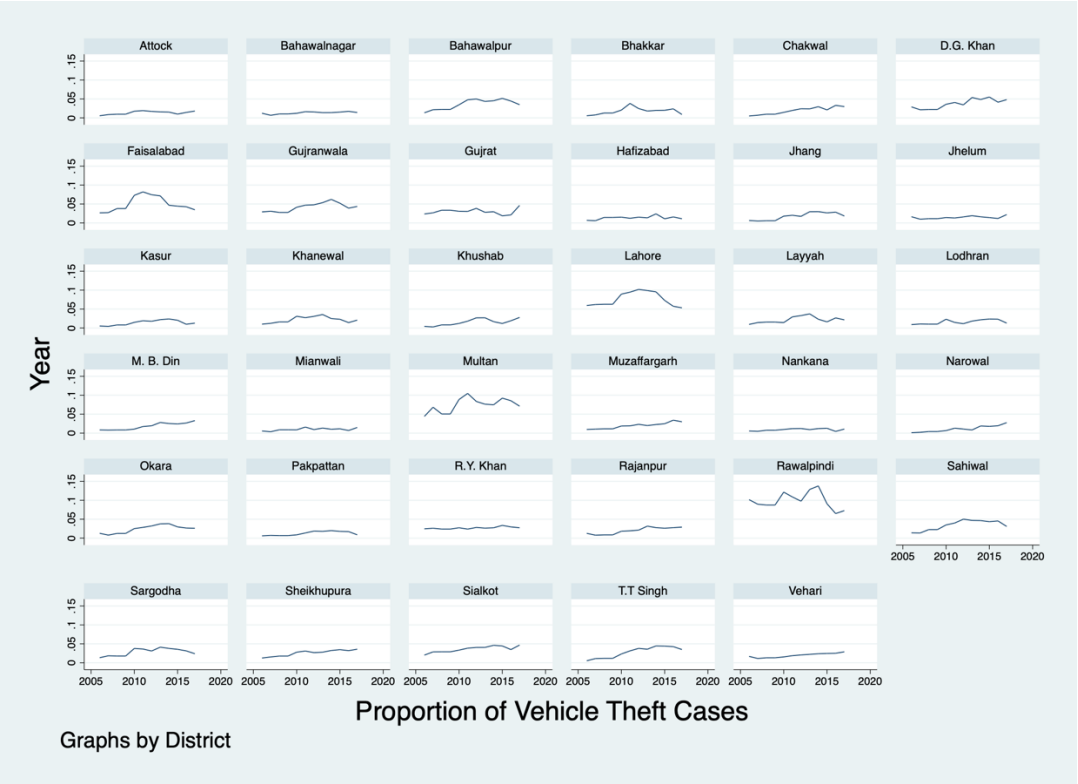
Descriptive Statistics - Exposure Index and its Components by district

	exposure index	Literacy	Young Population	Currently Married	Divorced Women	Urban Population	Television	Radio	Mobile	Computer
Attock	.314	.032	0.335	.379	.005	.297	.711	.132	.895	.042
Bahawalnagar	.271	.026	0.314	.374	.007	.287	.498	.091	.789	.053
Bahawalpur	.293	.032	0.333	.374	.002	.415	.488	.11	.786	.098
Bhakkar	.287	.024	0.312	.365	.002	.317	.513	.176	.827	.046
Chakwal	.37	.055	0.334	.403	.003	.324	.787	.37	.913	.141
D.G. Khan	.272	.023	0.280	.362	.001	.3	.43	.211	.798	.041
Faisalabad	.364	.052	0.347	.377	.003	.525	.775	.188	.892	.121
Gujranwala	.356	.046	0.335	.364	.002	.53	.757	.152	.914	.103
Gujrat	.342	.039	0.327	.365	.004	.333	.787	.234	.897	.095
Hafizabad	.327	.028	0.340	.379	.003	.31	.681	.268	.882	.053
Jhang	.255	.023	0.312	.374	.005	.292	.391	.1	.754	.04
Jhelum	.342	.039	0.338	.378	.004	.321	.828	.217	.883	.075
Kasur	.279	.024	0.316	.356	.002	.318	.571	.073	.821	.027
Khanewal	.282	.025	0.324	.372	.004	.22	.466	.235	.85	.038
Khushab	.346	.021	0.325	.383	.005	.361	.733	.369	.858	.061
Lahore	.423	.071	0.365	.381	.002	.846	.869	.151	.925	.2
Layyah	.267	.022	0.305	.365	.001	.312	.405	.128	.852	.019
Lodhran	.296	.021	0.322	.362	.002	.364	.501	.203	.846	.039
M. B. Din	.36	.031	0.316	.398	.002	.294	.831	.36	.935	.077
Mianwali	.3	.021	0.319	.364	.003	.357	.611	.116	.854	.057
Multan	.33	.037	0.343	.371	.002	.496	.613	.192	.828	.084
Muzaffargarh	.239	.018	0.302	.361	.001	.219	.338	.177	.697	.034
Nankana	.294	.035	0.313	.381	.005	.293	.687	.084	.827	.023
Narowal	.291	.024	0.281	.335	.001	.283	.691	.103	.859	.038
Okara	.291	.026	0.304	.374	.003	.29	.646	.096	.823	.051
Pakpattan	.277	.022	0.323	.379	.003	.287	.62	.059	.767	.036
R.Y. Khan	.269	.019	0.312	.362	.001	.243	.502	.153	.776	.052
Rajanpur	.256	.019	0.244	.354	0	.289	.374	.196	.806	.025
Rawalpindi	.399	.064	0.362	.381	.003	.602	.833	.231	.939	.176
Sahiwal	.302	.028	0.322	.369	.004	.234	.69	.203	.811	.057
Sargodha	.35	.034	0.332	.382	.003	.432	.725	.347	.817	.075
Sheikhupura	.309	.033	0.320	.36	.002	.35	.723	.1	.847	.05
Sialkot	.365	.062	0.326	.345	.002	.536	.839	.131	.912	.131
T.T Singh	.316	.04	0.328	.369	.003	.324	.686	.122	.88	.089
Vehari	.275	.028	0.323	.37	.004	.243	.513	.122	.81	.057

Proportion of Individual Crime Cases




Attock
Bahawalnagar
Bahawalpur
Bhakkar
Chakwal
D.G. Khan
Faisalabad
Gujranwala
Gujrat
Hafizabad
Jhang
Jhelum
Kasur
Khanewal
Khushab
Lahore
Layyah
Lodhran
M. B. Din
Mianwali
Multan
Muzaffargarh
Nankana
Narowal
Okara
Pakpattan
R.Y. Khan
Rajanpur
Rawalpindi
Sahiwal
Sargodha
Sheikhupura
Sialkot
T.T Singh
Vehari
0 .01.02.03.04
2005 2010 2015 2020
Year
Proportion of Murder Cases
Graphs by District


Attock
Bahawalnagar
Bahawalpur
Bhakkar
Chakwal
D.G. Khan
Faisalabad
Gujranwala
Gujrat
Hafizabad
Jhang
Jhelum
Kasur
Khanewal
Khushab
Lahore
Layyah
Lodhran
M. B. Din
Mianwali
Multan
Muzaffargarh
Nankana
Narowal
Okara
Pakpattan
R.Y. Khan
Rajanpur
Rawalpindi
Sahiwal
Sargodha
Sheikhupura
Sialkot
T.T Singh
Vehari
0 .05 .1 .15
2005 2010 2015 2020
Year
Proportion of Vehicle Theft Cases
Graphs by District

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