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Unintended Consequences of Lockdowns: COVID-19 and the Shadow Pandemic*

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Abstract

Violence against women is a problem worldwide, with economic costs ranging from 1-4% of global GDP. Using variation in the intensity of government-mandated lockdowns in India, we show that domestic violence complaints increase 0.47 SD in districts with the strictest lockdown rules. We find similarly large increases in cybercrime complaints. Interestingly, rape and sexual assault complaints decrease 0.4 SD during the same period in districts with the strictest lockdowns, consistent with decreased female mobility in public spaces, public transport, and workplaces. Attitudes toward domestic violence play an important role in the reporting and incidence of domestic violence during the lockdown.

JEL: J12, J16, I15, I18, O15

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1 Introduction

Globally, one in three women experience intimate partner violence (IPV), and the economic costs of this violence range from 1% to 4% of global GDP (Devries et al. (2013); García-Moreno et al. (2015); Ribero and Sánchez (2005)). Studies have shown that violence against women has negative impacts on female labor market participation, earnings, mental health, child health, and household consumption.[1] The estimated costs of IPV in the U.S. in terms of medical care and declines in productivity exceed USD 5.8 billion annually (Aizer (2010); Centers for Disease Control (2003)). UN Women has referred to the rise in violence against women (VAW) during the COVID-19 pandemic and accompanying lockdowns as the "Shadow Pandemic" (United Nations Women, 2020). While concerns of rising VAW have largely been based on media reports or surveys that use a pre- versus post-lockdown comparison, little is known about the changes in the magnitudes and types of VAW during the COVID-19 pandemic and lockdowns.

We study this issue in a country that has been ranked the world's most dangerous country for women: India (Thomson Reuters Foundation, Jun 25, 2018). Using a combination of temporal and spatial variation in the government-mandated intensity of lockdowns, we quantify the impacts of lockdown using data from complaints made to the National Commission for Women (NCW) in India. India is a unique setting for this study given the variation in the severity of the measures imposed by the national government in various parts of the country. In addition, the data we use are nationally reported complaints at the district level of various types of violence against women: domestic violence, cybercrimes, rape, and sexual harassment.

Our empirical strategy exploits variation in the Indian government's classification of districts into red, orange, and green zones where red zone districts had the strictest mobility restrictions and green the most lenient. Using district-month level data on complaints, we estimate the impact of lockdowns on VAW. Using a difference-in-differences empirical strategy, we find evidence of a 0.47 SD (131%) increase in domestic violence complaints in May 2020 in districts that saw the strictest lockdown measures (red zone districts) relative to districts that saw the least strict measures (green zone districts). Red zone districts also experienced a 0.70 SD (184%) increase in cybercrime complaints relative to green zone districts in May 2020. While there have been media reports that different forms of on-line

[1] See for example Aizer (2011); Heise (2011); Eswaran and Malhotra (2011); Sabia et al. (2013); Adams et al. (2013); Rawlings and Siddique (2014); World Health Organization (2017);Lewbel and Pendakur (2019), etc.

violence are on the rise including stalking, bullying, sexual harassment, and sex trolling (United Nations Women, 2020), we provide evidence for this through the observed increase in cybercrime complaints. Interestingly, rape and sexual assault complaints fell significantly by 0.39 SD in red zones in May 2020 and sexual harassment by 0.35 SD in April 2020 in red zone districts relative to green zone districts, likely due to decreased mobility in public spaces, public transport, and workplaces. These findings are consistent with research highlighting the magnitude of street harassment women in India face (see Borker (2018)).

We verify the findings using two independent sources of data: first, we document that the lockdown zone categories changed individual's mobility using Google Community Mobility Reports and show that mobility was most restricted in red zones. Second, we verify that the increase in domestic violence-related complaints received by the NCW during the lockdown period is consistent with an increase in Google search activity for domestic violence-related terms using Google Trends data during this same period.

We also show that attitudes toward domestic violence play an important role in the incidence and reporting of domestic violence during the COVID-19 pandemic and lockdowns in India. This is an important lesson for policy makers as we might not be able to decrease violence against women unless we can shift attitudes and social norms around violence. Using data from the National Family Healthy Survey 4 (2015-2016), we show that districts in which a greater proportion of husbands report that beating wives is justified see greater increases in domestic violence complaints received by the NCW in May 2020 in red zone districts relative to green zone districts. On the other hand, districts in which a greater proportion of wives report that a husband beating his wife is justified see fewer domestic violence complaints received by the NCW in May 2020 in red zone districts relative to green zone districts. This is consistent with a decrease in reporting when women believe that domestic violence against wives is justified.

We contribute to a growing literature on the impacts of lockdowns and stay-at-home policies on violence against women during the COVID-19 pandemic (Peterman et al., June 2020b). Boserup et al. (2020) use data from U.S. police departments in four cities and provide evidence of 10%–27% increases in domestic violence during stay-at-home order periods in comparison to prior weeks. Mahmud and Riley (2020) use survey data from rural western Uganda to document an increase in the perceived frequency of intimate partner violence against women during the COVID-19 lockdown in the country. Leslie and Wilson (2020) find evidence of a 10% increase in domestic violence police calls

in fifteen U.S. cities after social distancing began relative to the period before, after accounting for trends during the same period in 2019. Bullinger et al. (2020) find that the stay-at-home order announcement in the city of Chicago increased time spent at home, leading to a decrease in total calls for police service, but a subsequent increase in domestic violence-related calls for police service. Agüero (2020) uses data on the number of phone calls to the national helpline for domestic violence across 25 states in Peru and shows, using Google's mobility data, an increase in domestic violence calls driven by states where the lockdown has been more pronounced. Silverio-Murillo and Balmori de la Miyar (2020) use an event-study design to show that during the lockdown in Mexico City, intimate partner violence calls requesting psychological services increased.

Our study is unique in two ways. First, our identification strategy builds on the pre versus post-lockdown temporal variation used in these studies, but in addition, we exploit government-mandated spatial variation in the intensity of lockdowns, as districts were classified into red, orange, and green zones. This provides quasi-random variation in the lockdown intensity across 577 Indian districts. Second, we consider a broader set of violence and crimes against women, including cybercrime, harassment, rape, and sexual assault. Though domestic violence and cybercrime complaints increase quite a bit, we also find that lockdowns decrease complaints related to sexual harassment and rape, adding to the nascent literature on female mobility and safety in low-income countries (see for example, Borker (2018); Cheema et al. (2020); Field and Vyborny (2019)). This is an important finding because if we were to simply estimate the impact of lockdowns on violence against women, we might find null results due to the increase in domestic violence and cybercrimes and the decrease in rape and sexual harassment, masking important heterogeneities. Our results suggest that women face a portfolio of danger, and some policies can improve certain types of violence outcomes while exacerbating others.

The rest of the paper is organized as follows. Section 2 describes the lockdowns in the country and the various datasets that we use in the study while section 3 displays some of the descriptive findings. Section 4 outlines the difference-in-differences empirical strategy and section 5 presents the key results. We explore the role of attitudes toward domestic violence in section 6 and conclude in section 7.

2 Lockdowns and Data

2.1 Lockdowns: Red, Orange, and Green Zone Classifications

India imposed a nationwide lockdown to contain the spread of COVID-19 in the country on March 25, 2020. While the initial lockdown was announced for a 21-day period, on April 14, Indian Prime Minister Modi announced that the nationwide lockdown would be extended owing to the rising number of cases in the country. When announcing the extension of the lockdown, Indian media reported that "the Union ministry of health and family welfare has classified [the] country's districts in three zones—Red, Orange and Green—based on the severity of [the COVID-19] outbreak in those areas" (Times of India, April 16, 2020). The red, orange, and green zone classifications were widely reported in the Indian media, including in the Business Today (April 13, 2020) and The Economic Times (April 14, 2020b). On May 1, 2020, India's Ministry of Home Affairs officially issued an order that divided all districts into red, orange, and green zones under "Lockdown 3.0", a further two-week extension of the nationwide lockdown. However, since the zonal announcements were made in April, we consider April and May as the "treatment" months.

The red, orange and green zone classification was based on factors such as the number of COVID-19 cases and the doubling rate of COVID-19 cases (India Today, May 1, 2020). Table C.1 presents summary statistics of various district characteristics by zone color categories. Red zone districts have a larger population, more cumulative COVID-19 cases, and more cases per capita as of April 30. Red zone districts also experienced the greatest number of new cases and new cases per capita in the last two weeks of April. These districts had the fastest doubling rate of COVID-19 cases, with cases doubling every 12 days as of April 30. In contrast, orange and green zone districts were less populous and saw fewer COVID-19 cases with longer doubling times. Out of 639 districts, 120 districts were classified into the red zone, 257 into the orange zone, and 262 into the green zone. Figure B.1 shows a heat map of the spatial variation of the red, orange and green districts.

Districts in the red zone saw the strictest lockdown measures, with rickshaws, taxis and cabs, public transport, barber shops, spas, and salons remaining shut. Four wheelers with a driver and two passengers as well as two wheelers without pillion riders were allowed. Offices were allowed to open with a third of staff. E-commerce was allowed for essential services as were all standalone shops, including liquor stores. Orange and green zone districts saw fewer restrictions. In addition to the activities allowed in red

zones, orange zones allowed the operation of taxis and cab aggregators, as well as the inter-district movement of individuals and vehicles for permitted activities. In addition to the activities allowed in orange zones, buses were allowed to operate with up to 50% seating capacity and bus depots with 50% capacity in green zones (Hindustan Times, May 2, 2020a).

2.2 Data

We combine a number of administrative and survey datasets for this study. We use Google data and National Family Health Survey (NFHS) data from 2015–2016 (see Appendix A for more details on the Google and NFHS data used). The primary dataset we employ in this paper is public-access administrative records on district-month level complaints received by the National Commission for Women (NCW) across India over the period January 2018–May 2020.[2]

The NCW is the national level organization and statutory body of the Government of India with the mandate of protecting and promoting the interests of women. NCW data is disaggregated by categories of complaints, which we broadly group into (i) domestic violence, (ii) cybercrime, (iii) harassment, and (iv) rape and sexual assault complaints. In 2020, complaints of these types made up more than 90% of total complaints received by the NCW. Other categories include dowry-related complaints, police apathy against women, as well as trafficking and prostitution of women. NCW public-access administrative records are seen as a reliable source of data on VAW in the country and have been used by academics and media outlets to understand trends in VAW during the COVID-19 pandemic (see, for example, Deshpande (April 15, 2020) and The Hindu (May 4, 2020)). Appendix A provides more details on the categorization of complaints.

There are several means by which individuals can report complaints to the NCW. Individuals can register complaints using an online complaints registration portal or email the NCW.[3] In addition, the NCW runs a helpline for individuals to call in to file complaints, and set up a Whatsapp service in April 2020 to provide an additional mode of communication to the NCW (The Economic Times, April 10, 2020a). Individuals can also send a written complaint through mail or by hand. We further address reporting of complaints in Section 5.1 when we assess the robustness of our findings.

We obtain district-month level data on the total number of complaints received by the

[2] NCW data is available for 577 out of 640 districts since not all districts reported to the NCW over the period January 2018–May 2020 (2011 Census district identifiers used).

[3] The online portal is available at http://ncwapps.nic.in/onlinecomplaintsv2/frmPubRegistration.aspx.

NCW, in addition to type-month level complaints received. To disaggregate the data to the district-month-type level, we first calculate the proportion of complaints of each type from the type-month level data and apply these proportions to the district-month level data. Our assumption that the month-wise distribution of complaints does not differ by district within the given month is conservative and may lead us to underestimate the impacts that we estimate. This is possible if the composition of complaints change in a given month across districts such that districts facing stricter lockdown measures see a shift toward domestic violence and cybercrime complaints (which is what happened). Appendix A provides more details on this assumption and its implications.

3 Descriptive Results

Lockdown. The severity of lockdown measures by zone color categories affects mobility mostly strictly in April and May 2020 in red zone districts, as expected by the policy. Using data from the Google Community Mobility Reports, Figures B.2, B.3, and B.4 present the relationship between mobility and the fraction of a given state's population in March, April, and May 2020 in red, orange, and green zone districts, respectively. Mobility is defined at the state level in the Google Community Mobility Reports as the percentage change in the number of visitors to places of interest relative to the baseline 5-week period from January 3–February 6, 2020. The state mean is taken over the percentage change in the number of visitors (who have opted-in to share their Location History for their Google Account) to places of interest broadly categorized under "Grocery & Pharmacy", "Parks", "Transit stations", "Retail & recreation", and "Workplaces" for each month to create the Google Mobility Index.

Several findings in these figures are noteworthy. First, although India officially goes into national lockdown in late March 2020, mobility only decreases around 20% during this month, and the decrease is consistent across red, orange, and green zones (as expected since no zone announcements have been made yet).

Second, we observe the strongest impacts of the lockdown policy in April and May 2020. The middle and bottom panels of Figure B.2 show that there is a clear decline in mobility with an increase in the fraction of the state's population in red zone districts (and corresponding decrease in the fraction of orange or green zone districts) in April and May 2020. In May 2020, states with a small fraction of districts in red zones saw mobility declines of 30% relative to the baseline period, while states for which all districts were classified as red zone districts in a state saw mobility declines in excess of 70% relative to the baseline period from January 3–February 6, 2020. The negative correlation between

mobility and the fraction of state population in red zone districts is largest in May 2020 (-0.70), followed by April 2020 (-0.65), and March 2020 (-0.61).

Third, Figure B.4 shows that states with a larger fraction of population in green zone districts (and hence smaller fraction of orange or red zone districts) saw smaller declines in mobility relative to the baseline period, consistent with the monotonic decline in the severity of mobility restrictions. In May 2020, states with no districts in green zones saw average mobility declines in excess of 70%, while states where all districts were in green zones saw average mobility declines by only 30% (which is similar to the March levels of mobility).

Finally, Figure B.3 shows that there is no clear relationship between an increase in the fraction of a given state's population in orange zone districts and mobility in April or May 2020. This is not surprising as an increase in the fraction of orange zone districts in a given state could arise due to a decrease in either the fraction of red zone districts or green zone districts (i.e. a non-montonic change in severity of mobility restrictions).

Overall, Figures B.2, B.3, and B.4 show that India went into three distinct levels of lockdown measures following the imposition of lockdowns in the country, with the strictest measures in April and May 2020 in red zone districts, consistent with the policy. We exploit the classification of districts and measures by red, orange, and green zones in our empirical strategy, and show the results by month.

Violence Against Women. Figure 1 presents the mean monthly number of complaints received by the NCW from October 2019–May 2020 by district lockdown zone color categories. We observe a large increase in the number of domestic violence complaints received by the NCW from red zone districts from April–May 2020. In comparison, orange and green zone districts show smaller increases in the number of domestic violence complaints. A similar pattern is observed for cybercrime complaints across red, orange, and green zones.

Figure 1 shows the number of rape and sexual assault complaints also falls significantly in red zone districts in both April and May 2020, while orange and green zone districts see much smaller declines. The level of rape and sexual assault complaints remains low in May 2020 across all zone color categories. These declines are consistent with the decrease in commuting via public transit and overall reduced mobility outside the home.

The number of harassment complaints fall sharply in April and increase again in May 2020. The sharp fall in April 2020 is consistent with the decrease in complaints arising

from harassment at the workplace since women stopped going to work in districts with strict lockdown measures. The decrease is also consistent with the decrease in commuting via public transit, another significant source of harassment complaints. However, harassment complaint numbers re-bound in May 2020 to regular levels.

The large positive deviations in the mean number of domestic violence complaints in April and May 2020 in Figure 1 align with Google searches for domestic violence-related terms in these months. Figure 2 presents the relative search interest for the terms "domestic abuse" and "domestic violence helpline" in India in 2020. We note a significant increase in search activity for domestic violence-related terms in the weeks after India imposed the nationwide lockdown on March 25. Domestic violence-related searches may not reflect actual complaints made to the NCW due to difficulties in reporting owing to (i) the shutdown of postal and phone-based modes of communication during the lockdown and (ii) the inability to file a complaint while remaining in close proximity with an abuser during the lockdown. However, both the NCW and Google Trends datasets highlight an increase in domestic violence-related searches and complaints made in the months after the lockdowns in India.

4 Empirical Strategy

We employ a difference-in-differences empirical strategy to study the differential impact of complaints in districts most affected by the lockdown measures relative to districts least affected by the measures. Using the quasi-random government classification of districts into red, orange, and green zones, we exploit the panel structure of the district-month-year level data and run the following specification for district d in month m of year y:

$$Y_{dmy} = \alpha + \gamma_d + \lambda_{my} + \sum_{i=1}^{8} \beta_{i,r}\theta_i * RedZone_d + \sum_{i=1}^{8} \beta_{i,o}\theta_i * OrangeZone_d + \boldsymbol{X_{dy}}\delta + \varepsilon_{dmy} \tag{1}$$

where Y_{dmy} refers to the number of complaints received by the NCW in district d in month m of year y, γ_d are district fixed effects, and λ_{my} are month-year fixed effects. The district fixed effects capture time-invariant characteristics of districts including level differences across districts in attitudes toward domestic violence and reporting of violence against women. Month-year fixed effects flexibly control for country-wide trends in complaints made to the NCW over time. The combination of fixed effects used allows us to use variation within a given month and year across districts, in addition to variation within a

given district over time. $\boldsymbol{X_{dy}}$ is district-year level population.

$RedZone_d$ and $OrangeZone_d$ are dummy variables equal to 1 for districts in red and orange zones respectively, and 0 otherwise. θ_i refer to month dummies corresponding to the months October 2019 ($i = 1$) to May 2020 ($i = 8$). $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ are the coefficients of interest. The coefficients $\{\beta_{i,r}\}$ capture the impact of districts classified into the red zone relative to the impact of districts classified into the green zone, in month i relative to the monthly average from January 2018–September 2019 (the omitted months). Similarly, the set of coefficients $\{\beta_{i,o}\}$ capture the impact of districts classified into the orange zone relative to the impact of districts classified into the green zone, in month i relative to the monthly average from January 2018–September 2019. The district fixed effects absorb the time-invariant differences between red (orange) and green zone districts, and the estimated coefficients are relative to the average difference between red (orange) and green zone districts over the months January 2018–September 2019 (the omitted months). We also present results from a fully flexible specification that only omits May 2018 instead of the period January 2018–September 2019. All standard errors are clustered by district.

A key identification assumption for the differences-in-differences strategy is that absent the lockdowns, complaints in red, orange, and green zone districts should have evolved similarly over time. Our empirical strategy allows us to assess the validity of this assumption by studying the differential red-versus-green and orange-versus-green zone impacts on complaints before the start of the lockdowns from October 2019–February 2020. The differential impacts in these pre-lockdown months should be close to zero if the parallel trends assumption holds in this setting.

5 Results

Panel A of Table 1 reports the results from estimating equation (1) which combines temporal variation in the lockdowns (across pre- and post-lockdown announcement months) with spatial variation in the intensity of lockdowns across India (across red, orange, and green zone districts). Columns (1)–(4) present the coefficient point estimates for the differential impact of zone categories on the number of complaints received by the NCW for domestic violence, cybercrime, harassment, and rape and sexual assault complaints, respectively.[4] The combination of interaction terms, fixed effects, and district-year level population controls explain 73%–79% of variation in the number of complaints received

[4] Table C.3 presents the estimates in SD units, with the dependent variables transformed to z-scores. We standardize the number of complaints by subtracting the mean number of complaints (across all districts and months) and dividing by the SD of the number of complaints so as to create a z-score.

by the NCW (the adjusted R^2 ranges from 0.728 to 0.793). We also report p-values testing whether the difference between the red and orange zone effects is significantly different from zero in April and May 2020.

Consistent with the descriptive evidence in Figure 1, we observe large and statistically significant increases in the number of domestic violence and cybercrime complaints in red zone districts relative to green zone districts in May 2020. The increase in the number of domestic violence complaints by 0.562 on a base of 0.43 complaints across India represents a 131% (0.47 SD) increase. Red zone districts had a 184% (0.70 SD) increase in cybercrime complaints relative to green zone districts in May 2020. Orange zone districts saw a smaller 31% (0.12 SD) increase in cybercrime complaints relative to green zone districts.

Table 1 also displays statistically significant decreases in harassment, rape, and sexual assault complaints in red and orange zone districts relative to green zone districts in the months during and after the lockdowns. Column (3) of Table 1 shows a significant decrease in harassment complaints in April 2020 in red and orange zone districts relative to green zone districts by 0.35 SD. Column (4) also shows significant decreases in the number of rape and sexual assault complaints in these districts in April and May 2020 by 0.4–0.6 SD.

In Panel B of Table 1, we re-estimate equation (1) more flexibly, omitting only May 2018 instead of the period January 2018–September 2019. These results are similar in magnitude and statistical significance to the results presented in Panel A of Table 1.

Figure 3 presents event study plots of the differential impact of red versus green zone districts in a given month relative to the monthly mean from January 2018–September 2019, as well as analogous plots for orange versus green zone districts. All standard errors are clustered by district and 95% confidence intervals are shown. With a few exceptions,[5] we see overall that the coefficient point estimates for the months before the lockdown was imposed are close to zero, suggesting that the parallel trends identification assumption is likely to hold in this setting.

5.1 Robustness

We re-estimate Table 1 a few additional ways to test the robustness of the main results. We re-estimate equation (1) using per capita measures of the dependent variables. Despite

[5] Harassment complaints are higher in October 2019 in red and orange districts, but not in the five months prior to lockdown. Cybercrime complaints in red zone districts are lower than green zone districts in January and February 2020.

some dilution of the signal and increase in standard errors, we find qualitatively similar results in Table C.4. Second, we re-estimate the regressions in Table 1 and include state x month fixed effects so as to compare impacts across districts within the same state in the same month. The results in Table C.5 show that our results are robust to the inclusion of these fixed effects. Third, to address potential concerns relating to the distribution of red, orange, and green zone districts across India—in particular, the concentration of green zones in East and Northeast India—we re-estimate the regressions in Table 1 and include region x month x year fixed effects. We use the division of India into six regions (Northern, Northeastern, Central, Eastern, Western, and Southern) by zonal councils. These fixed effects ensure that we are comparing impacts across districts within the same region in the same month and year. The results overall are qualitatively robust to the inclusion of these fixed effects (results available upon request).

Underreporting of VAW is almost always a potential concern (see, for example, Ellsberg et al. (2001)). We acknowledge that there may have been potential changes in reporting during the lockdowns – in fact, Poblete-Cazenave (2020) finds evidence of a 60% reduction in reported crimes to the police as a result of the lockdowns in Bihar, India. Importantly, however, such changes are likely to have taken place at the national level and not differentially by red, orange, or green zones. If anything, it probably became more difficult for women to report abuse due to interruptions to postal and phone-based modes of communication during the lockdown. If it were the case that red zone districts saw larger disruptions to these modes of reporting, we would under-estimate the increases in domestic violence and cybercrime complaints and over-estimate the decrease in rape and sexual assault in our analysis. We also note that the differential directions of impacts for domestic violence and cybercrime complaints relative to rape and sexual assault complaints suggest that the impacts are unlikely to be driven by measurement error in the data.

We cannot rule out the possibility of some displacement of rape and sexual assault from public spaces outside homes to rape by family members inside homes. While marital rape is vastly underreported in India since it is not considered a crime, it is likely to be increasing during the lockdown period. In fact, if marital rape is reported it generally gets reported as domestic violence (The Hindu, June 30, 2016), and we are finding large increases in domestic violence during the lockdown period. Unfortunately we do not have the data to tease out how much of the increase in domestic violence is physical vs. psychological vs. sexual abuse. However, using NFHS data we know that of the 33

percent of women who experience domestic violence, approximately 20 percent report sexual violence as compared to 41 percent psychological and 89 percent physical violence (the percents do not sum to 100 as some women experience more than one type of violence). Therefore, while the incidence of marital rape might be increasing it is unlikely to account for the entire increase in domestic violence we observe during the lockdown.

6 Exploring the Role of Attitudes Toward Violence Against Women

We now explore the role of attitudes toward domestic violence by husbands and wives in the increase in domestic violence complaints received by the NCW during lockdown in India. These attitudes are measured using National Family Health Survey data from 2015–2016, several years before the COVID-19 pandemic. 49% of women believe that a husband is justified in beating his wife, while 42% of men report that they are justified in beating their wife.

We re-estimate equation (1) and include an additional interaction term with "husband believes it is justified to beat wife" and "wife believes it is justified for husband to beat her." This is basically a triple-difference empirical strategy that interacts the month and zone dummies with the district mean of the proportion of husbands and wives who reported in the NFHS-4 survey that a husband is justified in hitting or beating his wife.[6] The coefficients from this regression capture the differential impact of districts classified into the red zone relative to the impact of districts classified into the green zone (or the orange zone relative to the green zone), in month i relative to the monthly average from January 2018–September 2019, for districts where a greater proportion of husbands report that hitting or beating his wife is justified (or where a greater proportion of wives report that hitting or beating by the husband is justified).

Figure 4 presents the coefficients from this regression where the top panel of Figure 4 plots the triple-interaction sets of coefficients for husbands and the bottom panel for wives. Districts where a greater proportion of husbands report that hitting or beating his wife is justified experience greater increases in domestic violence complaints received by the NCW in April and May 2020 in red zone districts relative to green zone districts, although the point estimates are not statistically significant at conventional levels. Districts in which a greater proportion of husbands report that hitting or beating his wife is justified experience greater increases in domestic violence complaints received by the NCW in April and May 2020 in orange zone districts relative to green zone districts (p-values =

[6] The estimating equation and results from this regression are presented in Table C.6 in the appendix.

0.03 and 0.13 for April and May 2020, respectively). The regression controls for the role of domestic violence attitudes by wives.

In the bottom panel of Figure 4 we observe that districts in which a greater proportion of wives report that a husband hitting or beating his wife is justified see fewer domestic violence complaints received by the NCW in May 2020 in red zone districts relative to green zone districts (p-value = 0.03). A similar pattern of results is seen for orange zone districts relative to green zone districts, although the magnitudes of the point estimates are smaller and not statistically significant at conventional levels. These results control for the attitudes of husbands toward domestic violence.

Overall, these results highlight the role of attitudes toward domestic violence in the incidence and reporting of domestic violence complaints to the NCW. Districts in which a greater proportion of husbands view domestic violence as justified experience increases in complaints during the lockdown, while districts in which a greater proportion of wives view domestic violence as justified experience decreases in complaints during the lockdown relative to their comparison groups.

7 Discussion and Conclusion

We establish an increase in domestic violence and cybercrime during the COVID-19 lockdowns in India, with increases most concentrated in districts that saw the strictest lockdown measures. In addition, we show that rape and sexual assault complaints fell, consistent with decreased mobility in public spaces, public transport, and workplaces. Districts in which a greater proportion of husbands viewed domestic violence as justified saw larger increases in domestic violence complaints during the lockdown.

We acknowledge a large number of factors that could be mechanisms that explain our results. For example, Peterman et al. (2020a) document nine possible mechanisms through which increases in domestic violence could occur during the COVID-19 pandemic. While an analysis of the relative importance of possible channels is beyond the scope of the paper, we note that issues related to (i) economic insecurity and poverty-related stress, as well as (ii) quarantines and social isolation were the top two channels in the analysis of Peterman et al. (2020a). Such channels are likely to play an important role in our setting. Importantly, lockdowns increase women's day-to-day exposure to potential perpetrators of violence. Recent evidence from Bangladesh shows that in households where men were offered interest-free loans to facilitate migration, migration reduced female exposure to physical and/or sexual intimate partner violence over a six-month period by 3.5 percent (Mobarak and Ramos, 2019).

Our findings that attitudes toward domestic violence play an important role in the incidence and reporting of domestic violence during the lockdowns highlight that additional interventions are needed to reverse the trends in violence against women. Behavior Change Communication (BCC) interventions have been shown to be effective in reducing physical violence in Bangladesh (Roy et al., 2019). Similarly, Shah and Muz (2019) find that a soccer intervention to empower and change social norms targeting boys and young men decreases adolescent female reports of intimate partner violence. Dhar et al. (2018) also find that a school-based intervention in India that engaged adolescents in classroom discussions about gender equality saw program participants reporting more gender-equitable behavior. Social norms and attitudes around violence are important drivers of both violent behavior and reporting.

A further area of research is whether these are intensive margin or extensive margin changes we are observing in violence against women. Some anecdotal evidence suggests we are observing an increase in the intensity of domestic violence (Al Jazeera News, April 17, 2020), however, it will be hard to answer these questions until we are past the pandemic. While lockdowns may be an effective way of controlling disease spread, they also come with costs. Our study highlights that the lockdowns also caused a "Shadow Pandemic" in which violence against women increased at home and on online platforms. However, a silver lining is the temporary decrease in rape and sexual harassment, highlighting the heterogeneity of impacts of one policy on various outcomes related to violence against women.

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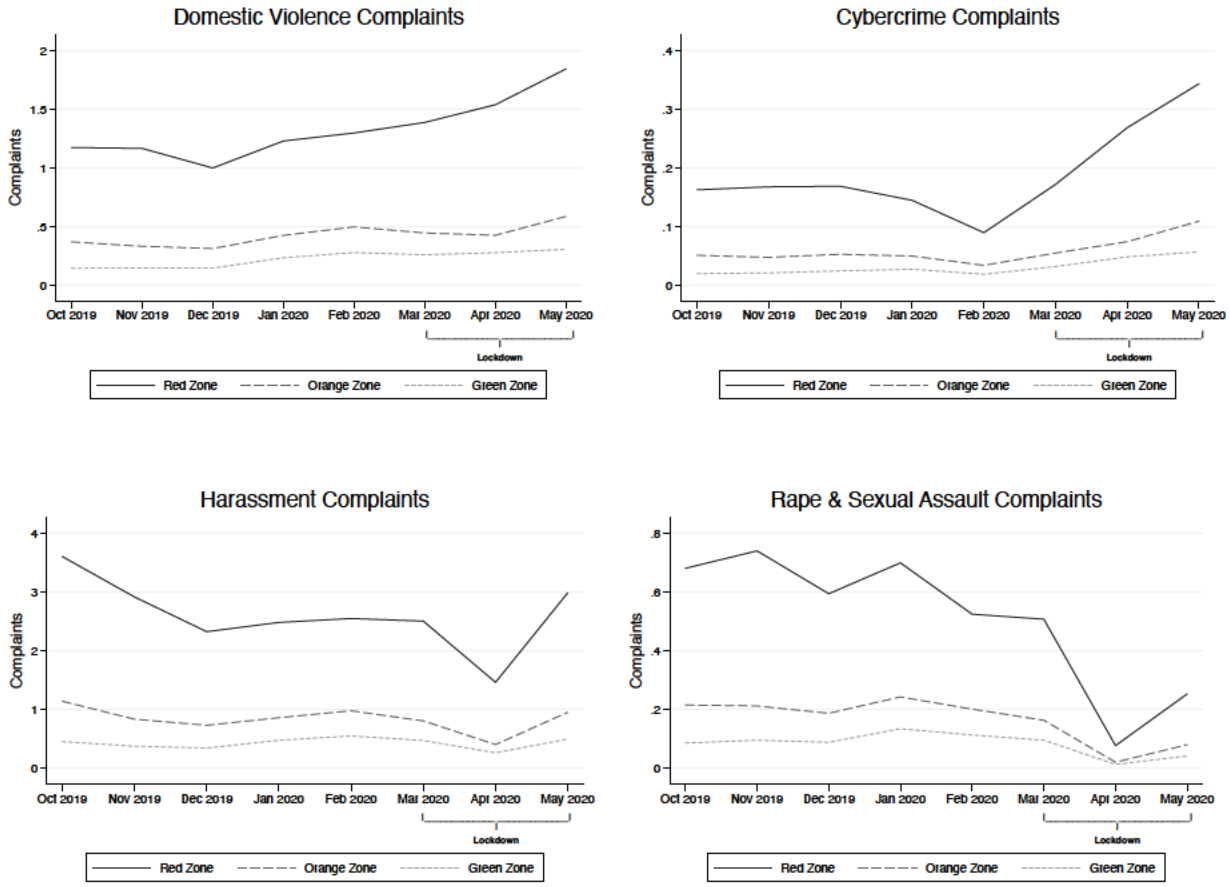
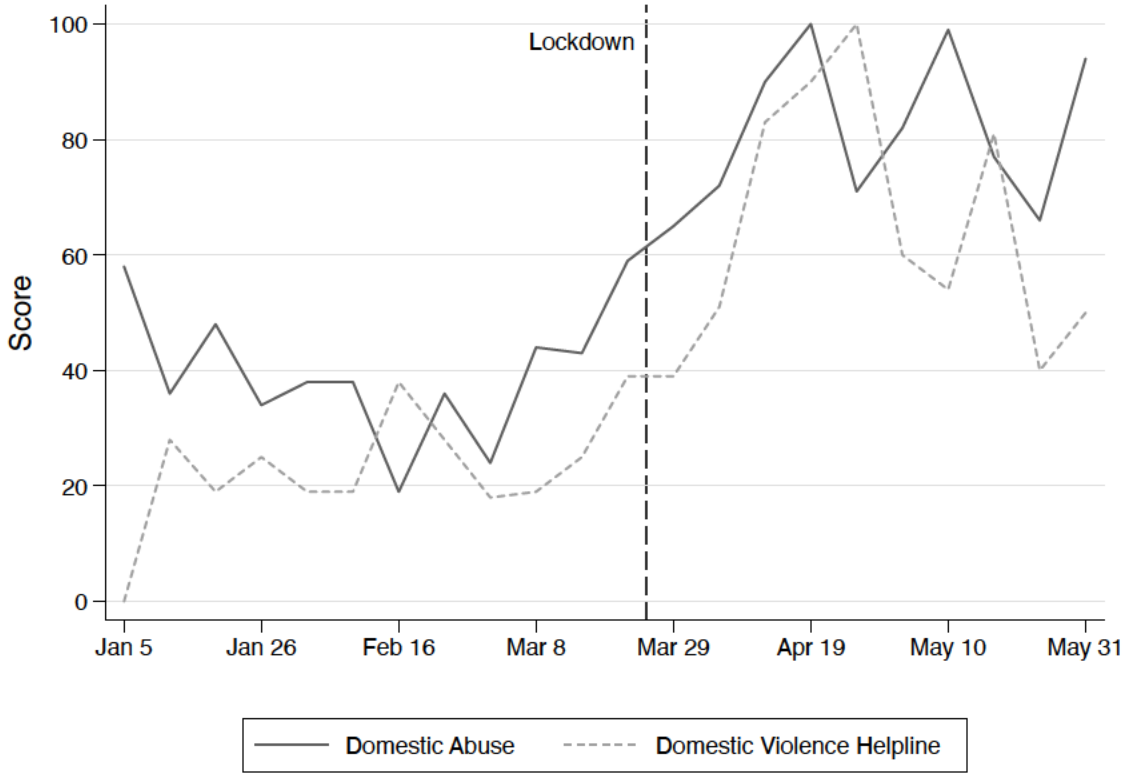
Figure 1: Complaints Received by the National Commission for Women



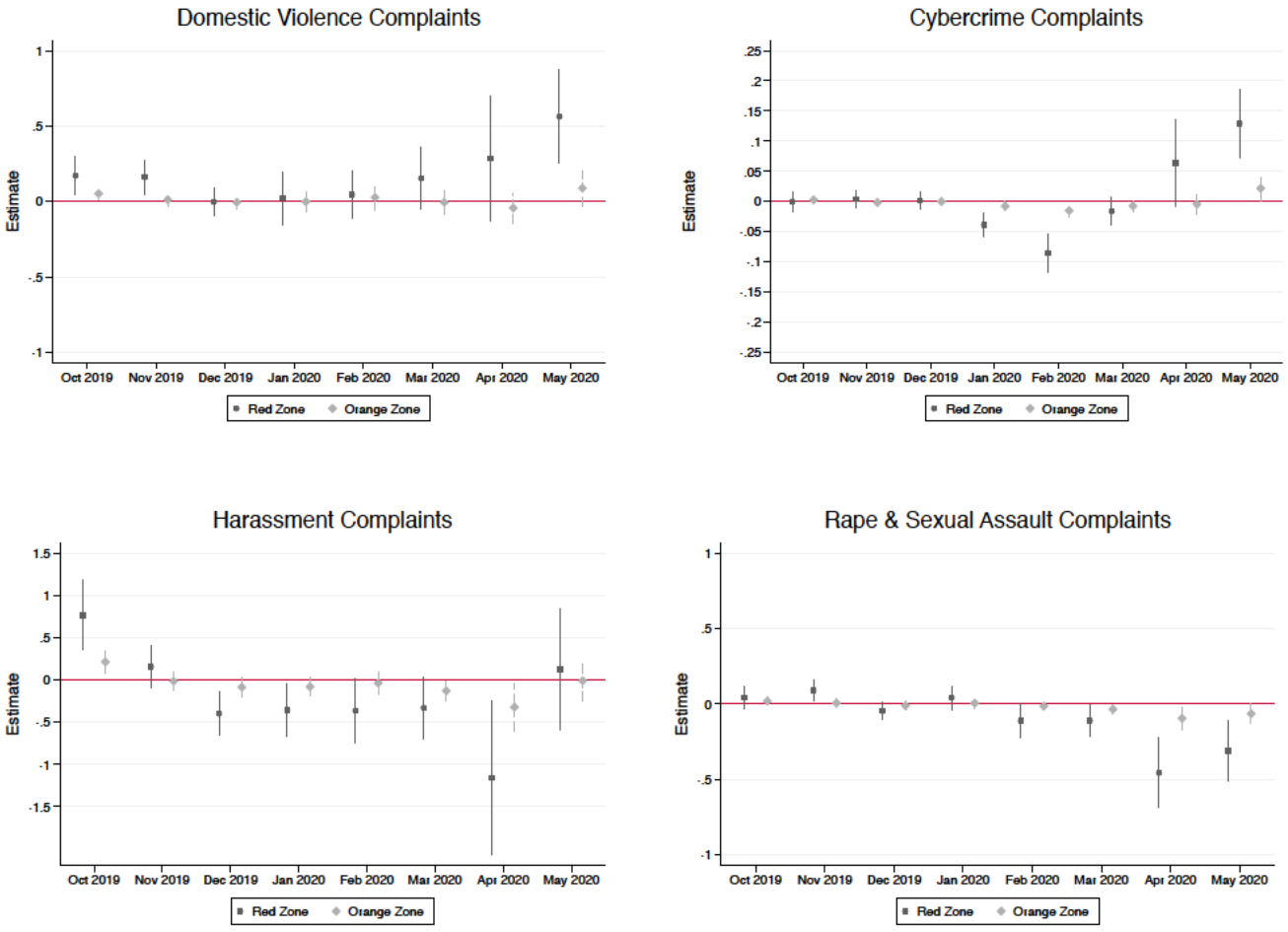
Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: The figure plots the district mean number of complaints received by the NCW from October 2019–May 2020 by lockdown zone color category (red, orange, and green). India imposed a nationwide lockdown on March 25, 2020.

Figure 2: Google Searches in India for Domestic Violence-Related Terms in 2020



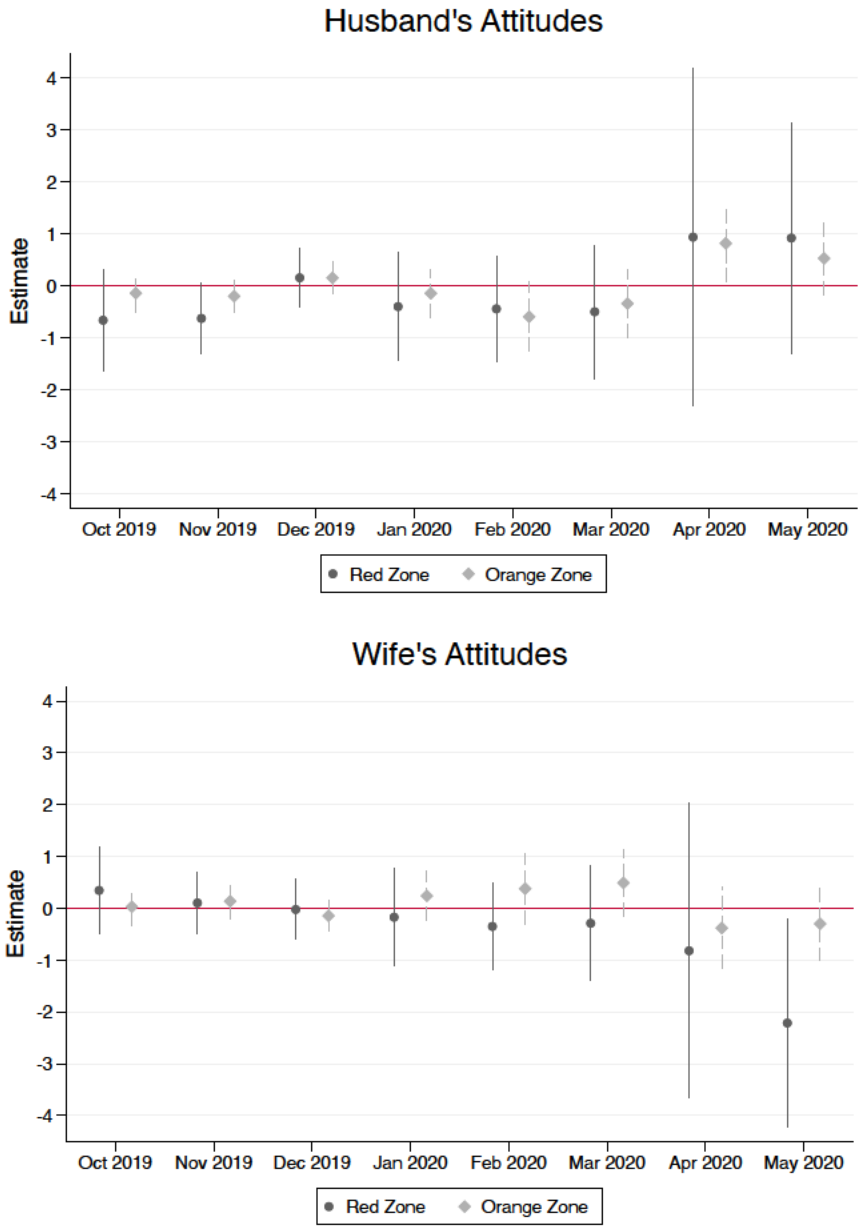
Source: Google Trends (accessed June 6, 2020).
Notes: The scores represent search interest relative to the highest point on the chart for India on the given date for each search term. A value of 100 is the peak popularity for the search term. A value of 50 means that the search term is half as popular. A score of 0 means that there was not enough data for this search term. India imposed a nationwide lockdown on March 25, 2020.

Figure 3: Event Study Plots of Differential Number of Complaints Received by Zone



Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020). Notes: The figure plots coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1). The black circles depict $\{\beta_{i,r}\}$, the differential impact of red versus green zone districts in month i relative to the monthly mean from January 2018–September 2019 (the omitted months). The gray diamonds depict $\{\beta_{i,o}\}$, the differential impact of orange versus green zone districts in month i relative to the monthly mean from January 2018–September 2019. 95% confidence intervals are shown.

Figure 4: The Role of Attitudes Toward Domestic Violence



Sources: National Family Health Survey 4 (2015–2016) and Complaint & Investigation Cell, National Commission for Women (NCW), India (accessed June 1, 2020).
Notes: The figure in the top panel plots coefficients $\{\beta_{i,rh}\}$ and $\{\beta_{i,oh}\}$ from the estimated equation in Table C.6. The black circles depict $\{\beta_{i,rh}\}$, while the grey diamonds depict $\{\beta_{i,oh}\}$. The figure in the bottom panel plots coefficients $\{\beta_{i,rw}\}$ and $\{\beta_{i,ow}\}$ of the estimated equation in Table C.6. The black circles depict $\{\beta_{i,rw}\}$ and the gray diamonds depict $\{\beta_{i,ow}\}$. 95% confidence intervals are shown.

Table 1: Impact of Zonal Classification on Number of Complaints

	(1) Domestic Violence	(2) Cybercrime	(3) Harassment	(4) Rape & Sexual Assault
Panel A: Main Specification				
Red Zone ∗ May 2020	0.562***	0.129***	0.126	-0.310***
	(0.157)	(0.0287)	(0.365)	(0.104)
Red Zone ∗ Apr 2020	0.286	0.0635*	-1.159**	-0.457***
	(0.212)	(0.0362)	(0.464)	(0.118)
Orange Zone ∗ May 2020	0.0885	0.0217**	-0.00900	-0.0635*
	(0.0601)	(0.0109)	(0.122)	(0.0330)
Orange Zone ∗ Apr 2020	-0.0436	-0.00458	-0.321**	-0.0945**
	(0.0510)	(0.00842)	(0.143)	(0.0384)
Red Zone - Orange Zone (May 2020)	0.474***	0.108***	0.135	-0.246**
p-value	[0.002]	[0.000]	[0.725]	[0.028]
Red Zone - Orange Zone (Apr 2020)	0.330	0.068*	-0.838*	-0.362***
p-value	[0.118]	[0.062]	[0.087]	[0.004]
Adjusted R^2	0.768	0.793	0.748	0.728
District FEs	✓	✓	✓	✓
Month-Year FEs	✓	✓	✓	✓
Dependent Variable Mean	0.43	0.07	1.15	0.26
Observations	15,208	15,208	15,208	15,208
Panel B: Flexible Form				
Red Zone ∗ May 2020	0.612***	0.130***	-0.750	-0.466***
	(0.173)	(0.0319)	(0.636)	(0.165)
Red Zone ∗ Apr 2020	0.336	0.0637	-2.035***	-0.613***
	(0.220)	(0.0391)	(0.747)	(0.178)
Orange Zone ∗ May 2020	0.102	0.0221*	-0.174	-0.0917*
	(0.0668)	(0.0121)	(0.208)	(0.0514)
Orange Zone ∗ April 2020	-0.0300	-0.00423	-0.487**	-0.123**
	(0.0531)	(0.00920)	(0.233)	(0.0561)
Red Zone - Orange Zone (May 2020)	0.510***	0.108***	-0.576	-0.374**
p-value	[0.002]	[0.001]	[0.386]	[0.032]
Red Zone - Orange Zone (April 2020)	0.366*	0.068*	-1.548**	-0.491***
p-value	[0.097]	[0.086]	[0.048]	[0.009]
Adjusted R^2	0.774	0.797	0.756	0.737
District FEs	✓	✓	✓	✓
Month-Year FEs	✓	✓	✓	✓
Dependent Variable Mean	0.43	0.07	1.15	0.26
Observations	15,208	15,208	15,208	15,208

Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: The sample consists of district-month level number of complaints from January 2018–May 2020. Panel A presents coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1) for April and May 2020. Panel B reports coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1) for April and May 2020, but omitting May 2018, instead of January 2018 - September 2019. All regressions include district fixed effects and month-year fixed effects, as well as district-year level population controls. Standard errors are clustered by district and are shown in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Online Appendix

A Data Appendix

NCW data. Cybercrimes include online abuse, indecent exposure, unsolicited obscene pictures, threats, ransom demands, and online blackmail (Hindustan Times, May 3, 2020b). Harassment complaints include sexual harassment, sexual harassment at the workplace, stalking and voyeurism, molestation, and complaints related to the right to live with dignity. Rape and sexual assault complaints includes sexual assault, rape, and attempt to rape. Notably, marital rape or forced sex by a husband is not a criminal offense under the Indian Penal Code, unless the wife is below the age of 15. More details on the processing and categorization of complaints received by the NCW are available at http://ncw.nic.in/sites/default/files/SOPSnICell06112019.pdf.

For an illustration of our disaggregation of the data, consider a two-type two-district example: say that across India, there were 300 complaints in April 2020, of which 150 were domestic violence complaints. Chennai and Delhi had 100 and 200 total complaints, respectively. The proportion of domestic violence complaints across India in April 2020 = 0.5. Thus, we estimate that there were 50 and 100 domestic violence complaints from Chennai and Delhi, respectively. If red zone districts receive a greater proportion of domestic violence and cybercrime complaints during the lockdown months and green zone districts receive a smaller proportion of such complaints, we would underestimate the difference in these types of complaints between red and green zone districts by assuming that the month-wise distribution of complaints does not differ by district within the given month.

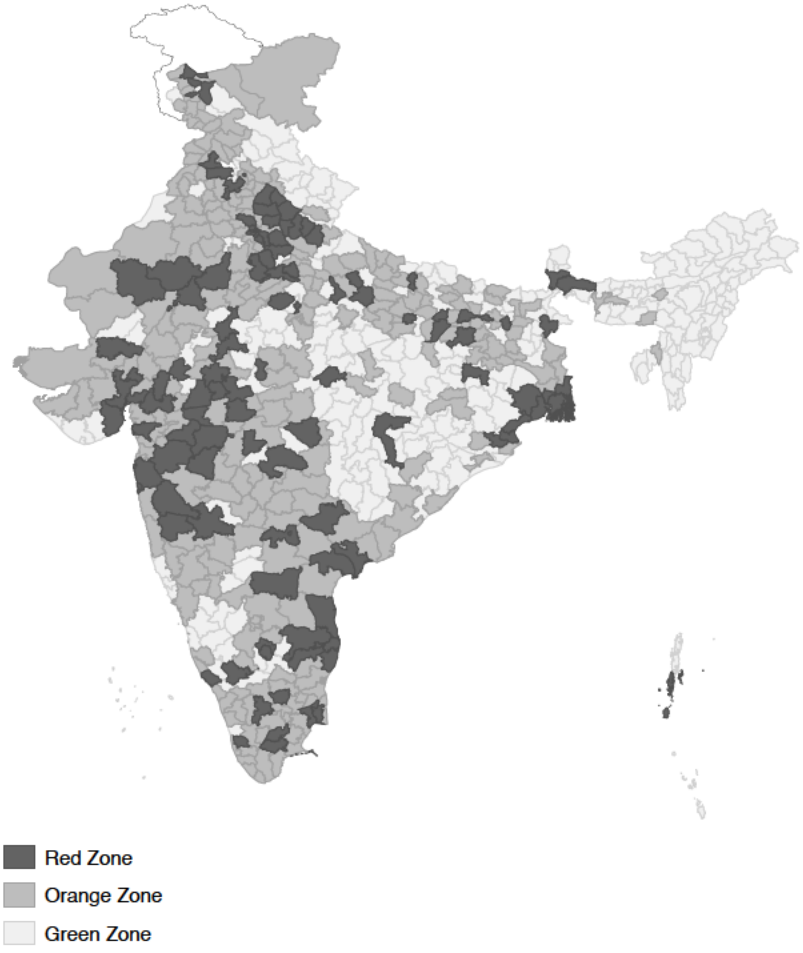
Google data. To explore spatial variation in the intensity of lockdown measures, we combine the NCW data with district-wise data on lockdown zone categories as issued by the Ministry of Home Affairs, India. We assess the effect of these lockdown zone measures on mobility of individuals using state-week level data from Google Community Mobility Reports. We also compare trends in the NCW data with trends in the relative search interest for domestic violence-related terms using Google Trends data.

NFHS data. We explore the role of attitudes toward domestic violence in explaining the changes in domestic violence complaints during lockdown across zone categories using the large and nationally representative National Family Health Survey 4 (2015 - 2016), based on the Demographic Health Surveys (IIPS Mumbai, India, 2017). We use self-reported responses to questions on attitudes toward domestic violence posed sepa-

rately to husbands and wives. The survey question asks whether a husband is justified in hitting or beating his wife in a number of situations, including neglect of the house or children, improper cooking, disrepect for in-laws, and refusal to have sex. We average and aggregate individual-level responses separately across 122,351 women and 112,122 men to the district level using survey weights to obtain district attitudes toward domestic violence.

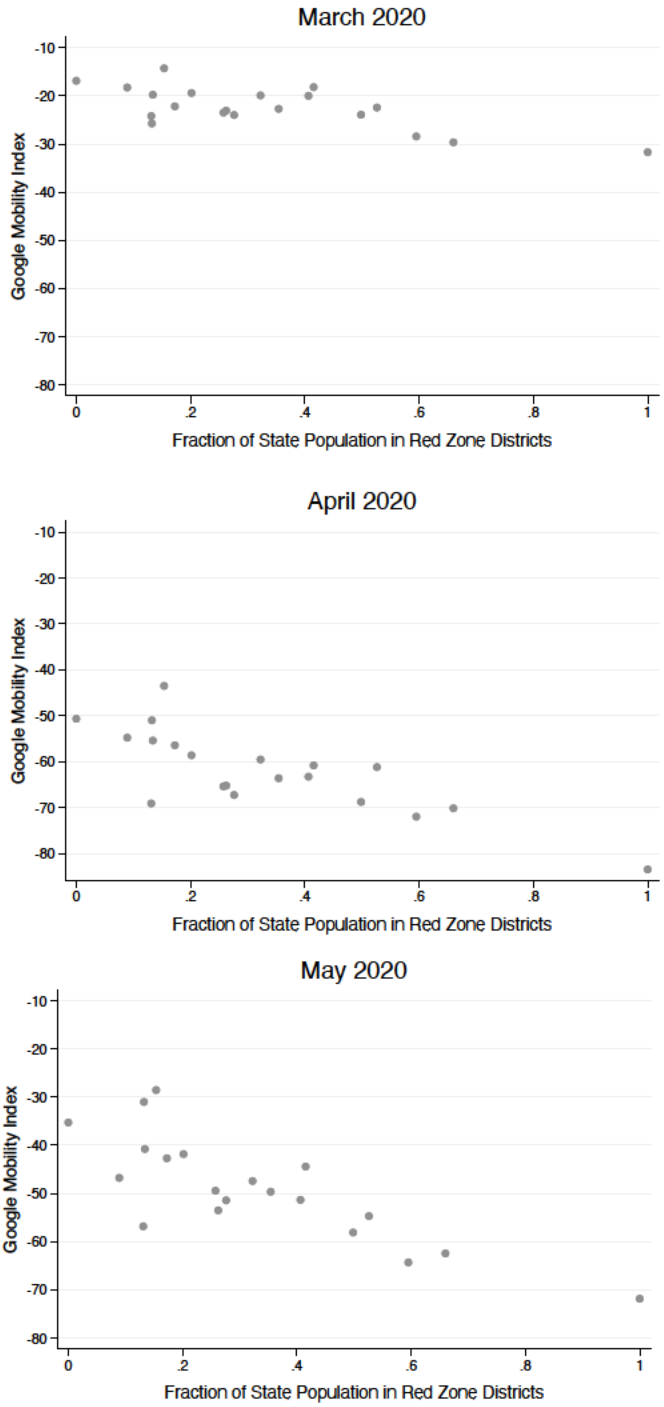
B Figures

Figure B.1: Spatial Distribution of Red, Orange & Green Lockdown Districts



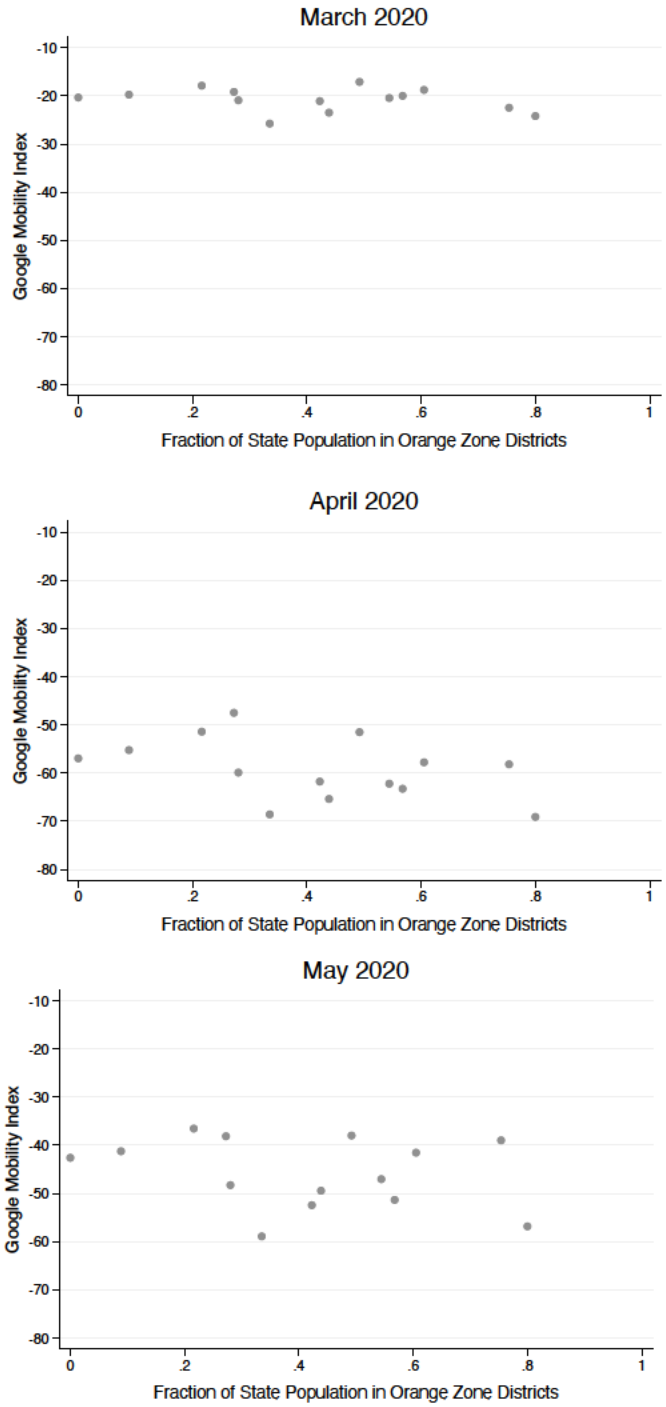
Source: Ministry of Home Affairs, India (May 1, 2020). 2011 Census district boundaries used.

Figure B.2: Correlations Between Fraction of State Population in Red Lockdown Districts & Google Mobility Index



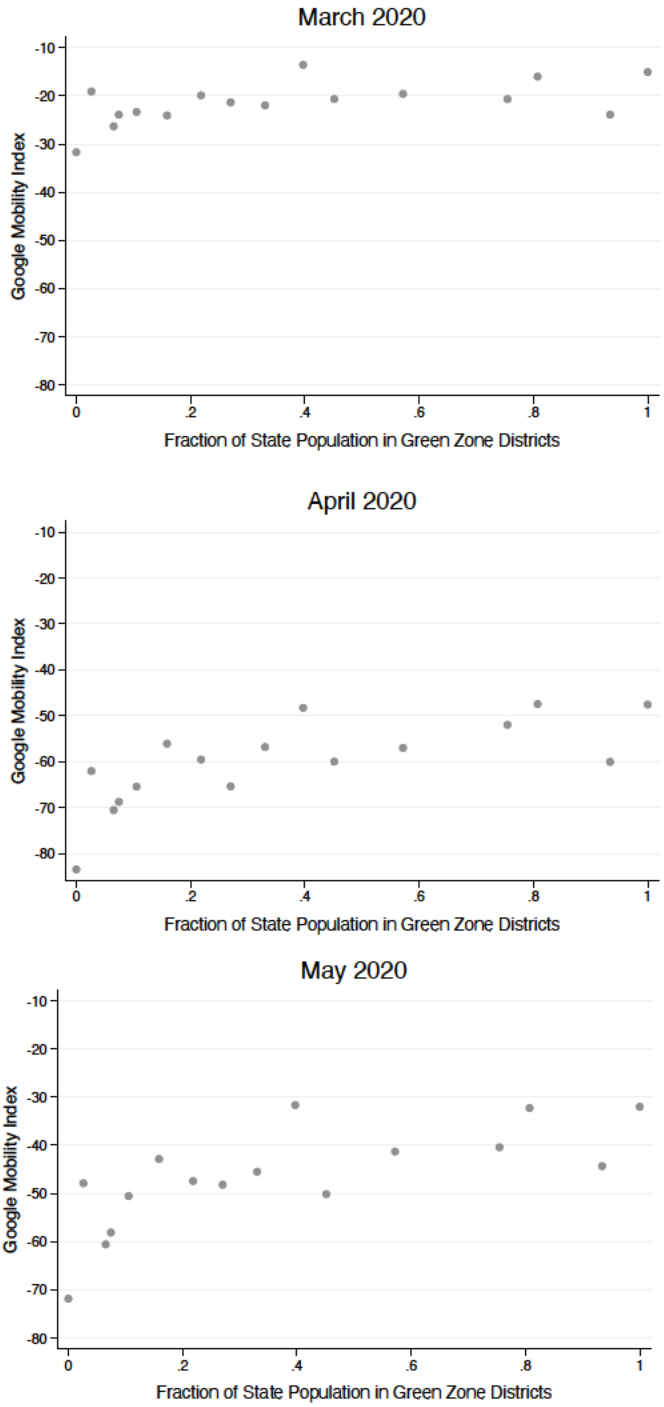
Source: Google Community Mobility Reports (accessed June 9, 2020).
Notes: Mobility is defined in the Google Community Mobility Reports as the percentage change in mobility relative to the baseline 5-week period from January 3 - February 6, 2020. The state mean is taken over the categories "Grocery & pharmacy", "Parks", "Transit stations", "Retail & recreation", and "Workplaces" for the months of March, April, and May 2020, respectively, to create the Google Mobility Index. Google calculates mobility based on data from users who have opted-in to Location History for their Google Account.

Figure B.3: Correlations Between Fraction of State Population in Orange Lockdown Districts & Google Mobility Index



Source: Google Community Mobility Reports (accessed June 9, 2020).
Notes: Mobility is defined in the Google Community Mobility Reports as the percentage change in mobility relative to the baseline 5-week period from January 3 - February 6, 2020. The state mean is taken over the categories "Grocery & pharmacy", "Parks", "Transit stations", "Retail & recreation", and "Workplaces" for the months of March, April, and May 2020, respectively, to create the Google Mobility Index. Google calculates mobility based on data from users who have opted-in to Location History for their Google Account.

Figure B.4: Correlations Between Fraction of State Population in Green Lockdown Districts & Google Mobility Index



Source: Google Community Mobility Reports (accessed June 9, 2020).
Notes: Mobility is defined in the Google Community Mobility Reports as the percentage change in mobility relative to the baseline 5-week period from January 3 - February 6, 2020. The state mean is taken over the categories "Grocery & pharmacy", "Parks", "Transit stations", "Retail & recreation", and "Workplaces" for the months of March, April, and May 2020, respectively, to create the Google Mobility Index. Google calculates mobility based on data from users who have opted-in to Location History for their Google Account.

C Tables

Table C.1: District Characteristics by Zone Color Categories

	Red Zones (120)		Orange Zones (257)		Green Zones (262)		Difference (p-value)		
	Mean	SD	Mean	SD	Mean	SD	Red-Orange	Red-Green	Orange-Green
Population (millions)	3.87	2.54	2.35	1.44	1.30	1.13	0.000	0.000	0.000
Cumulative COVID-19 Cases (April 30)	252.71	789.01	17.64	25.52	0.94	5.45	0.000	0.000	0.000
Cumulative Cases per Million People (April 30)	313.75	2787.80	9.29	14.88	1.24	10.11	0.080	0.070	0.000
New COVID-19 Cases (April 16 - 30)	164.55	546.59	6.65	12.15	0.42	3.85	0.000	0.000	0.000
New Cases per Million People (April 16 - 30)	174.66	1490.58	3.14	5.59	0.63	7.43	0.065	0.059	0.000
Days Taken for Cases to Double (April 30)	11.71	7.22	16.97	8.85	24.46	10.52	0.000	0.000	0.004

Source: www.covindia.com, accessed May 31, 2020.
Notes: These are summary statistics based on 120 red zone districts, 257 orange zone districts, and 262 green zone districts (2011 Census district identifiers used). "Population" refers to the projected district population in 2020, in millions (projection based on growth rates calculated from the 2001–2011 Census data. "Cumulative COVID-19 Cases" refers to the total number of COVID-19 cases reported in the district as of April 30, 2020. "Cumulative COVID-19 Cases per Million People" refers to the total number of COVID-19 cases reported in the district as of April 30, 2020 divided by the district population in millions. "New COVID-19 Cases" refers to the number of new COVID-19 cases reported between April 16-30, i.e. in the two weeks prior to the announcement of the zone categories on May 1, 2020. "New Cases per Million People" refers to the number of new COVID-19 cases reported between April 16-30 divided by the district population in millions. "Days Taken for Cases to Double" refers to the number of days taken for cases to double to reach the number of COVID-19 cases observed on April 30, 2020.

Table C.2: Nationwide Number of Complaints by Type: January–May (2018–2020)

	(1) Domestic Violence	(2) Cybercrime	(3) Harassment	(4) Rape & Sexual Assault
Panel A: 2020				
May	392	73	635	54
April	315	55	300	16
March	298	37	538	109
February	302	21	593	122
January	271	32	547	154
Panel B: 2019				
May	266	49	460	163
April	193	35	341	60
March	148	22	375	67
February	181	30	440	75
January	133	39	380	102
Panel C: 2018				
May	188	35	882	198
April	200	41	911	261
March	129	14	710	207
February	191	24	731	137
January	124	26	428	86

Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: Cybercrimes include online abuse, indecent exposure, unsolicited obscene pictures, threats, ransom demands, and blackmail. Harassment complaints include sexual harassment, sexual harassment at the workplace, stalking and voyeurism, molestation, and complaints related to the right to live with dignity. Rape and sexual assault complaints include sexual assault, rape, and attempt to rape.

Table C.3: Impact of Zone Categories on Number of Complaints
(in Standard Deviation units)

	(1) Domestic Violence (z-score)	(2) Cybercrime (z-score)	(3) Harassment (z-score)	(4) Rape & Sexual Assault (z-score)
Panel A: Main Specification				
Red Zone ∗ May 2020	0.474***	0.697***	0.0379	-0.393***
	(0.132)	(0.154)	(0.110)	(0.132)
Red Zone ∗ Apr 2020	0.241	0.342*	-0.348**	-0.580***
	(0.179)	(0.195)	(0.140)	(0.150)
Orange Zone ∗ May 2020	0.0746	0.117**	-0.00270	-0.0805*
	(0.0507)	(0.0585)	(0.0368)	(0.0419)
Orange Zone ∗ April 2020	-0.0368	-0.0246	-0.0966**	-0.120**
	(0.0430)	(0.0453)	(0.0430)	(0.0487)
Red Zone - Orange Zone (May 2020)	0.400***	0.580***	0.041	-0.312**
p-value	[0.002]	[0.000]	[0.725]	[0.028]
Red Zone - Orange Zone (April 2020)	0.278	0.366*	-0.252*	-0.460***
p-value	[0.118]	[0.062]	[0.087]	[0.004]
Adjusted R^2	0.768	0.793	0.748	0.728
District FEs	✓	✓	✓	✓
Month-Year FEs	✓	✓	✓	✓
Dependent Variable Mean	0.000	0.000	0.000	0.000
Observations	15,208	15,208	15,208	15,208
Panel B: Flexible Form				
Red Zone ∗ May 2020	0.516***	0.698***	-0.226	-0.592***
	(0.146)	(0.172)	(0.191)	(0.209)
Red Zone ∗ Apr 2020	0.283	0.343	-0.612***	-0.778***
	(0.186)	(0.210)	(0.224)	(0.226)
Orange Zone ∗ May 2020	0.0861	0.119*	-0.0524	-0.116*
	(0.0564)	(0.0652)	(0.0627)	(0.0653)
Orange Zone ∗ April 2020	-0.0253	-0.0227	-0.146**	-0.156**
	(0.0448)	(0.0495)	(0.0700)	(0.0712)
Red Zone - Orange Zone (May 2020)	0.430***	0.579***	-0.173	-0.475**
	[0.002]	[0.000]	[0.386]	[0.031]
Red Zone - Orange Zone (April 2020)	0.309*	0.365*	-0.466**	-0.623***
	[0.096]	[0.085]	[0.047]	[0.009]
Adjusted R^2	0.774	0.797	0.756	0.737
District FEs	✓	✓	✓	✓
Month-Year FEs	✓	✓	✓	✓
Dependent Variable Mean	0.000	0.000	0.000	0.000
Observations	15,208	15,208	15,208	15,208

Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: The sample consists of district-month level number of complaints from January 2018 - May 2020, standardized to a z-score. Panel A reports coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1) for April and May 2020. Panel B presents coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1) for April and May 2020, but omitting May 2018, instead of January 2018 - September 2019. All regressions include district fixed effects and month-year fixed effects, as well as district-year level population controls. Standard errors are clustered by district and are shown in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table C.4: Impact of Zone Categories on Number of Complaints per Capita

	(1) Domestic Violence	(2) Cybercrime	(3) Harassment	(4) Rape & Sexual Assault
Red Zone $*$ May 2020	0.0329*	0.00582*	-0.124	-0.0616
	(0.0188)	(0.00307)	(0.130)	(0.0556)
Red Zone $*$ Apr 2020	0.00470	-0.000451	-0.228	-0.0731
	(0.00740)	(0.00209)	(0.206)	(0.0640)
Orange Zone $*$ May 2020	0.00271	0.000224	-0.00638	-0.00305
	(0.00440)	(0.000800)	(0.00918)	(0.00228)
Orange Zone $*$ April 2020	-0.00206	-0.000657	-0.0137	-0.00365
	(0.00378)	(0.000623)	(0.00852)	(0.00239)
Red Zone - Orange Zone (May 2020)	0.030*	0.006*	-0.117	-0.059
p-value	[0.085]	[0.067]	[0.349]	[0.277]
Red Zone - Orange Zone (April 2020)	0.007	0.000	-0.214	-0.069
p-value	[0.360]	[0.918]	[0.286]	[0.265]
Adjusted R^2	0.796	0.819	0.755	0.735
District FEs	✓	✓	✓	✓
Month-Year FEs	✓	✓	✓	✓
Dependent Variable Mean	0.03	0.01	0.09	0.02
Observations	15,208	15,208	15,208	15,208

Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: The sample consists of district-month level number of complaints per 100,000 people from January 2018–May 2020. The table reports coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1) for April and May 2020. All regressions include district fixed effects and month-year fixed effects, as well as district-year level population controls. Standard errors are clustered by district and are shown in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table C.5: Impact of Zone Categories on on Number of Complaints
Including State x Month Fixed Effects

	(1) Domestic Violence	(2) Cybercrime	(3) Harassment	(4) Rape & Sexual Assault
Red Zone $*$ May 2020	0.478***	0.110***	-0.0219	-0.343***
	(0.153)	(0.0280)	(0.371)	(0.107)
Red Zone $*$ Apr 2020	0.223	0.0481	-1.219***	-0.467***
	(0.194)	(0.0333)	(0.417)	(0.111)
Orange Zone $*$ May 2020	0.0722	0.0180	-0.0559	-0.0814**
	(0.0635)	(0.0114)	(0.129)	(0.0356)
Orange Zone $*$ Apr 2020	-0.0364	-0.00451	-0.321**	-0.0988***
	(0.0472)	(0.00807)	(0.130)	(0.0368)
Red Zone - Orange Zone (May 2020)	0.406***	0.092***	0.034	-0.262**
p-value	[0.005]	[0.001]	[0.930]	[0.022]
Red Zone - Orange Zone (April 2020)	0.260	0.053	-0.897**	-0.368***
p-value	[0.172]	[0.112]	[0.041]	[0.002]
Adjusted R^2	0.776	0.808	0.762	0.742
District FEs	✓	✓	✓	✓
Month-Year FEs	✓	✓	✓	✓
State-Month FEs	✓	✓	✓	✓
Dependent Variable Mean	0.43	0.07	1.15	0.26
Observations	15,201	15,201	15,201	15,201

Source: Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: The sample consists of district-month level number of complaints from January 2018–May 2020. The table reports coefficients $\{\beta_{i,r}\}$ and $\{\beta_{i,o}\}$ from Equation (1) for April and May 2020. All regressions include district fixed effects, month-year fixed effects, and state-month fixed effects as well as district-year level population controls. Standard errors are clustered by district and are shown in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table C.6: The Role of Attitudes and Domestic Violence Complaints

	(1)	(2)
	Domestic Violence Complaints	
	∗ **Red Zone**	∗ **Orange Zone**
Husband Justifies DV ∗ May 2020	0.926	0.536
	(1.132)	(0.357)
Husband Justifies DV ∗ Apr 2020	0.943	0.824**
	(1.654)	(0.378)
Wife Justifies DV ∗ May 2020	-2.215**	-0.299
	(1.022)	(0.363)
Wife Justifies DV ∗ Apr 2020	-0.820	-0.381
	(1.449)	(0.399)
Adjusted R^2	0.769	0.769
District FEs	✓	✓
Month-Year FEs	✓	✓
Dependent Variable Mean	0.43	0.43
Observations	15,208	15,208

Sources: National Family Health Survey 4 (2015-2016) and Complaint & Investigation Cell, National Commission for Women, India (accessed June 1, 2020).
Notes: The sample consists of district-month level number of complaints from January 2018 - May 2020. Lockdown months (April and May 2020) are highlighted in bold. The table reports coefficients $\{\beta_{i,rh}\}$, $\{\beta_{i,rw}\}$, $\{\beta_{i,oh}\}$, and $\{\beta_{i,ow}\}$ from estimating the following:

$$Y_{dmy} = \alpha + \gamma_d + \lambda_{my} + \sum_{i=1}^{8} \beta_{i,r}\theta_i * RedZone_d + \sum_{i=1}^{8} \beta_{i,o}\theta_i * OrangeZone_d + \sum_{i=1}^{8} \beta_{i,h}\theta_i * HusbandJustifiesDV_d + \sum_{i=1}^{8} \beta_{i,w}\theta_i * WifeJustifiesDV_d$$
$$+ \sum_{i=1}^{8} \beta_{i,rh}\theta_i * RedZone_d * HusbandJustifiesDV_d + \sum_{i=1}^{8} \beta_{i,oh}\theta_i * OrangeZone_d * HusbandJustifiesDV_d$$
$$+ \sum_{i=1}^{8} \beta_{i,rw}\theta_i * RedZone_d * WifeJustifiesDV_d + \sum_{i=1}^{8} \beta_{i,ow}\theta_i * OrangeZone_d * WifeJustifiesDV_d + \boldsymbol{X_{dy}}\delta + \varepsilon_{dmy}$$

The set of coefficients $\{\beta_{i,rh}\}$ captures the differential impact of districts classified into the red zone relative to the impact of districts classified into the green zone, in month i relative to the monthly average from January 2018 - September 2019, for districts where a greater proportion of husbands reported that hitting or beating his wife was justified. The set of coefficients $\{\beta_{i,rh}\}$ captures the differential impact for districts where a greater proportion of wives reported that hitting or beating by the husband was justified (column 1). Analogously, the sets of coefficients $\{\beta_{i,oh}\}$ and $\{\beta_{i,ow}\}$ capture the impacts for orange zone districts (column 2). The regression includes district fixed effects and month-year fixed effects, as well as district-year level population controls. Standard errors are clustered by district and are shown in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.