Disconnecting Dissent:
The Effect of Internet Shutdowns on Protests

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Abstract

Internet shutdowns are an increasingly common form of repression, with India being responsible for nearly half of global shutdown events. Ordered by local and state authorities, many of these shutdowns aim to restore public order and quell protests and riots. So far, however, there is no causal evidence that this measure is effective in achieving its stated goal. Social media has been shown to facilitate protests as well as hate crimes through lowering organizational cost. Yet, internet shutdowns could also foster further resentment by protesters as well as turn a situation unpredictable and chaotic. By harmonizing several data sources, I construct a novel data set that measures over 500 government-ordered internet shutdowns between 2012 and 2022 in India on the district level. To causally identify the effect of internet shutdowns on protest and riot incidence, a difference-in-differences design is utilized with subdistricts that were intended to have their internet blocked but unintentionally receive signals from unaffected neighboring districts as control groups. It is shown that contrary to the intended goal, internet shutdowns have an incendiary effect and increase riots.

Keywords: Internet Shutdowns; Riots; Authoritarianism; Repression, DiD, Cell Phone Towers

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1 Introduction

The internet made organizing collective action easier than ever before. Indeed, the causal link between internet penetration and protest incidence seems to be robust across a myriad of contexts (Fergusson and Molina, 2019, Enikolopov et al., 2020a,b, Manacorda and Tesei, 2020). This is not only the case for peaceful protests as violent crimes also increase in prevalence due to lower organizational cost (Bursztyn et al., 2019) as well as due to increased exposure to hateful content (Müller and Schwarz, 2021, 2023). One might then be led to believe that turning internet access off might be an effective policy to quell protests and violent uprisings. Thus, governments around the world often justify internet shutdowns in the name of restoring law and order during turbulent political demonstrations (Zach et al., 2023). Despite being a democracy, India uses this form of repression nearly as often as the rest of the world combined (Zach et al., 2023).

However, several reasons for why this measure may backfire exist. First, restricting internet during protests may lead to situations becoming chaotic and unpredictable due to organizational capabilities being impaired. Less well organized protests are more likely to become violent (Ives and Lewis, 2020), thus possibly leading to backlashes to internet shutdowns. Moreover, the evidence for the effectiveness of repression to reduce dissent is mixed. Internet shutdowns as a form of indiscriminate repression can be linked to the general repression literature (Earl et al., 2022). Backlashes to suppression have been found in some studies (Sullivan and Davenport, 2017, Pan and Siegel, 2020). When it comes to protests specifically, violent repression by the state seems to be associated with increased riot propensity and longer protest duration (Sullivan, 2019, Ives and Lewis, 2020, Lewis and Ives, 2023). Lastly, internet shutdowns do not address underlying grievances and instead aim to take away internet as an organizational tool for protests. The will to demonstrate thus remains while online coordination can be replaced by offline communication. Even in societies with high social media penetration, offline networks do seem to play a pivotal role in protest organization (Potrafke and Roesel, 2022).

Due to these conflicting theoretical effects of internet shutdowns on protest and riot incidence, it becomes an empirical question whether they can be effective in restoring public order by reducing protests and especially riots.

Internet shutdowns constitute a newer form of overt digital repression that indiscriminately punishes whole populations (Earl et al., 2022). India's regular use of this measure serves as a Petri dish for governments across the world which may explain the recent surge in usage of this measure (Zach et al., 2023). According to the UN, internet shutdowns are firmly entrenched in some regions but recently have been enacted in both newer as well as long-established democracies, in line broader trends of global democratic recession (UN, 2021). As the legitimacy of using shutdowns during protests stems from the claimed reductions in violence and turmoil, it is crucial to examine this claim empirically.

Due to this measure gaining prominence only in recent years, research about internet shutdowns is still scarce. In the Syrian civil war, internet shutdowns correlate with an increase in fatalities and conventional state repression (Gohdes, 2015, 2020). Rydzak (2019) presents important theoretical considerations and empirically correlates internet shutdowns in India with an increase in protests and riots. My paper builds on this work in two major ways. First, the novel data set presented in this study synthesizes two data sources and utilizes the exact geocoded locations of internet shutdowns instead of looking at the state level. Second, due to a Difference-in-Differences methodology that compares subdistricts that have their internet shut off with those that were intended to loose internet access but unintentionally receive signal from neighboring districts, a strong case for the causality of my findings is made.

One critical issue that is universal across the repression literature is that the fundamental problems of causal inference associated with state suppression of protests, including internet shutdowns, are barely addressed beyond the use of lagged dependent variables (Gohdes, 2015, Rydzak, 2019, Sullivan, 2019, Ives and Lewis, 2020, Gohdes, 2020, Lewis and Ives, 2023). Coercive measures are plausibly more likely to be implemented among the most severe protests which then also in turn cause repression. This leads to a positive bias that might drive previous findings of backlashes.[1] Quasi-experimental methods are necessary to deal with this selection bias and reverse causality. As the hereby presented identification strategy solves these issues, I also contribute to the wider suppression literature by showing that internet shutdowns causally lead to a backlash by increasing riots.

The subsequent sections of this paper are structured as follows. Section 2 delves into the background information on internet shutdowns. Following that, Section 3 introduces the data, Section 4 outlines the identification strategy and Section 5 presents both the results and robustness checks. Finally, Section 6 concludes the paper.

2 Background

2.1 Internet Shutdowns Globally and in India

Consequences of intentional network disruptions are far reaching and directly affect the whole population in targeted regions, not just the protesters. Apart from violating freedom of expression and correlating with human rights abuses and conventional repression by the enacting governments (Gohdes, 2015, 2020), internet shutdowns are

[1] This issue is even more severe for internet shutdowns as they are also used as a precautionary measure, i.e. before waves of protests and riots are expected to occur. The purpose is to stop the spread of viral videos that might further enrage citizens. These videos typically include communal violence, political scandals or police brutality.

also associated with economic insecurity (Zach et al., 2023). This is especially true in India where rapid digitization made internet an essential tool for many: Right to work guarantees, food subsidies and many other social security and governance services are administered online or require biometric authentication (Bajoria, 2023).

Despite that, internet shutdowns are much more frequent in India than in the rest world: In 2022 alone, 120 million people were affected in 84 separate shutdown events (Ellis-Petersen and Hassan, 2023). This makes them more than four times as common as in the country with the second most shutdowns, Iran, and more than ten times as frequent as in Myanmar, Bangladesh, Sudan and Yemen (Ellis-Petersen and Hassan, 2023). What is especially concerning is that in 2013, before Modi came to power, India only had less than 10 shutdowns a year (Johri, 2020). That this rapid expansion correlates with Modi's rise does not seem to be a coincidence. States ruled by his Hindu-nationalist BJP are more likely to issue shutdowns and the process of approval and review seems to be on political rather than on legal grounds (Ruijgrok, 2022).

Another major reason for internet shutdowns are so common in India is its legal setting that delegates the power to shut off telecom services to district magistrates and state authorities in the interest of public safety with checks and balances on the use of this measure being non-existent or consisting of a toothless rubber stamp review committee (Bajoria, 2023, Zach et al., 2023). Thus, my data set shows, some states use internet shutdowns very liberally, with Gujarat and Rajasthan even justifying this measure with preventing cheating during important standardized exams.

2.2 Administrative Levels and Stakeholders

In order to understand the identification strategy employed by this paper, an explanation for India's administrative levels as well which authorities enact internet shutdowns on whom is necessary.

India is a federal state and has 28 states and 8 union territories on its first administrative level (UPSC, 2022). Moreover, each state is divided into separate districts, of which there are 775 total. Both district as well as state level officials can enact shutdowns (Bajoria, 2023). The latter has the authority to turn off internet access in any number of districts in that state, while district magistrates only have jurisdiction in their own district (Bajoria, 2023). Internet shutdowns are not enacted on the even more granular level of subdistricts. However, my identification strategy exploits within district variation on the subdistrict level. Of this third administrative level, over 6000 units exist in India (UPSC, 2022).

Even though more than 90 percent of shutdowns are ordered by state authorities, only a minority of them affect the whole state. Typically, internet shutdowns are enacted one administrative level below that as individual districts and sometimes several adjacent districts are targeted.

3 Data

3.1 Shutdown and Conflict Data

Two data sources are synthesized to create a list of shutdowns that is as exhaustive as possible. The first data set is a manually labelled and verified list of Software Freedom Law Center's shutdown tracker (SFCL, 2023) that was compiled for a DW article (Johri, 2020). In addition to affected districts, time and duration of the shutdown, the journalists provide additional information such as affected networks, official as well as actual reasons for the internet shutdown, news sources, etc. In order to extend the temporal coverage from until 2020 to 2022, data from the #KeepItOn Shutdown Tracker from AccessNow (2023) is used. While the former collects information on shutdowns by news reports or at least ten wittiness testimonies, AccessNow also uses technological methods such as remote sensing to detect shutdowns and then verifies and supplements findings via a similar qualitative approach. As this data set has global coverage instead of being India specific, additional information is more limited and the number of recorded shutdowns fewer than in the DW data during years in which they overlap.

Despite the richness of information provided by these sources, they are not immediately suitable for quantitative analysis. While many location descriptions consist of an easily readable list of districts, some have to be manually processed due to being expressed in natural language, e.g. "All districts in Haryana but Nuh and Palwal" or "First only Jaipur and Udaipur, later the whole state of Rajasthan". Another obstacle is that names of districts are inconsistent, most likely due to different romanization of names based on differing local languages. Thus, districts that could not be localized with a common geocoding algorithm (Cambon et al., 2021) where first identified with the US geographic Names Server (GNS). When both where unsuccessful, manual research was conducted.

In the end, the finished data set is, to my knowledge, the most comprehensive list of geocoded internet shutdowns in India used for quantitative analysis. The only other study that geocoded India's shutdowns identified 585 district-months with shutdowns (Ruijgrok, 2022), while my study utilizes over 1600 district shutdown events, mostly due to extended temporal coverage and aggregating events to the day-district level instead of monthly.

Lastly, ACLED conflict data provides the number of protests, riots, battles and excessive use of violence by state authorities. For each district that is affected by a shutdown, the subdistricts that experience conflict are identified and the sum of each type of conflict in the seven days prior and seven days after are calculated.

Following Rydzak (2019) and Ruijgrok (2022), Jammu and Kashmir is excluded from the main analysis due to the state receiving complex exacerbating and loosening of internet shutdown measures (e.g. only allowing 2G Internet during some periods, while completely cutting all service on others). Moreover, long term shutdowns are frequent in which large parts of the state loose internet access for up to 18 months.Moreover, frequent and long shutdowns might change the population's reactions to them as they are more likely to develop coping mechanisms such as offline meetings to organize protests. All of this makes Jammu and Kashmir a special case that differs significantly from shutdowns in the rest of India as well as the rest of world.

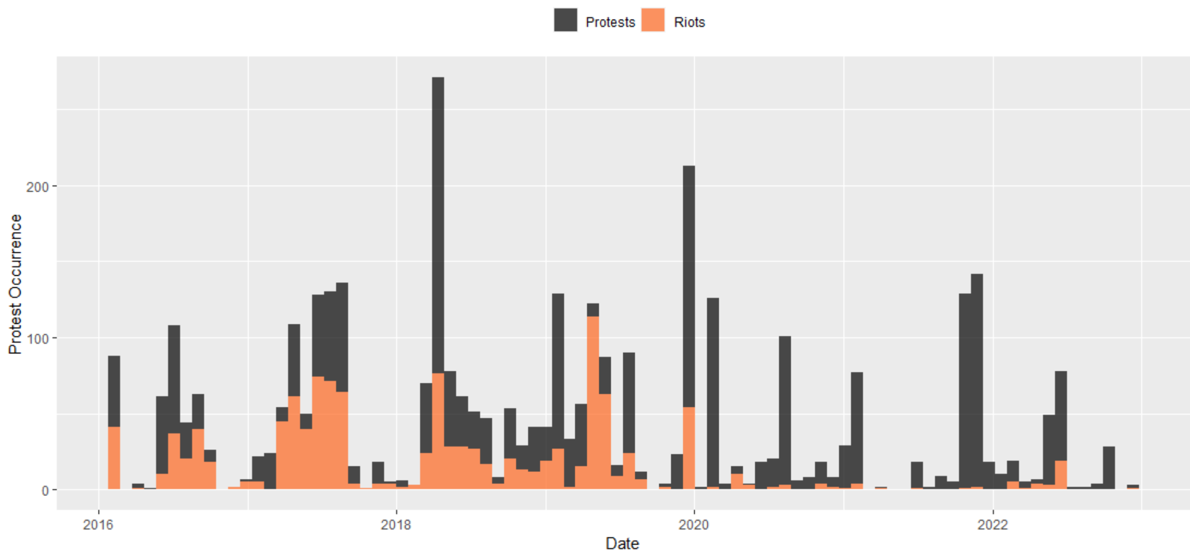
3.2 Cell Tower Data

For the purpose of identifying subdistricts that where supposed to have their internet blocked but unintentionally receive signals from neighboring districts that are unaffected by the shutdown, OpenCellID (UnwiredLabs) provides the largest data base on cell phone towers. This open source project collects towers with the help of contributors that install an app on their phone as well as commercial tracking devices and corporate data donations. In India, over 2.5 million towers with information on approximate location, range and signal type are recorded. According to a field experiment, despite consistent localization errors, Open Cell ID provides a representative sample of cell towers (Ulm et al., 2015) and has been used by development economists (Ackermann et al., 2021, Viollaz and Winkler, 2022, Höckel and Kramer, 2022)). As documented by Ulm et al. (2015), some data cleaning is necessary such as excluding unrealistically large ranges of some outliers. Nearly 99 percent of towers in the sample have a range of less than 3 miles or 5 km, as these are used in high density in cities. Only 0.1 percent of towers are useful for my identification strategy as they have a range of over 12 miles or 20 km. These so called macro towers can have a range of 45 miles or 70 km and are located in rural areas (Ulm et al., 2015, Markgraf, 2023). While signals from neighboring countries have been used as an identification strategy for radio (DellaVigna et al., 2014) as well as TV reception (Bursztyn and Cantoni, 2016), internet spillovers have been more difficult to leverage due to the generally lower range. The context of this study, however, provides a unique opportunity for this due to the level of analysis being on a smaller scale as spillovers come from neighboring districts instead of countries.

3.3 Descriptive Statistics

Overall, 6930 conflict events are found within a 14 day window of shutdowns. Of these, 3641 are protests or riots, whereas 1002 of these remain when excluding the state of Jammu and Kashmir. Figure 1 shows the temporal distribution of demonstrations, including Kashmir. The first spike in 2016 is due to events in response to the killing of Burhan Wani, a young social media-savvy Islamist militant insurgent in Kashmir. In 2017, a major cause of a rise in riots was due to Gurmeet Ram Rahim Singh, the cult leader of Dera Sacha Sauda, being convicted of rape. While the first three month of 2018 started out calmly, the biggest spike of demonstrations in the sample is in April due to caste protests in Haryana and Uttar Pradesh in which Dalits, who are at the bottom of India's caste system, protested a supreme court ruling against immediate arrests of individuals accused of violence against Dalits. 2019 and the beginning of 2020 was characterized by the citizenship amendment protests in which first only in northeastern states states and later all over India protested to planned and later implemented law that gives an accelerated path to citizenship for persecuted religious minorities from neighboring countries as long as they are not Muslim. The rest of 2020 as well as the whole year of 2021 was dominated by the farmers protest, a movement that constituted the biggest protest in history and led to all three proposed farmer bills that where perceived as "anti-farmer" to be repealed.

Figure 1 – Temporal distribution of protests and riots



Note: This figure presents all protests and riots of the sample by their time of occurrence. Each bin represents one months.

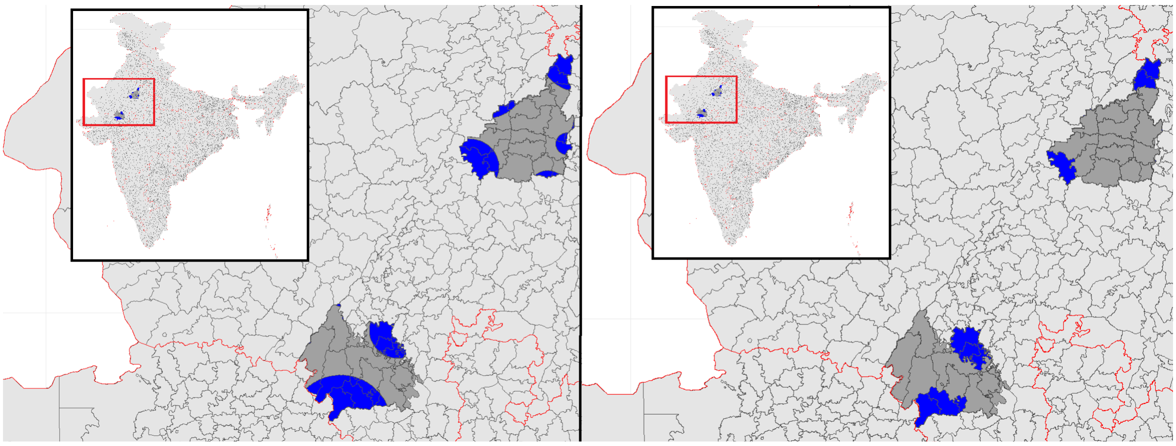
4 Identification Strategy

4.1 Defining Treatment and Control Groups

The research question that I aim to address whether there is a causal effect of internet shutdowns on protest and riot occurrence. As discussed previously, two major obstacles need to be overcome for this purpose. The selection bias of shutdowns only occurring during and in anticipation of the most severe periods of unrest and reverse causality, i.e. the fact that protests and riots cause governments to react with repression. OLS estimates will be upwards biased in that case. A valid counterfactual thus has to have the same evolution of protests and riots up until the moment of the shutdown, i.e. the same reason for the government to react. Moreover, ex-ante, both treatment and control groups need to have the same anticipated evolution. While this cannot be tested, the same cause for protesting can credibly support this assumption.

A counterfactual that possibly fulfills these criteria is found by identifying parts of districts that had their internet shut down, i.e. the cell phone towers inside these areas have been ordered to stop service, but that unintentionally still receive signal from long range macro towers that are located in unaffected neighboring districts. Figure 2 illustrates this methodology with the example of the internet shutdown of Jaipur and Udaipur in the state of Rajasthan in June 2022.

Figure 2 – Illustration of internet spillovers.



Note: This figure presents the internet shutdowns of Jaipur and Udaipur in the state of Rajasthan in June 2022. Affected areas are in a darker shade of grey. On the left side, the signals from neighboring districts are shown. On the right side, the hereby resulting control groups are shown. Each subdistrict inside a district that was ordered to shut down internet services and that is at least 50% covered by neighboring signal is defined as the control group, while the other affected subdistricts are part of the treatment group.

Furthermore, to ensure that treatment and control group are completely similar with the exception of the internet spillover, only subdistricts that border control subdistricts are considered as part of the treatment group in the main analysis. The logic behind this approach is similar to that of spatial RDD. A downside to this approach is the results are more vulnerable to protest-spillovers. This could cause a downward-bias as protesters and rioters affected by the shutdown might want to move to areas where they can receive signal, i.e. from treatment to control group.

This process is repeated for all shutdowns in the sample. Of the 500 original shutdowns, 214 have both treatment and control protest or riot events. This is due to some shutdowns happening for reasons other than public unrest, such as to prevent cheating in important exams. A minority of shutdowns happen before 2016 and are excluded due to ACLED only being available from 2016 on wards. Moreover, most shutdowns do not have sufficient neighboring signal that allows me to define control groups. Figure 3 shows the spacial distribution of treatment and control subdistricts. In summary, there are 102 control and 128 treatment subdistricts after excluding Jammu and Kashmir. Furthermore, more than 10 percent of subdistricts change treatment status across shutdowns. This is due to two reasons. First, India experienced a rapid expansion of internet availability during the observation period. The cell tower data set also has information on when the signal was first registered. This is used as a proxy for the time when the tower comes online for the first time to take into account expanding access for calculating internet spillovers. Moreover, the extent of the shutdown varies between events. While in the example in figure 2, only two distinct districts are affected, there have also been numerous shutdowns in which several neighboring districts or even a whole state has its internet turned off.

4.2 Balance Assesement

Table 1 – Balancing table

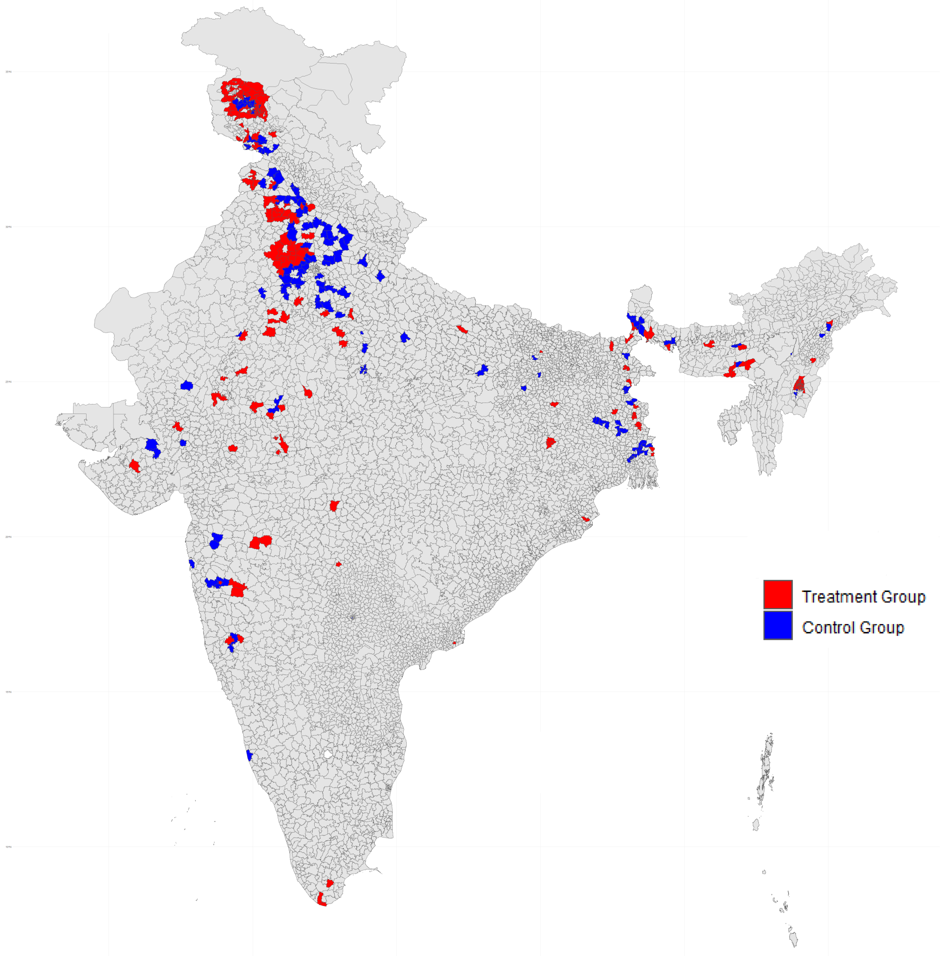
	Control		Treatment			
	Mean	Std. Dev.	Mean	Std. Dev.	Diff. in Means	Std. Error
Total Population	636,064	772,056	464,567	525257	-171,497	97208
Agricultural Workers	16,532	14,889	14,661	12.226	-1881	2061
Males	52.2	1.1	51.9	1.4	-0.3	0.2
Scheduled Castes	20.1	9.5	18.5	12.3	-1.5	1.8
Literacy Rate	67.4	8.5	66.9	8.2	-0.5	1.3
Landline Phone Only	4.2	4.4	4.2	5.1	0.0	0.8
Mobile and Landline	56.6	14.1	55.4	15.8	-1.6	2.4
PC with Internet	1.6	2.0	1.6	2.3	0	0.3
TV in household	48.6	22.9	47.0	25.8	-1.6	3.9
Radio in Household	18.9	8.0	19.7	14.7	2	1.4
Average Household Size	5.1	0.6	4.9	0.5	-0.1	0.1

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

The reception of neighboring district's signal has to be as good as random in order for this identification strategy to yield causal estimates. As mentioned before, macro cell phone towers tend to be in rural areas which can correlate with many confounding factors. Moreover, urbanized subdistricts tend to be smaller in size which makes it easier to cover the majority of its area with neighboring signal and thus categorize it as a control subdistrict. The spatial RDD approach though mitigates all these potential concerns.

Table 1 assesses balance in regards to possible confounders. Subdistrict data stems from Indian Census 2011. Selected variables examine the size, level of development and

Figure 3 – All treatment and control groups.



Note: This figure presents all treatment subdistricts in red and control groups in blue. Only areas in which protest or riot events occur within the shutdown time window are shown. Some of these subdistricts change treatment status across shutdowns due to additional cell towers being built and differing affected neighboring districts between events.

media availability. Every difference in means is fails to reach a significance level below 10 percent, thus indicating that internet spillovers are as good as random.

4.3 Model Specification

The following Difference-in-Differences (DiD) regression equation is estimated:

$$Riots_{i,s,t} = \alpha + \beta_1(Treat_{i,s} \cdot After_t) + \beta_2 Treat_{i,s} + \beta_3 After_t + \pi_s + \tau_i + \epsilon_{i,s,t} \quad (1)$$

Where $Riots_{i,s,t}$ denotes the number of riots or alternatively protests or other conflict events in subdistrict i, during the shutdown event s and during the week before or after the shutdown t. Following a standard DiD framework, β_1 is the coefficient of interest with $Treat_{i,s}$ being the treatment dummy that turns 1 if subdistrict i is treated during the shutdown event s. $After_t$ is a dummy that turns 1 if the observation is within the one week window after the shutdown. π_s refers to shutdown event fixed effects and tau_i to subdistrict fixed effects.

5 Results

5.1 Main Results

Table 2 shows the main results. In column (1) and (3), only the pre-shutdown period is assessed. If there was a difference even before the shutdown is enacted, the parallel trends assumptions would be violated. For both protests and riots, the difference between the groups is far from any conventional significance level thus validating the causality of the results. In column (2), it can be observed that there is a highly significant increase in riots in the treatment group compared to the control group after an internet shutdown. This gives a direct answer to the research question of whether this measure is effective in achieving its stated goal. Not only are internet shutdowns not effective, they even seem to be counterproductive by worsening the situation and increasing violence. This table also gives an explanation as to why government officials are misled to believe in the effectiveness of this form of repression. As seen in the second row, riots lessen over time. Shutdowns seem to be enacted at the height of public unrest after which by definition riots will lessen with time. What can naively be attributed to internet shutdowns is just the ordinary trajectory of any period of unrest. When comparing it to the counterfactual of not having this measure in place, it can be seen that there is indeed an incendiary effect.

When it comes to protests, column (4) shows no detectable effect. The same is the case for armed conflict in column (6). As opposed to riots, both protests and battles require a level of coordination. Thus, both might be impaired more so than riots which might cancel out any escalatory effect. Lastly, one concern for this identification strategy is that the government is aware of internet spillovers and thus uses conventional forms of repression differently between treatment and control subdistricts. This does not seem to be case according to column (6), where state violence are events of excessive violence against protesters, violence against civilians by the police or military as well as the arrest of key individuals.

5.2 Robustness Checks

Several further potential concerns are addressed in table 3. All columns have riots as the outcome variable and column (1) covers the original findings of table 2. Overall, the results are robust across the board. In column 2 and 3, the treatment group is replaced

Table 2 – Main results

	Dependent variable:					
	Riots		Protests		State Violence	Battles
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	−0.068	−0.427	0.217	0.361	0.008	−0.014
	(0.097)	(0.324)	(0.270)	(0.719)	(0.013)	(0.024)
After Shutdown		−0.456***		−0.266***	0.000	−0.044**
		(0.057)		(0.078)	(0.009)	(0.020)
DiD Estimator		0.251**		0.105	−0.022	0.023
		(0.111)		(0.164)	(0.014)	(0.025)
Observations	251	502	251	502	502	502
R^2	0.505	0.451	0.338	0.646	0.451	0.470

*Signif. Levels: ***: 0.01, **: 0.05, *: 0.1*
Robust standard errors in parentheses.

by only second order neighbors to control group subdistricts while excluding immediate neighbors (i.e. "Donut" strategy). This addresses potential concerns about protest and riot spillovers that potentially confound the results above. This bias is assumed to make previous results a conservative estimate as protesters in shut down districts would most likely relocate to subdistricts that still receive signal. Still, it is worthwhile to examine this empirically. Moreover, changing the treatment group also further serves as a robustness check on its own. The sample size increases due to second order subdistricts being more numerous than first order neighbors. Remarkably though,the findings stay nearly identical: No difference between treatment and control group before shutdowns and subdistricts that lose internet connection have an increase in violence compared to those that were intended to have their internet shutdown but still receive neighboring signals.

The next regression of column (4) now includes all variables that where used to assess balance as controls. As both treatment and control group do not differ in any of the observables though, the main estimation is expected to be unchanged a priori. While some control variables seem to have a statistically significant effect on the number of riots, none of them interact with the treatment in any way.

The last two columns merely change the standard errors. Both methods of clustering add uncertainty to the estimates, but not enough to make found estimates statistically insignificant. Treatment assignment is not on the subdistrict level as expanding internet infrastructure and a differing extent of shutdown districts between shutdown events cause some subdistricts to switch from treatment and control group. This makes clustered

Table 3 – Robustness Checks

	Model:					
	Original Model	Second Order Neighbors		With All Controls	Subdistrict Clustered	Conley SE
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	−0.427	0.680	0.657*	−0.427	−0.427	−0.427
	(0.324)	(0.554)	(0.350)	(0.324)	(0.715)	(0.547)
After Shutdown	−0.456***		−0.384***	−0.456***	−0.456***	−0.456***
	(0.057)		(0.055)	(0.057)	(0.111)	(0.105)
DiD Estimator	0.251**		0.253***	0.251**	0.251*	0.251**
	(0.111)		(0.079)	(0.111)	(0.152)	(0.129)
Observations	502	351	702	502	502	502
R^2	0.451	0.913	0.477	0.451	0.451	0.451

*Signif. Levels: ***: 0.01, **: 0.05, *: 0.1*

standard errors on the subdistrict level overly conservative. Yet, even in that case the treatment stays significant at the 10 percent level. Lastly, an argument can be made for treatment assignment having spatial correlation. Thus, the last column shows Conley standard errors with a distance cutoff of 80 km, the maximum range of macro towers. [2]

5.3 Channels

The argument for the intended effect of internet shutdowns reducing protests lays on rather clear theoretical grounds: Stopping access to inflammatory content and taking away the tools of organizing collective action plausibly reduce protests and riots. As the robust findings of backlashes contradict these considerations, it is important to illuminate as to how exactly this backlash occurs. The following channels are considered.

I. **Dispersion:** Centralized communication on social media is replaced by decentralized offline communication among neighborhoods and friend groups, thus leading to a higher number of smaller protests events.

II. **Shutdown Protests:** Internet shutdowns are seen as an authoritarian policy against protests and thus seen as a cause to protest themselves. When it comes to riots, this channel can cause anger and resentment amongst protesters and thus lead to an increased likelihood of violence.

[2] The results are also statistically significant with different cutoff distances.

III. **Online Protest Substitution:** With internet, resentment can be shown by posting on social media. Due to internet shutdowns, online protests are substituted by offline protests and riots.

IV. **Chaos:** While protesters have their organizational capabilities impaired, their concerns and causes for protest are still unaddressed. Individuals still protest but with less organization, thus leading to more volatility and increasing the odds of violence.

5.3.1 Dispersion

A case study in Egypt showed significant dispersion of anti-Mubarak demonstrations (Hassanpour, 2014) in the aftermath of the internet shutdown. My study design allows me to examine if this pattern is systematic. Therefore, I define two new outcomes. Instead of measuring the number of riots, I focus on the number of subdistricts that experience a riot as well as the time in which subdistricts that where unaffected by both protests and riots experience their first protest event as a riot.

Table 4 – Dispersion Channel

	Dependent variable:					
	Number of Riot Subdistricts		Only First Riot		Exl. New Districts	Exl. Internal Dispersion
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.091	0.056	−0.118	−0.192	0.361	−0.128
	(0.564)	(0.481)	(0.096)	(0.285)	(0.617)	(0.377)
After Shutdown		−1.026***		−1.051***	−0.595***	−0.389***
		(0.224)		(0.135)	(0.065)	(0.041)
DiD Estimator		0.706**		0.385***	0.279*	0.256***
		(0.356)		(0.107)	(0.150)	(0.078)
Observations	63	126	117	234	372	372
R^2	0.680	0.449	0.634	0.507	0.465	0.448

Robust standard-errors in parentheses
*p<0.1; **p<0.05; ***p<0.01

Table 4 shows limited evidence in favor of the dispersion channel. Both outcomes do not differ between treatment and control groups before the internet shutdown as shown by column 1 and 3. Furthermore, both measures of dispersion show positive and statistically significant coeffients for the DiD estimator. Internet shutdowns thus cause more subdistricts to start experiencing riots and increase the chance of previously unaffected districts to become violent.

It is, however, unclear if this is just a scale effect or indeed the decentralization of protest events. In the former case, other underlying factors such as increased resentment from channels II to IV cause subdistricts that did not have enough reason to demonstrate before the shutdown to start taking to the streets. In other words, the scale of resentment surges due to shutdowns and increases the likelihood of riots across every affected subdistricts. In favor of this argument is the fact that the same dispersion measures are insignificant for protests (see table A1). While the dispersion channel would apply to protests and riots equally[3], the scale effect can plausibly only act on either protests or riots. Rising resentment from channel II due shutdowns as well as a loss of organization as in channel IV can increase the propensity to violence while leaving propensity to protest unchanged.

Lastly, in column 5, subdistricts that only have a riot after the shutdown are excluded. Thus, it is shown if dispersion between subdistricts is disregarded, the result from table 2 still largely holds. As the scattering of protests could also happen within subdistricts, column (6) additionally replaces the number of riots with a dummy that turns one if at least one riot occurs. Here, the result not only holds but also becomes more precise with a comparable magnitude. I therefore conclude that the effect is driven mostly by subdistricts that already experienced unrest having longer and/or more violent demonstrations as a result of internet shutdowns.

I conclude that there is limited evidence for channel I. The effects found are better explained by a scale effect and even if dispersion is a factor, it drives the results only to a minimal extent.

5.3.2 Other Channels

By analyzing individual protests around internet shutdowns, the latter is only mentioned in the descriptions in less than 0.5 percent of protests. While this is some evidence against channel II, it still cannot be ruled out completely as it might be a latent factor that increases mobilization but does not become the main cause and thus is not mentioned in the event description. Future versions of this paper will further investigate this as well as remaining channel by linking news coverage to individual events in order to have a more nuanced view of underlying causes.

The chaos channel is suspected to be the most relevant. The increase in riots with protest numbers being unaffected is strong indicator for channel IV. Moreover, armed conflicts do not increase either, a reason for which might be that these activities require

[3]One argument for why dispersion might increase riots more so than protests is that smaller organizational units put radicals in more influential positions. Neither theoretical plausibility nor empiric evidence justifies further consideration though.

a higher degree of coordination that is impaired when internet access is lost. All of this hints at the fact that the resulting less organized protests have a higher propensity for violence, which is in line with Ives and Lewis (2020).

6 Conclusion

In this paper, I provide evidence that internet shutdowns are counterproductive for restoring public safety as they increase riots. This results stays consistent against a variety of robustness checks.

Especially when viewed in the context of the poverty enhancing effects of this form of indiscriminate repression (Bajoria, 2023), the justification for enacting internet shutdowns becomes exceedingly thin. Another reason for why governments utilize this measure is to silence voices of dissent and to shroud police violence. Future versions of this paper will examine if this perceived reason stands on solid empirical ground by following Gohdes (2015) in using a capture-recapture technique with multiple data sets to examine if internet shutdowns do make it more difficult for information on protests or excessive violence by police to become public.

Moreover, due to rich information on shutdowns in the data set, several hetereogeneities can be examined, e.g. do shutdowns that last longer than a day differ from shorter ones, how do shutdowns that also have broadband connections turned off differ from only mobile internet shutdowns. etc.

Another crucial step is to code shutdowns in India's most affected state, Jammu And Kashmir, correctly. Shutdowns there are frequent, with overlaps and varying intensity (e.g. some still allow 2G networks to operate while most shutdowns turn off every cell phone tower) as well as complicated timing (e.g. a shutdown lasts 7 days but with three breaks in between). For now, all of this factors are not accounted for which makes estimates noisy. Lastly, as the population in Jammu And Kashmir is used to internet shutdowns much more than the rest of India, the reaction to shutdowns might also differ: Established offline organizational networks reduce the effect of the chaos and dispersion channel and entrenched internet shutdowns as an acceptable means of law enforcement make it less likely that shutdowns themselves become a grievance of protesters.

Even though the data set comprises a considerable part of total shutdowns in India and covers a wide range of causes of unrest, caution should still be exercised when generalizing results to other countries. The legal setting that determines how quickly and under which conditions internet shutdowns are permissible for instance might differ substantially. Moreover, other countries that experience shutdowns less might be less accepting of this measure and thus intensify resistance even more. More authoritarian countries might also increase conventional repression more so than India does.

In summary, this paper helps to understand a new form of repression that is seeing more and more widespread use. Moreover, it gives causal evidence of a repression measure backfiring. In light of recent democratic backsliding globally, more needs to be done to understand the current wave of authoritarianism as it differs substantially from previous episodes due to the rapid expansion of the internet as well as novel technologies that interact with government control, information exchange and repression methods.

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A Appendix: Tables

Table A1 – Dispersion Channel - Protests

	Dependent variable:					
	Dispersion		New_Event		Protests	IsProtest
	(1)	(2)	(3)	(4)	(5)	(6)
treated	−0.143	−0.374	−0.017	−0.017	0.046	−0.003
	(0.275)	(0.313)	(0.076)	(0.614)	(0.304)	(0.179)
After_Shutdown		−0.320		−0.492***	−0.517***	−0.353***
		(0.207)		(0.145)	(0.076)	(0.035)
treated:After_Shutdown		0.177		0.034	−0.091	0.006
		(0.270)		(0.100)	(0.227)	(0.071)
Observations	92	184	251	346	324	324
R^2	0.805	0.533	0.512	0.198	0.762	0.689

Robust standard-errors in parentheses
*p<0.1; **p<0.05; ***p<0.01