Online appendix:
Election Cycles and Electricity Provision: Evidence from a Quasi-experiment With Indian Special Elections

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A Details of Light Data

We analyze satellite imagery of the earth at night to observe the level of light output annually from 1992 to 2009. The nighttime satellite imagery comes from the U.S. Air Force Defense Meteorological Satellite Program's Operational Linescan System (DMSP-OLS) and are processed by the National Oceanic and Atmospheric Agency's (NOAA) National Geophysical Data Center (NGDC). While a nighttime image is captured by DMSP-OLS every single night, the most widely used data product are annual composite images of time stable night lights. These composite images are created from a subset of high quality images captured between 19:00 and 22:00 local time on clear evenings with low moonlight illumination. Additional processing excludes ephemeral and inconsistently lit pixels to eliminate wildfires, auroral lights, and other temporary lighting phenomena (Elvidge et al., 1997, 2001). The annual composite time series is available dating back to 1992. Images are scaled onto a geo-referenced 30 arc-second grid (approximately 1 km^2). Each pixel is encoded with a relative measure of its annual average brightness on a 6-bit scale from 0 to 63. Prior research has shown that DMSP-OLS can reliably detect electrified villages in the developing world and that nighttime light output is a useful proxy for electricity provision (Doll et al., 2006; Min et al., 2013).

Since the primary unit of observation is the state-level Assembly constituency, the constituency-level nighttime light output is produced by overlaying a shapefile of constituency boundaries over each annual composite image and then summing the light values of all pixels (with values from 0 to 63) within the boundaries of each constituency. We also compute the *Proportion of Lit Villages* within a constituency. More specifically, we locate the roughly 600,000 villages in India to the assembly constituency using a spatial merge in GIS software. We then calculate the proportion of villages within each constituency in each year with detectable stable light output observed in the satellite data stream at the

village center, which is the proportion of villages with positive light output within each constituency in each year.

Our data reveal significant variation across constituencies and over time. The typical constituency had a total light output of 1,956 "brightness" units in 1992, increasing to 3,745 by 2008. Accounting for population growth, the change in per capita light output in the typical constituency was 40% during this timeframe. The proportion of lit villages also follows this upward trend. In 1992, just under half of villages in the typical constituency were lit in satellite imagery. By 2008, that rate had increased to 69%.

Despite the usefulness of night time light data as a proxy for electricity provision and economic activity, it has some limitations. Due to limitations of the satellite sensor, many dimly lit areas are not detectable in the data stream. In India, this suggests that many villages with only the most basic electricity service may not be seen in the imagery. Also, saturation in the data stream occurs in very bright areas because of the limited dynamic range of the sensor. Thus the data exhibit right and left censoring in which the most dim and most bright areas are not accurately measured. Moreover, blooming occurs when light from a brightly lit area appear to spill out into neighboring areas. This is a potentially severe issue around large cities. In addition, the satellite imagery detects light output only in the evening hours and so we do not observe electricity usage during the day or late at night. However, we assume that electricity is highly valued during the evening hours and thus efforts to increase supply hours are likely to be visible during this window. Another complication is that the level of light output are relative brightness values. Because there is no onboard radiance calibration on the satellite sensors, there is no way to convert the relative brightness values to an actual level of illumination. This complicates time series analysis since changes in observed brightness in different annual composites may be due to real changes in light output on the ground or due to technical factors related to gain levels and sensor properties. Following Henderson et al. (2012) and Chen and Nordhaus

(2011), we account for this limitation by including year fixed effects in our models that control for contemporaneous shocks affecting all units in a year, including any factors that may affect the overall brightness detected by a sensor in any given year. We also examine, as Henderson et al. (2012) suggests, growth rates in light output which also mitigate the potential for bias induced by common shocks. In addition, we consider proportion of lit villages as a dependent variable, which is likely to be less sensitive to these issues in comparing brightness values over time.

B Construction of Event Study Plots

In the event study plots, the plotted values for special election constituencies are the unweighted averages of light in the three years before the special election (t=-3,...,-1), in the special election year (t=0), and in the three years after the special election (t=1,...,3).

As constituencies that do not hold special elections have neither pre- nor post- election years, it is not obvious how to construct event study plots for them. We adopt the following approach. We calculate for each special election year the average light output in all non-election constituencies. This gives us for each special election constituency a value of average light in non-election constituencies in year $t = (-3, ..., 3)$. We then collapse the average light output in non-election constituencies across all special election constituencies for each period t. This results for each t in a synthetic value of light in non-election constituencies, which then can be plotted in the event study plots.[1]

This procedure can be illustrated with the following example. Assume there are only four constituencies in our dataset. Special elections are held in constituency A in 2005 and in constituency B in 1998. There are no special elections in constituency C and D. It is

[1]We only include special election constituencies that had exactly one special election during the sample period to avoid potential overlap across different special elections (this leads us to drop 4 out of 223 special election constituencies).

obvious how to mark $t = -3, ..., 0, ...3$ for constituency A and B. Thus, the event study plots for special election constituencies can be constructed by simply taking the unweighted average of the outcome variable in constituencies A and B for each t.

In contrast, it is not obvious how to mark $t = 0$ for constituencies C and D. Our approach is to match the unweighed average of constituency C and D's values in 2005 to constituency A. To constituency B, we match the unweighed average of constituency C and D's value in 1998. We thus have two values constructed as unweighted averages from non-election constituencies, one of which is matched to constituency A and the other to constituency B. We then take the average of the values that were matched to constituency A and B. This gives us a synthetic value for non-election constituencies in $t = 0$. We adopt the same procedure for all other t.

C Additional Results

We test for differences in constituencies that ever held a special election (due to death of an incumbent legislator) and constituencies that never held a special election in Table C-1 for a battery of characteristics that are available for each village in the 1991 census. We aggregate the village level data to the constituency level by adding each variable for all villages within a constituency. Since this data is only for villages, the constituencies that have no villages have missing entries and hence get left out. The aggregated data has a total of 3466 constituencies out of a total of about 4000 constituencies we have in our sample.[2] Also, the aggregated variable, say number of primary schools, will also underestimate the actual number of primary schools in the constituencies as the census provides this data only for villages and excludes towns and cities. Despite these limitations, village level data is still the most comprehensive data available and includes all villages in 1991, totaling

[2]Figure C-1 depicts a map of all constituencies. We highlight constituencies that held a special election.

over 500,000. A comparison of these census characteristics also suggests that there are no systematic differences between special election constituencies that hold special elections after death of a legislator and constituencies that do not.

Table C-2 reports the results of all special elections. We use the same specification as Table 2 in the paper. The only difference is the definition of the special election dummy, which is 1 for any special election (irrespective of the reason for vacancy) and 0 otherwise. In column (1), per capita light output is 3% higher in special election years than other years. The effect is consistently positive in column (2) where we include various control variables and in columns (3)-(6) where we consider growth rate of per capita light output and proportion of lit villages. The size of the coefficients of generic special election dummy in log light per capita and growth of light per capita regressions are smaller than the corresponding coefficients of dummy for special elections after death reported in Table 2 in the paper. One explanation for this difference may be some degree of reverse causality between economic developments and generic special elections, especially special elections due to resignations. That is, MLAs in constituencies that are doing well economically are more likely to resign in order to run for higher office. The relative bump in light output may therefore be smaller for special elections due to resignations, and consequently for generic special elections. On the other hand, the estimated coefficient for proportion of lit villages is slightly larger than in Table 2. While the differences are small and may be simply due to chance, it is possible that in constituencies that are doing well economically more unelectrified villages are getting connected to the grid at the same time as a sitting MLA chooses to resign.

In Table C-3, we explore whether any pre-election differences in light output between special election and non-election constituencies possibly confound the baseline estimates. We therefore re-estimate the baseline specifications after additionally including the lagged outcome as a control. The estimates for the special election dummy in Table C-3 are similar

to the baseline estimates across all outcomes, which suggests that there are no systematic pre-election differences in light output.

We report results from some further checks in Table C-4. In columns (1)-(3) we create two dummy variables: one of them is 1 if a special election was held within two years before a general election (closer to general election) and 0 otherwise and the other is 1 if a special election was held earlier in the term and 0 otherwise.[3] The results suggest that elections that are held earlier in the term have a larger effect on electricity provision than special elections that are held later in the term. It is plausible that special elections closer to a general election may matter, as these may be a harbinger of general election prospects of the state government. However, there may be counteracting forces. Much anecdotal evidence suggests that special elections are often labeled as a litmus test for the ruling party, especially for a newly elected or newly appointed chief minister earlier in the term.[4] Losses in special elections may weaken the chief minister, who then could be challenged from the rival faction within the party. It is not unusual to see multiple changes in the chief ministership during a term of a government. In addition, these results are also consistent with the view that earlier in the term, voter uncertainty about a state government's competence is higher. Thus, the state government may feel a greater need to manipulate electricity supply during special elections that are held early in the term.

Columns (4)-(6) include lagged values of a dummy that is 1 for state-wide general elections and 0 otherwise, which is an alternative to controlling for state-specific time trends. The estimated effects of special elections remain largely the same.

We next examine how the effect of special elections differs with the experience of the MLA who had died. We measure political experience of a MLA by the number of years

[3]We get similar results when we distinguish between special elections held one year before the general election and those held earlier in the term.

[4]See http://articles.economictimes.indiatimes.com/2014-08-18/news/52941982_1_chief-minister-anandi-patel-prime-minister-narendra-modi-the-bjp or http://www.firstpost.com/politics/yeddyurappas-son-contest-karnataka-assembly-bypoll-1640621.html

he or she had been in office prior to the current year. This variable can be interpreted as an alternative way of measuring core constituencies. The larger the number of years a MLA has served previously in the constituency, the more the constituency is a safe seat for his or her party. The state government has fewer incentives to signal its competence through manipulation before special elections in constituencies that are either safe seats for the opposition or for the state government.

We examine this hypothesis in Table C-5 by interacting political experience of the previous MLA with the dummy variable for special elections. If the hypothesis that state government targets electricity toward swing than core constituencies before special elections is right, we should expect a negative effect on the interaction variable. In all the columns, the special election dummy is positive and significant. Political experience is positively and significantly related to log light per capita and growth of light per capita in columns (1)-(4). These results suggest that constituencies that are represented by more experienced MLAs on average get greater electricity provision. However, the interaction effect is negative, suggesting that the bump in light output during special elections is smaller for constituencies with more experienced MLAs.[5] These results are consistent with the hypothesis that the state government primarily targets swing constituencies.[6]

Finally, we study the persistence of light output observed in the event study plots in more detail. Table C-6 shows results from specifications where we estimate separate pre- and post-election effects for special elections held close to a general election (special elections held at most two years before the next general election) and all other special elections. We observe a smaller bump during special elections held closer to a general election than for other special elections. However, we also find that post-election effects are larger for elections held closer to a general election. Thus, the state government arguably manipulates

[5]We get similar results if we instead examine the number of years a party has held a seat.

[6]A related interpretation for why the bump in light output is smaller in constituencies that are safe seats is that there is less of a need to dispel uncertainty about the state government's and/or the candidates' competence.

electricity supply less during special elections held closer to general elections, but any manipulation during these special elections tends to persist. These results are consistent with the notion that there are political costs to reversing electricity supply, and that these costs are particularly salient if a general election is just around the corner.

References

Chen, X. and W. D. Nordhaus (2011). Using luminosity data as a proxy for economic statistics. *Proceedings of the National Academy of Sciences 108*(21), 8589–8594.

Doll, C., J. Muller, and J. Morley (2006). Mapping regional economic activity from night-time light satellite imagery. *Ecological Economics 57*(1), 75–92.

Elvidge, C. et al. (1997). Mapping city lights with nighttime data from the DMSP Operational Linescan System. *Photogrammetric Engineering & Remote Sensing 63*(6), 727–734.

Elvidge, C. et al. (2001). Night-time lights of the world: 1994–1995. *ISPRS Journal of Photogrammetry & Remote Sensing 56*, 81–99.

Henderson, J. V., A. Storeygard, and D. N. Weil (2012). Measuring economic growth from outer space. *American Economic Review 102*, 994–1028.

Min, B., K. M. Gaba, O. F. Sarr, and A. Agalassou (2013). Detection of rural electrification in Africa using DMSP-OLS night lights imagery. *International Journal of Remote Sensing 34*(22), 8118–8141.

Table C-1: Special Election vs Non-Special Election Constituencies

	(1)	(2)	(3)
	Special Election=1	Special Election=0	Difference
Total Number of Households	14927.1	15254.1	-327.0
	[19478.5]	[19560.4]	(1455.7)
Total Population	100004.5	104522.3	-4517.8
	[114810.4]	[114790.5]	(8544.8)
Number of Villages with Paved Road	58.7	54.9	3.75
	[50.9]	[44.9]	(3.37)
Number of Colleges	1.54	1.70	-0.15
	[2.58]	[2.92]	(0.22)
Number of High Schools	12.1	11.7	0.43
	[10.4]	[10.1]	(0.75)
Number of Middle Schools	32.8	31.7	1.07
	[24.0]	[24.3]	(1.80)
Number of Primary Schools	140.3	135.8	4.49
	[89.2]	[85.1]	(6.35)
Number of Training Schools	3.68	3.87	-0.19
	[21.0]	[22.9]	(1.70)
Number of Villages with Taps	25.3	28.6	-3.32
	[45.5]	[54.7]	(4.04)
Number of Villages with Wells	103.3	104.2	-0.98
	[108.9]	[106.7]	(7.95)
Number of Villages with Tanks	22.8	19.1	3.72
	[48.6]	[43.3]	(3.24)
Number of Villages with Tubewells	25.7	22.2	3.46
	[54.2]	[44.2]	(3.34)
Number of Villages with Handpumps	89.1	93.2	-4.04
	[121.7]	[118.4]	(8.83)
Number of Health Centers	3.77	4.31	-0.54
	[5.19]	[5.88]	(0.43)
Number of Nursing Homes	0.43	0.75	-0.32
	[1.58]	[3.21]	(0.23)
Number of Maternity and Child Welfare Centers	3.04	3.46	-0.42
	[7.14]	[7.97]	(0.59)
Number of Primary Health Centers	4.40	4.25	0.15
	[4.32]	[4.15]	(0.31)
Number of Primary Health Sub-centers	10.1	10.5	-0.41
	[14.4]	[13.8]	(1.03)
Number of Community Health Workers	24.8	25.7	-0.91
	[60.6]	[68.0]	(5.03)
Number of Registered Medical Practitioners	14.3	13.6	0.70
	[27.8]	[23.2]	(1.74)
Number of Electrified Villages	181.0	181.9	-0.86
	[180.1]	[188.2]	(14.0)
Number of Post Offices	35.2	33.5	1.62
	[31.9]	[30.2]	(2.26)
Number of Villages with Phone Connections	8.48	8.74	-0.26
	[11.1]	[12.0]	(0.89)
Number of Telegram Offices	1.05	1.10	-0.051
	[2.63]	[3.20]	(0.24)
Number of Villages with Bus Stops	55.1	50.6	4.57
	[45.7]	[42.6]	(3.19)
Number of Villages with Railway Stations	1.92	1.64	0.28
	[3.40]	[3.00]	(0.22)
Total Irrigated Area (ha)	5282.9	97129.4	-91846.5
	[10077.6]	[5242137.8]	(379359.4)
Observations	191	3275	

All variables are aggregated at the constituency level by summing up the village level values for each constituency. Special Elections We compare all constituencies that ever had a special election after death of a legislator (Special Election=1) to all constituencies that never had a special election after death (Election=0). * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level for a t-test with two-sided alternative.

Table C-2: Special Elections and Electricity Provision: All Special Elections

	(1)	(2)	(3)	(4)	(5)	(6)
	Log Per Capita Light		Growth of Per Capita Light		Proportion of Lit Villages	
Special Election	0.030***	0.032***	3.333***	3.381***	0.016***	0.018***
	[0.011]	[0.011]	[1.245]	[1.250]	[0.004]	[0.004]
Log Electorate Size $_{t-1}$		-0.503***		16.885***		-0.040***
		[0.061]		[2.497]		[0.011]
Log Turnout $_{t-1}$		-0.020		1.096		-0.014***
		[0.016]		[0.817]		[0.004]
State Govt. Constituency $_{t-1}$		-0.015***		-0.284		-0.002
		[0.005]		[0.262]		[0.002]
Central Govt. Constituency $_{t-1}$		-0.031***		-1.457***		-0.008***
		[0.005]		[0.324]		[0.002]
Central and State Govt. Constituency $_{t-1}$		0.042***		2.496***		0.009***
		[0.006]		[0.417]		[0.003]
Coalition Government $_{t-1}$		-0.011**		3.597***		-0.005***
		[0.004]		[0.353]		[0.002]
Female Legislator $_{t-1}$		-0.026***		-0.351		-0.013***
		[0.010]		[0.407]		[0.005]
R^2	0.37	0.39	0.36	0.37	0.34	0.35
N	68,529	67,791	64,358	64,055	65,123	64,408
Method	FE	FE	FE	FE	FE	FE

Log Per Capita Light is the natural log of total light output divided by the size of electorate. Growth of Per Capita Light is the annual growth rate of per capita light. Proportion of Lit Villages is the proportion of villages in a constituency that have positive light output. Special Election is 1 for years in which a special election was and 0 otherwise. All control variables are lagged by one period. All regressions include year fixed effects and state-specific time trends. Standard errors are clustered at the constituency level and given in parentheses. The values with *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table C-3: Special Elections and Electricity Provision: Controlling for Lagged Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	Log Per Capita Light		Growth of Per Capita Light		Proportion of Lit Villages	
Special Election	0.043**	0.043**	5.241**	5.004**	0.015***	0.015***
	[0.017]	[0.017]	[2.353]	[2.379]	[0.006]	[0.006]
Electorate Size		-0.207***		6.819***		-0.023***
		[0.031]		[1.805]		[0.007]
Turnout		-0.009		-0.815		-0.008***
		[0.008]		[0.696]		[0.003]
State Government Constituency		-0.008**		-0.176		-0.001
		[0.003]		[0.303]		[0.001]
Central Government Constituency		-0.021***		-1.847***		-0.008***
		[0.004]		[0.362]		[0.002]
Central and State Government Constituency		0.033***		2.530***		0.010***
		[0.004]		[0.467]		[0.002]
Coalition government		0.020***		4.450***		0.008***
		[0.003]		[0.390]		[0.001]
Female Legislator		-0.018***		-0.473		-0.010***
		[0.006]		[0.480]		[0.003]
Lagged Per Capita Light	0.432***	0.424***				
	[0.010]	[0.010]				
Lagged Growth of Per Capita Light			-0.388***	-0.389***		
			[0.008]	[0.008]		
Lagged Proportion of Lit Villages					0.397***	0.398***
					[0.008]	[0.008]
R^2	0.49	0.49	0.47	0.48	0.42	0.42
N	64,358	64,055	60,187	59,890	61,226	60,822
Method	FE	FE	FE	FE	FE	FE

Log Per Capita Light is the natural log of total light output divided by the size of electorate. Growth of Per Capita Light is the annual growth rate of per capita light. Proportion of Lit Villages is the proportion of villages in a constituency that have positive light output. Special Election is 1 for years in which a special election is held to fill a vacancy after the death of a legislator and 0 otherwise. All control variables are lagged by one period. All regressions include year fixed

Table C-4: Special Elections and Electricity Provision: Other Checks

	(1) Log Per Capita Light	(2) Growth of Per Capita Light	(3) Proportion of Lit Villages	(4) Log Per Capita Light	(5) Growth of Per Capita Light	(6) Proportion of Lit Villages
Special Elections Closer to General Election	0.028	1.688	0.016			
	[0.024]	[2.804]	[0.010]			
Special Elections Not Closer to General Election	0.050**	6.744**	0.009			
	[0.024]	[3.225]	[0.008]			
Special Election				0.039**	4.753**	0.012*
				[0.017]	[2.257]	[0.006]
Lagged General Election				0.007**	0.225	0.008***
				[0.003]	[0.315]	[0.001]
R^2	0.39	0.37	0.35	0.37	0.37	0.30
N	67,791	64,055	64,408	64,055	64,055	60,822
Controls	X	X	X	X	X	X
Method	FE	FE	FE	FE	FE	FE

Log Per Capita Light is the natural log of total light output divided by the size of electorate. Growth of Per Capita Light is the annual growth rate of per capita light. Proportion of Lit Villages is the proportion of villages in a constituency that have positive light output. Special Election is 1 for years in which a special election is held to fill a vacancy after the death of a legislator and 0 otherwise. The Dummy for Special Elections Closer to General Election is 1for special elections that were held two years before a general election and 0 otherwise. The Dummy for Special Elections Not Closer to General Election is 1for special elections that were held more than two years before a general election and 0 otherwise. General Election is 1 for years in which a general (state-wide) election was held and 0 otherwise. All control variables are lagged by one period. All regressions include year fixed effects and state-specific time trends. Standard errors are clustered at the constituency level and given in parentheses. The values with *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table C-5: Special Elections and Electricity Provision: Political Tenure

	(1)	(2)	(3)	(4)	(5)	(6)
	Log Per Capita Light		Growth of Per Capita Light		Proportion of Lit Villages	
Special Election	0.104***	0.108***	10.118***	9.639***	0.026**	0.033***
	[0.030]	[0.032]	[3.170]	[3.145]	[0.013]	[0.012]
Special Election × Political Experience	-0.014***	-0.014***	-1.180*	-1.131*	-0.003	-0.004**
	[0.005]	[0.005]	[0.648]	[0.663]	[0.002]	[0.002]
Political Experience	0.002***	0.002***	0.486***	0.485***	-0.000	-0.000
	[0.001]	[0.001]	[0.035]	[0.035]	[0.000]	[0.000]
Controls		X		X		X
R^2	0.37	0.39	0.37	0.37	0.34	0.35
N	68,529	67,791	64,358	64,055	65,123	64,408
Method	FE	FE	FE	FE	FE	FE

Log Per Capita Light is the natural log of total light output divided by the size of electorate. Growth of Per Capita Light is the annual growth rate of per capita light. Proportion of Lit Villages is the proportion of villages in a constituency that have positive light output. Special Election is 1 for years in which a special election is held to fill a vacancy after the death of a legislator and 0 otherwise. Political Experience is the number of years in office that an MLA has served. All control variables are lagged by one period. All regressions include year fixed effects and state-specific time trends. Standard errors are clustered at the constituency level and given in parentheses. The values with *,**, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table C-6: Special Elections and Electricity Provision: Persistence

	(1)	(2)	(3)	(4)	(5)	(6)
	Special Elections Not Close to General Elections			Special Elections Close to General Elections		
	Log Per Capita Light	Growth of Per Capita Light	Proportion of Lit Villages	Log Per Capita Light	Growth of Per Capita Light	Proportion of Lit Villages
3 years after Special Election	-0.0002	-1.597	0.006	0.052*	3.507	0.012
	[0.025]	[2.788]	[0.010]	[0.032]	[2.604]	[0.016]
2 years after Special Election	0.008	0.618	0.002	0.032	-2.443	0.011
	[0.029]	[2.491]	[0.011]	[0.033]	[2.031]	[0.015]
1 year after Special Election	0.009	-1.227	0.002	0.059*	1.615	0.016
	[0.028]	[2.247]	[0.011]	[0.033]	[2.704]	[0.014]
Special Election	0.045*	7.099†	0.011	0.028	1.360	0.013
	[0.026]	[3.130]	[0.010]	[0.031]	[2.895]	[0.013]
1 year before Special Election	-0.035	1.566	-0.012	0.021	-0.313	0.001
	[0.026]	[2.508]	[0.009]	[0.033]	[2.323]	[0.016]
2 years before Special Election	-0.046	0.745	-0.007	0.017	4.202	0.013
	[0.032]	[2.911]	[0.011]	[0.030]	[2.662]	[0.014]
3 years before Special Election	-0.053*	0.947	-0.011	-0.038	0.878	-0.021
	[0.029]	[3.155]	[0.011]	[0.034]	[3.674]	[0.017]
R^2	0.39	0.37	0.35	0.39	0.37	0.35
N	67,791	64,055	64,408	67,791	64,055	64,408
Controls	X	X	X	X	X	X
Method	FE	FE	FE	FE	FE	FE

Log Per Capita Light is the natural log of total light output divided by the size of electorate. Growth of Per Capita Light is the annual growth rate of total light output divided by the size of electorate. Proportion of Lit Villages is the proportion of villages in a constituency that have positive light output. All controls variables are lagged by one year. All regressions include year fixed effects and state-specific time trends. Standard errors are clustered at the constituency level and given in parentheses. The values with *, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Figure C-1: Map of Constituencies with Special Elections Following Death