Does Political Quotas Lead to Development? Evidence from India

Resuf Ahmed*

Draft: September 2022

Abstract

This paper studies the impact of political quotas on development. I exploit an exogenous variation provided by the redistricting of the electoral constituencies in 2008: almost 20% of all Indian villages changed their quota status. I employ novel village-level data on nightlights, electrification, road (re)construction, and school enrollment. The findings are fourfold: (i) redistricting leads to more development in villages directly affected, (ii) villages that get the quotas for the first time experience a higher development as opposed to villages that loses the political quotas, (iii) share of the (SCs) minority in the village in addition to political quotas plays an instrumental role for the development (iv) there is evidence of intended ethnic favouritism. Furthermore, losing political quotas does not result in a lower level of development, implying a persistence of quota mandate.

Keywords: **Quotas, Schedule Caste, Development, Minority**
JEL Classification Codes: F5, P16, P48

*__Resuf Ahmed__, HEC Lausanne, University of Lausanne. resuf.ahmed@unil.ch

It is not enough to be electors only. It is necessary to be law-makers; otherwise those who can be law-makers will be the masters of those who can only be electors.

- **Dr. Bhim Rao Ambedkar**, Writings and Speeches, Volume 1 (Page 251)

1 Introduction

Many countries have affirmative action policies, which give preferential treatment to disadvantaged minority groups to empower them. One such affirmative action policy is a political reservation or electoral quota, where a specified share of seats in the legislature is reserved for a specific marginalized minority. The question regarding the efficiency of such electoral quotas has long been debated among policymakers, politicians, scholars and the general public.

The Scheduled Castes (SC) minority, also referred to as "Untouchables" and "Dalits", is one of the most underdeveloped and marginalized minorities in India. The extent of marginalization can be understood by prejudice and mistreatment of SC: they were prohibited from drinking water from shared water sources and living in or using areas frequented by "higher castes" people. They faced social and economic isolation and were often denied rights and privileges that many born into upper castes consider "fundamental rights". In 1949, the Indian federal government banned untouchability, but discrimination against SCs still exists. (Thorat and Joshi, 2020) using Indian Development Survey (IHDS-II) finds that 27% of Indian households still practice untouchability. The practice among the upper caste Hindus is considerably higher; 52% Brahmin (Upper Caste) households practices untouchability. In addition to social prejudice against SC, they are also on the margins economically. (Bharti et al., 2018) finds that per capita of a member of the SC community is 89,356 Indian Rupees compared to 167,013 Indian Rupees per capita for Brahmins.

Since adopting the constitution in 1950, India has mandated political representation for the SCs and STs (Scheduled Tribes) in proportion to their share in the population at federal, state, and municipal levels of governance. Though seats are reserved for SCs and STs, they are elected by all the voters in a constituency, without any separate electorate. Members of the SC and ST minorities are also not debarred from contesting a general (non-reserved) seat.

(Bhavnani, 2017) explores whether reservations for Scheduled Castes continue to improve their chances of winning elections after quotas are withdrawn. The result shows that the electoral quota for Scheduled Castes (SCs) fails to boost SC's chances of winning elections after they are discontinued. This result supports the *social justice* argument in favour of reservation. There is little evidence of the positive impact of

reservation on the economic development of Scheduled Caste (SC). In this paper, I provide *economic justice* argument in favour of reservation.

Using the novel high-resolution data at the village level, I explore the impact of political reservations on the following development variables. (1) nighttime light density (a proxy for economic development), (2) rural electrification (RGGVY), (3) road construction (PMGSY), and, (4) school enrollment (DISE). There are around 420,000 villages in the analysis. The data on nightlights, electrification, and road construction captures the effect of reservation at the village level. However, School enrollment data allows me to zoom into the village and see how different community enrollment within the school over time.

I used the delimitation (redrawing) exercise of the assembly constituency of 2008, which created exogenous variation in 2008, to investigate the impact of reservation. There are two main motivations; first, there was a large variation in the voter size of the constituencies. Second, the population figure of SCs as a percentage of the total population had increased from 14.6% to 16.2%. Increases in the share of the SC population meant that the number of seats reserved for SC needed to be increased accordingly. (Iyer and Reddy, 2013) and (Kjelsrud et al., 2020) found that the redrawing process of 2008 was done fairly, and there was no manipulation. I strengthened their argument by providing additional evidence that there was no gerrymandering in the delimitation process.

The result shows that reservation leads to higher nighttime light density. In the villages which become part of the reserved constituency, the nightlights increase significantly by 2.73% with respect to the mean. As nightlight is considered a robust proxy for economic development, it could be interpreted that reservation leads to higher local economic development. We found no impact on the village, which ceased to exist as part of the reserved constituency suggesting the persistence of reservation or quota mandate. Interestingly I also find that the reservation is insufficient, but the share of SC in the villages has to be higher. This result can be rationed by the political motive of the SC politician as they would target the villages, which is their primary vote bank. This provides evidence of ethnic favouritism by a politician as the SC politician redirects more resources to SC-dominated villages.

The source of nightlights is primarily electricity in the villages. To explore the channel behind the positive impact of reservations on nightlights of nightlights, I explore the nationwide electrification program targeting 300,000 villages. I find robust evidence that nightlights result primarily driven by the electrification of the SC-dominated reserved villages. The result suggests that reservation leads to a 2.16%

higher probability of electrification in the reserved villages. Additionally, the electrification result confirms ethnic favouritism as SC-dominated villages drive the overall positive impact.

The second result is that reservation leads to higher SC student enrollment. In the villages which become part of the reserved constituency, the SC enrollment increases by 2.2% with respect to the mean. The result can be explained as a consequence of two different dynamics. First is the role model effect: the SC community in newly reserved villages feels empowered by the fact that the leader of their local constituency belongs to their community. This may motivate the SC community to educate their children to escape social and economic deprivation. Second, intended ethnic favouritism, newly elected SC politicians may want to contribute positively to their society. To achieve this, the SC leader will promote the policy to educate and enrol children from the SC community.

Interestingly, I also find that the impact of SC enrollment is higher in the villages with a Low SC share. The result could be explained by the *discrimination* channel. SC faces more discrimination in the villages with a low SC share, and the fear of violence and retaliation against SC is much higher as SC is the super minority. Once the reservations for SCs are introduced in the villages where SC share is super low, the SC community feel more empowered and asserts their rights as they have an authority figure who can fight, represent and maintain that the rights of SC are not hindered. So the result that villages with low SC share have a higher impact is not surprising but assuring that reservation for SC reduces discrimination against SC.

To explore the mechanism behind the increase in SC enrollment, I investigate the result of reservations on new road construction and road up-gradation. I find evidence that reservation leads to higher upgrades of roads which will make education more accessible for students. I also find evidence that reservation leads to the construction of new roads but with a lag. The result suggests that new politicians may not be experienced and resourceful enough to implement a policy like a road construction as they may lack the political experience and calibre to implement a relatively tricky policy.

This paper contributes mainly to two strands of literature probing (i) *political quotas* and (ii) *favoritism*. In traditional voting models, politicians are assumed to be vote-seeking, motivated by career incentives like re-election for themselves or their parties (Downs, 1957; Arrow, 1963; Cox et al., 2005). There are also models which assume that politicians act in the interest of their ethnic groups or act as "citizen-candidates" who run for election to implement their favoured policies (Horowitz, 2000; Osborne

and Slivinski, 1996; Besley and Coate, 1997).

Political quotas: Empirical studies probing for socioeconomic effects of quotas for minorities in India finds the mixed result. (Pande, 2003) using state-level panel dataset finds that political reservation in Indian states has increased redistribution of resources for ST while she does not find any impact for SC. Similarly, (Chin and Prakash, 2011) using data on sixteen major Indian states for the period 1960-2000, finds that increasing the share of seats reserved for ST significantly reduces poverty while increasing the percentage of seats reserved for Scheduled Castes has no impact on poverty. (Jensenius, 2015) finds that 30 years of quotas had no impact on overall development or redistribution to SCs. (Kaletski and Prakash, 2016) finds that reservation for SC increases the total number of children working at the household level. (Girard, 2018) finds that electoral quotas for SC reduce caste-based discrimination. However, the decrease is temporary; once the quotas end, discrimination appears. (Gulzar et al., 2020) finds that quotas for ST lead to higher NREGA work for ST.

Favoritism: There is vast literature studying favouritism in policy implementation by politicians. (Hodler and Raschky, 2014) using nightlights data finds that the home region of the current political leader has more intense nighttime light suggesting regional favouritism. (Franck and Rainer, 2012) finds evidence from 18 African countries that education increases and infant mortality decrease in the ethnicity of the countries' leaders, suggesting ethnic favouritism. Similarly, (Burgess et al., 2015) finds that the area that shares the president's ethnicity in Kenya has better and more roads. (Kramon and Posner, 2016) finds that having a co-ethnic as president during one's school-age years is associated with an increase in children's schooling. Using nightlights data again, (De Luca et al., 2018) finds evidence for ethnic favouritism; nighttime light becomes 7%10% more intense in the political leaders' ethnic homelands.

My primary contribution is the following. First, I provide economic development justification for the reservation of SC in India. Second, the macro-level analysis may lead to the wrong conclusion. So, I do pan-India analysis with highly disaggregated novel datasets, which allows me to heterogeneous treatment effects. This shows that only reservation is not enough; there has to be a considerable share of SC in the village. Third, ethnic favouritism is considered antithetical. I argue that intended ethnic favouritism is not wrong. As caste-based political reservation, which I show leads to ethnic favouritism, is essential and crucial for developing deprived minorities. My paper differs from recent literature investigating the impact of political quotas for SC for the following reason, (1) different types of outcomes, (2) the timeline coincides with some of the world's most extensive development programs like rural road

construction (PMGSY), rural electrification (RGGVY), education for all (RTE Act of India).

The paper will proceed as follows. Section 2 offers the institutional background of India's electoral process and quotas. Section 3 gives details regarding the primary sources of data. Section 4 offers the empirical strategy; section 5 presents the main results. Section 6 concludes.

2 Institutional background

India is a federal parliamentary constitutional republic comprising 28 states and eight union territories, comprising 36 entities.

2.1 Election in India

The federal government of India (also known as the Central Government) is elected by a parliamentary election held every five years. Currently, the house has 543 seats, which are made up of up to 543 elected members. Each parliamentary constituency is represented by a single member elected by the first past the post-voting system.

In addition to the Lok Sabha (federal parliament), all 28 states have their respective legislative assemblies. Each assembly constituency is represented by a single member elected by the first-past-the-post voting system. The National Capital Territory of Delhi and Puducherry union territories also have their respective legislative assembly. At the same time, the federal government directly rules the other six union territories. [1]

In this paper, we focus on the state legislative election, where the voters vote to elect their local representative, known as Member of Legislative Assembly (MLA). Each constituency is a single-member constituency, where a political party nominates a candidate (an Independent politician without any political affiliation can also participate and get elected). The first-past-the-post system elects members,i.e. the candidate with the highest number of votes is elected to the Legislative assembly.

[1] Jammu and Kashmir Reorganisation Act, 2019: The state of Jammu and Kashmir was partitioned into two union territories of Jammu & Kashmir and Ladakh. The Legislative Assembly of Jammu and Kashmir is also abolished.
http://egazette.nic.in/WriteReadData/2019/210407.pdf (Accessed on 28th March 2020)

2.2 Reservation in India

Reservation in India is an affirmative action system that provides proportional representation for historically and currently disadvantaged minority groups in Indian society in education, employment, and politics. Articles 15 and 16 of the Indian Constitution allow the Indian government to set quotas to ensure any "socially and educationally backward classes of citizens" is adequately represented in public life.

Political reservations for minority communities existed in India well before its independence from Great Britain in 1947. In 1906, both the Muslim and Hindu minority communities demanded fair representation in power-sharing with the British Indian government; as a result, Muslims received 117 seats out of 250 seats in Bengal Legislative Assembly (Indian Council Act, 1909). Accordingly, the general elections of 1937 were held based on separate extended electorates, where only the Muslims voted for the 117 reserved seats in Bengal province.

In the Round Table Conferences in 1930-32, the concept of separate electorates for the depressed class (Scheduled Castes and Scheduled Tribes) was raised by Dr B. R. Ambedkar to ensure sufficient representation for the SC/ST minority in government. His efforts resulted in the Poona Pact, where it was agreed that among the seats reserved for Hindu minorities, a fraction of it would be reserved for the depressed class in the provincial legislature of Madras, Bombay with Sind, Punjab, Bihar and Orissa, Central Provinces, Assam, Bengal, and United Provinces. Additionally, in the Central Legislature, 18% of the seats allotted to the general electorate for British India were reserved for the Depressed Classes.[2]

Since the adoption of the constitution in 1950, independent India continued political reservation for SCs and STs in proportion to their share of the population at federal, state, and municipal levels of governance. Definition of SCs and STs are given below:

Legal Identification of Scheduled Castes and Scheduled Tribes[3]
Selection criteria for Scheduled Castes (SC)

1. Cannot be served by clean Brahmans
2. Cannot be served by the barbers, water-carriers, tailors, etc. who serve the upper

[2]The Poona Pact 1932
http://www.ambedkar.org/impdocs/poonapact.htm (Accessed on 29th March 2020)
[3]The criteria were the required basis for the selection of scheduled caste and scheduled tribe minorities, as stated in the Constitutional (scheduled caste and scheduled tribe) orders of 1950.

caste Hindus
3. Pollutes a high-caste Hindu by contact or by proximity
4. Is one from whose hands a caste Hindu cannot take water
5. Is debarred from using public amenities such as roads, ferries, wells, or schools
6. Will not be treated as an equal by high-caste men of the same educational qualification in ordinary social intercourse
7. Is depressed on account of the occupation followed and, but for that, the occupation would be subject to no social disability

Selection criteria for Scheduled Tribes (ST)

1. Tribal origin
2. Primitive ways of life and habitation in remote and less accessible areas
3. General backwardness in all respects

Though seats are reserved for Scheduled Castes and Scheduled Tribes, they are elected by all the voters in a constituency, without any separate electorate. Also, a member of Scheduled Castes and Scheduled Tribes is not debarred from contesting a general, i.e., non-reserved seat. The Constitution of India introduced the electoral quota system in 1950 for the first ten years. The constitution has been continuously amended to extend the reservation for more than ten years. Under the 104th amendment to the Constitution of India, this reservation will last until 2030.[4]

2.3 Delimitation in India

The Government of India establishes the Delimitation Commission of India under the provisions of the Delimitation Commission Act. The commission's main task is redrawing the boundaries of the various state legislative assembly and Lok Sabha constituencies based on a recent census. Delimitation commissions were set up four times in 1952, 1963, 1973 and 2002 under the Delimitation Commission Acts of 1952, 1962, 1972 and 2002. After the delimitation in 1974, the federal government suspended delimitation until after the 2001 census so that states' family planning programs would not affect their political representation in the Lok Sabha.

[4]The Constitution 104th Amendment Act 2019
http://egazette.nic.in/WriteReadData/2020/215637.pdf (Accessed on 29th March 2020)

There are two primary motivations for the delimitation exercise of 2008. (i) As the last delimitation took place in 1976, by the year 2001, there large was variation in the voter size of constituencies, with the largest having over three million electors and the smallest less than 50,000. (ii) In addition to significant discrepancies in the size of constituencies, the population figure of SCs as a percentage of the total population had increased from 14.6% in the 1971 census to 16.2% in the 2001 census. Similarly, the population figure of Scheduled Tribes had increased from 6.9% in the 1971 census to 8.2% in the 2001 census. The overall increase in population figure of SC and ST in the 2001 census has led the Delimitation Commission to increase the seats for Scheduled Castes in Lok Sabha from 79 to 84 and for Scheduled Tribes from 41 to 47 out of 543 Lok Sabha constituencies. The representation of each state is not changed during this exercise. For the legislative Assembly, the number of seats reserved for SC and ST minorities in the state legislative assembly is updated following the census. The present delimitation of constituencies has been done based on the 2001 census under the Delimitation Act, 2002. Like the 1974 delimitation, the federal government freezes the delimitation until the new census after 2026.

Table 9 presents the change in the number of seats reserved for SC and ST. We see that the total number of seats reserved for SC and ST increased by 43 and 22, respectively. This occurs due to the rise in the SC population share from 14.8% in 1971 to 16.2% in 2001. However, the total number of seats in the state assembly remains the same. The number of seats reserved for SC and ST seems very similar compared to their population share, which is 16.6% and 8.6% for SC and ST, respectively. This is because the average voter size of the constituency is not uniform across the state, implying that the SC constituency is relatively larger in terms of voter size compared to the ST constituency. The Delimitation exercise was deferred in the state of Assam, Manipur, Nagaland, Arunachal Pradesh, and Jharkhand. Moreover, no changes were made in the states of Meghalaya, Mizoram, Tripura and Sikkim for the ST (BL for Sikkim) constituency as per the Section 7 (1C) of the Representation of the People Act, 1950. The delimitation exercise did not occur in the former state of Jammu and Kashmir due to special constitutional provisions. We will look closely at the empirical strategy's delimitation exercise. section.[5]

In this paper, I focus on the delimitation of reserved constituencies for the Scheduled Castes. Figure 29 shows the concentration of SC and ST by district level according to the 2011 Census. The left panel shows the percentage of SC at the district level; we

[5]https://www.outlookindia.com/newswire/story/govt-defers-delimitation-exercise-in-4-ne-states-jharkhand/534077 (Accessed on 31st March 2020)

can see that the highest presence of SC is about 51%. The SC population is scattered throughout the country. On the right, we see ST concentration, and the ST population is clustered in certain pockets of India. In some districts, the ST population reaches almost 100%. Given the first-past-the-post electoral system, the SC population is scattered, and reservation becomes instrumental for them to be elected. Empirically it is more feasible to study reservations for SC as there is considerably more variation in SC villages compared to ST villages. Additionally, most ST-dominated villages did not go through the delimitation process.

2.3.1 Delimitation Exercise: An example

The Process of Delimitation can be explained with an example of Adilabad district in the state of Andhra Pradesh:[6]

Step 1: ENTITLEMENT OF SEATS FOR A DISTRICT

Total assembly seats in Andhra Pradesh = 294
Population of Andhra Pradesh = 76,210,007
Population of Adilabad District = 2,488,003
Constituency Seats for District = $\frac{\text{Population of Adilabad District}}{\text{Population of the State}}$ x 294 = 9.6

So, Adilabad district is entitled to 10 seats out of 294 assembly constituency seats.

Step 2: DISTRIBUTION OF SEATS FOR SCHEDULED CASTES

Proportion of SCs in Andhra Pradesh = 16.19%
Total Assembly Seats = 294
Seats for SCs in the state assembly = 0.1619x 294 = 47.59 = 48

So, Andhra Pradesh is entitled to 48 seats reserved for SCs out of 294 assembly constituency seats.

Step 3: SELECTION OF SCHEDULED CASTES CONSTITUENCY

Population of SC in A.P = 12,339,496 or 16.19%
Population of SC in Adilabad District = 461,214
Seats for SCs in Adilabad District = $\frac{\text{Population of SCs in Adilabad District}}{\text{Population of SCs in the State}}$ x 48

[6]Changing Face of Electoral India: Delimitation 2008, Volume - I

Seats for SCs in Adilabad District = 1.79 $\Rightarrow$ 2 SC seat.

In Figure 1, two assembly constituency Chennur and Bellampalle from the district of Adilabad, which have the highest and second-highest proportion of SC minority has been reserved for SC.

Figure 1: Selection of 2 SC Constituency in Adilabad District

Sl. No.	No. & Name of Assembly Constituency	2001 CENSUS POPULATION TOTAL	SCs	% of SCs	SC Seats
	ADILABAD	2488003	461214	18.54	TWO
1	2 Chennur (SC)	251989	72911	28.93	1
2	3 Bellampalle (SC)	223283	60161	26.94	2
3	1 Sirpur	251427	52008	20.69	
4	4 Mancherial	276425	51904	18.78	
5	6 Khanapur (ST)	245833	43413	17.66	
6	10 Mudhole	259141	43847	16.92	
7	8 Boath (ST)	227205	36861	16.22	
8	5 Asifabad (ST)	245803	33842	13.77	
9	9 Nirmal	259032	34738	13.41	
10	7 Adilabad	247865	31529	12.72	

Source: Changing Face of Electoral India: Delimitation 2008, Volume - I , Page - 64

It is important to emphasize that even though the delimitation exercise was completed in 2008, it was not effective until the next election based on newly delimited assembly constituencies. The state legislative assembly election of Indian states is not held simultaneously, so the effective treatment begins once the election takes place after the delimitation. For instance, even though the new boundaries and reservation status for 403 legislative assembly seats of Uttar Pradesh were delimited in 2008. The legislative assembly election of Uttar Pradesh took place in 2007 with the old constituency boundaries. The new delimited maps were put to use five years later in the assembly election of the year 2012. So, the effective treatment begins only after the election with new delimited maps. Figure 6 shows the beginning of effective treatment by state.

Additionally, I chose that if the election takes place in the first six months of a year (let's say April 2010), then the effective treatment began in 2010. On the other hand, if the election occurs during the second half of a year (let us say November 2010), then the effective treatment begins in the year 2011. For instance, in Karnataka, the first legislative election with the new maps took place in May 2008, so all the years after 2007 are labelled as treated. Look at Table 8 for effective treatment status of all the

Indian states.

One problem with redrawing the electoral constituency is that a politician may manipulate it to favour them electorally. (Iyer and Reddy, 2013) provides evidence that there is no manipulation for the delimitation of the state legislative assembly constituencies in Andhra Pradesh and Rajasthan. (Kjelsrud et al., 2020) did a similar exercise to show no evidence of gerrymandering for the delimitation at the Lok Sabha (federal Parliament) level. The main aim of the delimitation is to make the voter size uniform within states. In Figure 30, I plot the variation from the mean numbers of voters within a state before redistricting and after redistricting. The figure suggests that the main objective of redistricting was achieved as the deviation from mean voters decreased considerably after redrawing.

3 Data

3.1 Nighttime light density

Nightlight luminosity data are from DMSP-OLS annual measures of nighttime light luminosity, measured at 1/120 degree. Data has three primary variables at the village level; *total_light* is the total sum of luminosity in the village ranging from 0 to 63, with 0 indicating no light output and 63 indicating the highest output level. *num_cells* is the number of cells within a village and *avg_light* is the average nightlight luminosity of a village calculated by dividing the village's total nightlight (*total_light*) by the number of cells *num_cells* in the village. Nightlights data is obtained from (Asher et al., 2019). I plot the average nighttime light density over the year in Figure 24. It also shows that the nighttime light density follows an upward trend. In the year 2004, the average nightlight of the village is 3.43, and in the year 2013, is 6.175.

The nightlights data range from 1994-2013. I employ the data from 2004-2013 to study the impact of reservations on nightlights as the treatment occurred in 2004-2013. The data for 1994-2003 is used to perform a pre-trend test using placebo treatment. (Asher et al., 2021) finds that nighttime lights are highly significant proxies for population, employment, per capita consumption, and electrification at local levels. For further discussion on nighttime light density data, please refers to Appendix A.2.

3.2 Electrification

The electrification scheme, formally known as Rajiv Gandhi Gram Vidhutikaran Yojna (RGGVY), translated as Rajiv Gandhi rural electrification scheme, was launched in 2005. The scheme was launched to electrify electrified villages without electricity. The program targeted more than 360,000 villages. I matched the villages to the 2011 Indian Villages Census polygons. We can see in Figure 25 that the electrification count peaked in 2010. The data is obtained from (Eynde and Wren-Lewis, 2021). For my main measure of electrification, I use the completion date at the village level. For further discussion on electrification data, please refers to Appendix A.3.

3.3 Road (Re)construction

The central government launched the Pradhan Mantri Gram Sadak Yojna (PMGSY) or Rural Road Construction scheme in 2000 to connect unconnected villages to the road network with a paved road. In addition to the new road, the program also covered massive up-gradation of the existing road network. In Figure 26, we can see the number of new roads awarded (new road to be constructed) and also the number of roads upgraded (revamping of the old road). The highest number of roads were awarded in 2013 and 2006, with more than 10000 new roads awarded. The number of roads upgraded peaks in 2008 and 2009 with 10000 and 9209 roads upgraded respectively. As our primary measure of road connectivity, we use the road completion date at the village level. By the year 2014, in total, 90,000 villages were awarded new roads, and 45,000 villages went through road up-gradation. The dataset is obtained from the SHRUG repository by (Asher et al., 2019). I use the road completion date and road up-gradation at the village level. For further discussion on the road (re)construction data, please refer to Appendix A.4.

3.4 School Enrollment

DISE is an annual school-level report of primary and middle schools in India. It includes data on student enrollment by the community (SCs, STs and OBC), exam completion, and school infrastructure. DISE is a product of joint efforts made by the Ministry of HRD (now Ministry of Education), NIEPA, and UNICEF towards strengthening of Educational Management Information System (EMIS) in India. From 2005-06 the entire country got covered under the DISE; all the 35 States UTs and 604 districts were covered under DISE, and as many as 1.3 million schools imparting elementary

education were covered, and data was collected by using a single format. Our primary outcome variable here is *SC enrollment* calculated by SC Enrollment divided by Total Enrollment. For further discussion on school enrollment data, please refers to Appendix A.5.

4 Empirical Strategy

I only focus on political reservations for SC. So, I only keep those villages whose status was either SC (constituency reserved for Scheduled Castes) or GEN (constituency open for everyone, including SCs) before and after the delimitation.

Exogenous variation can be visualized in the Figure 2, 3, 4 and 5. Figure 2 shows the electoral constituency before the redistricting. The red line represents the constituency boundary with blue-shaded regions reserved for SCs. Similarly, Figure 3 shows the electoral constituency for the same area after the redistricting, with constituencies shaded as orange reserved for SC. In Figure 4, I combine the pre and post-redistricting map, and we can see considerable variation both with the boundary and the area reserved for SC. Finally, I introduce the villages in Figure 5, and we can now see the variation at the village level.

As a result of this variation, a village can take one out of four different status, first, villages which were part of the reserved constituency before redistricting and is no longer part of the reserved constituency (blue). Second, villages not part of the reserved constituency before the delimitation are now part of the reserved constituency (orange). Villages were always part of the reserved constituency both before and after the delimitation (brown), and the villages that were never part of the reserved constituency (white). In Table 1 we can see the distribution of village by type. (GEN $\Rightarrow$ GEN) Villages (villages which were never part of reserved constituency, colored white in Figure 5) represents in total 297,795 or 69.8% of villages. Villages that become part of the reserved constituency from unreserved (GEN $\Rightarrow$ SC) represent 45,134 or 10.6% of total villages. Villages which does not fall under reserved constituency (SC $\Rightarrow$ GEN) represent 36,243 or 8.5% of the villages. Finally, the villages which were always part of the reserved constituency (SC $\Rightarrow$ SC) represent 11.1% of the sample.

4.1 Baseline specification

The baseline model is estimated using a difference-in-difference strategy.

$$\mathbf{Y}_{it} = \alpha + \gamma(\textbf{Political Change})_i \times \textbf{post}_t + \mathbf{V}_i + \mathbf{T}_t + \mathbf{X}_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is the outcome variable for village i in year t. *Political Change* is a dummy which takes value = 1, when the village is either of type (GEN $\Rightarrow$ SC) or (SC $\Rightarrow$ GEN). *post* is a dummy which takes value 1 in the year post redistricting. V_i is village fixed effect and T_t is year fixed effect. Additionally X_i control for share of SC and ST in the village. The γ here captures the impact of political change (when the village changes its reservation status) on different set of outcome variable.

To investigate the impact of reservation, its important to explore how does the direction of variation matters i.e. what happens when a village become reserved (SC) from unreserved (GEN) and what happens when a village become unreserved (GEN) form reserved (SC). To do so, we run the following regressions:

$$\mathbf{Y}_{it} = \alpha + \beta_1(\text{GEN} \Rightarrow \text{SC})_i \times \textbf{post}_t + \beta_2(\text{SC} \Rightarrow \text{GEN})_i \times \textbf{post}_t + \mathbf{V}_i + \mathbf{T}_t + \mathbf{X}_i + \varepsilon_{it} \quad (2)$$

where Y_{it} is the outcome variable for village i in year t. (GEN $\Rightarrow$ SC) is dummy = 1 if the village changes its status from GEN to SC, 0 otherwise. (SC $\Rightarrow$ GEN) is dummy = 1 if the village changes its status from SC to GEN, 0 otherwise. *post* is a dummy which takes value 1 in the year post redistricting. V_i is village fixed effect and T_t is year fixed effect. Additionally X_i control for share of SC and ST in the village. β_1 here captures the impact of reservation on the villages which become part of the reserved constituency from unreserved constituency. $beta_2$ captures the impact of taking away the reservation from the villages which were previously part of the reserved constituency.

4.2 Split sample specification

In specification 2, the control sample are the villages that do not experience any political change i.e. (GEN $\Rightarrow$ GEN) and (SC $\Rightarrow$ SC). As two type of control villages differ considerably with each other as shown in Table 2. I also do the analysis with split sample as follows:

Entering Reservation

$$\mathbf{Y}_{it} = \alpha + \beta_1(\text{GEN} \Rightarrow \text{SC})_i \times \textbf{post}_t + \mathbf{V}_i + \mathbf{T}_t + \mathbf{X}_i + \varepsilon_{it} \quad (3)$$

where all the parameters are same as specification 2. The only difference is that now treated villages are (GEN ⇒ SC) and control villages are (GEN ⇒ GEN).

Leaving Reservation

$$\mathbf{Y}_{it} = \alpha + \beta_1(\text{SC} \Rightarrow \text{GEN})_i \times \mathbf{post}_t + \mathbf{V}_i + \mathbf{T}_t + \mathbf{X}_i + \varepsilon_{it} \tag{4}$$

where all the parameters are same as specification 2. The only difference is that now treated villages are (SC ⇒ GEN) and control villages are (SC ⇒ SC).

4.3 Output specific specification

For the nighttime light density data, I run the regression on the specification 1-4. The outcome variable in the case of nighttime light density is the average nighttime light density captured from the village. Similarly for *electrification*, *road award* and *road upgrade* outcome variable I run all 4 specification on dummy variable for village electrification, village being awarded a new road and road being upgraded in the village respectively. For the SC enrollment outcome variable, my unit of observation is school, so i refers to school instead of a village. I run all the specifications on SC enrollment at the school level.

5 Results and Mechanism

Nighttime Light Density

Main result: Table 3 represents the effect of political reservation for SC minority on the nighttime light density. Column 1 and 2 is the result of specification 1 which shows the impact of political change i.e. the village experiencing a change in reservation status. Column 3 and 4 is the result for specification 2 which shows the result for the impact of reservation on nighttime light density when a village become reserved from unreserved (GEN ⇒ *SC*) and when a village become unreserved from reserved (SC ⇒ GEN).[7] The nighttime light density data is available for the period of 20 years from 1994 to 2013. As my treatment begin in 2008, to have a balanced analysis, I only

[7]The standard error are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation).

employ the data for the last ten years (2004 to 2013) in my main analysis, this choice can be justified because this will give me relatively balanced years of pre-treatment and post-treatment period.

In Table 3 column 1, it can be seen that average nighttime light density are 0.0689 points higher in the villages that experience a change in their political reservation status. In terms of magnitude the result suggest that the nightlights increases by 1.5% compared to the mean of the dependent variable. In column 2, I control for the share of SC and ST and we see that the nightlights increases by (0.0585 points, not significant). However the result in column 1 and 2 only shows how different is the villages that experiences a political change as respect to those who do not. To measure the impact of reservation, we have to explore whether the direction of change matters (GEN $\Rightarrow$ SC and SC $\Rightarrow$ GEN), column 3 and 4 provides the coefficient β_1 and β_2 of specification 2, where β_1 refers to the change from GEN to SC, and β_2 refers to the change from SC to GEN. In column 4, we see that the average nighttime light density increase significantly by 0.126 points or 2.73% as respect to the mean of the dependent variable when a village becomes part of a reserved constituency.

In recent year a substantial literature employs nightlight as a measure of development outcomes (Chen and Nordhaus, 2011; Asher and Novosad, 2017; Henderson et al., 2012). Literature suggests that nighttime light density could be employed as a proxy for economic development. So it could be interpreted that reservation leads to higher local economic development. We also see that there is no effect of reservation on nighttime light density once the village ceases to exist as part of the reserved constituency. This result makes sense as its not rational for politician/policymakers to take away the resources once it's already provided to the public suggesting persistence of reservation or quota mandate.

In Figure 8 I do an event study to test the pre-trend assumption. The horizontal axis represents the years since the treatment, which varies from 6 or more years before the treatment to 4 and more years after the treatment. On the vertical axis, we have a 95% confidence interval of "Effect on nighttime light density". Horizontal axis is regressed on a set of year dummies around the year of treatment. The blue line refers to the villages which become part of reserved constituency from unreserved constituency (GEN $\Rightarrow$ SC) and gray line refers to the villages which become part of unreserved constituency from reserved constituency (SC $\Rightarrow$ GEN). It can be seen that before the treatment, the coefficient is zero indicating no pre-trends. For newly reserved villages there is a significant rise in the nighttime light density while for villages losing the reservation status there is no impact.

Placebo test: The nighttime light density data is available from 1994 to 2013. I used the last ten years of data (2004-2013) for my main analysis and first ten years of data (1994-2003) to perform a placebo test. As there is no actual treatment in the placebo data, I coded a village treated in the same manner as in the primary dataset. For example, if a village "X" became treated in the 5th year in the main data (5th year is 2009), then I code in the placebo data that the village "X" is treated in the year 1999 (1999 is the 5th year) in the placebo dataset.

We can see the result of placebo test in Table 3 column 5 to 8. The result shows that there is no impact of political reservation on nighttime light density. Coefficient for specification 1 and 2 is insignificant, and we fail to reject the null hypothesis. The placebo test result further strengthens our result of the causal relationship between political reservation and nighttime light density (as a proxy for economic development). Similar to the main analysis, I perform an event study with the placebo dataset; we can see in Figure 31 that both before and after the treatment, there is no impact of placebo reservation (placebo treatment) on nighttime light density.

Heterogeneous treatment analysis: In my data, there is information regarding share of Scheduled Castes at the village level. I do above median and below median analysis based on the share of SC in the village. I divide the sample in two, (i) village with high share of SC, i.e. above median, (ii) villages with low share of SC, i.e. below median. The average share of SC in above median villages is 33% while in below median villages it is 5%. I run the specification 1 and 2 separately on high share and low share samples. In Figure 10 I plot the β_1 (GEN $\Rightarrow$ SC) and β_2 (SC $\Rightarrow$ GEN) coefficient of specification 2. We see that the positive impact of reservation is only present for the villages which has high share of SC.

We also see that the there is no impact of reservation for below median sample and the overall positive effect is driven by above median sample. It implies that when a village become reserved from unreserved the nighttime light density only increases when there is significant SCs population in the village. This provide evidence that reservation alone is not sufficient for the development of the impoverished minorities and areas, the share of SCs (impoverished) matters. It can also be interpreted that there has to be a sizable and decisive vote base of the SC minority to see any sizable positive impact of reservation. In Figure 10 we also plots the β_2 (effect of reservation when a village become unreserved from reserved), the coefficient is 0 for both samples, implying that regardless of the share of SC in the village there is no impact. The result make sense it's not rational politically to take away (or decrease the intensity) of the resources once already provided. In Table 12 I present the regression result.

One possible concern with such splitting the sample that there may not be enough villages of type (GEN ⇒ SC) and (SC ⇒ GEN) as the consistency with high SC share are reserved for SC. In Figure 7 we can see that there is significant representation of such villages in *Low SC Share* sample. For instance, for nightlights data in low SC share, 7.4% (15,511 villages) and 6.2% (13,000 villages) of villages are of of type (GEN ⇒ SC) and (SC ⇒ GEN) respectively.

Split sample analysis: In specification 2 the control samples are the villages whose political reservation remains same i.e. (GEN ⇒ GEN) and (SC ⇒ SC). There is a probable concern in terms of inference as the two control groups differs considerably from each other as can be seen in Table 2. To have a more clearer view, I split the sample (i) I define (GEN ⇒ SC) as treated group and (GEN ⇒ GEN) as control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group. The split sample specification is specified in the specification 3 and 4.

The result for the split sample analysis is presented in Table 11. In the column 1-4 the result for the year 2004-2013 is presented. In column 1-2 we see that the result is consisted with the main result, the nightlights increases significantly in the villages which become part of reserved constituency from unreserved ones. Similarly for the villages which loses the reservation status the reservation has no impact indicating persistence of quota mandate. In the column 5-8 I present the result for placebo treatment (1994-2003), the result is consistent with the main result with full sample i.e. we see no pre trend.

Similar to full sample analysis, I do an event study with the split sample. I present the the event study in the bottom panel of Figure 8. The result is similar to the event study with full sample. Similarly, it can be seen that before the treatment, the coefficient is zero indicating no pre-trends. For newly reserved villages (GEN ⇒ SC) there is a significant rise in the nighttime light density while for villages losing the reservation (SC ⇒ GEN) status there is no impact.

I perform the heterogeneous treatment analysis with the split sample, I split the sample in two (i) high SC share, above median and (ii) low SC share, below median. I plot the coefficient β_1 (GEN ⇒ SC) obtained from specification 3 and β_2 (SC ⇒ GEN) obtained from specification 4 in the Figure 35. We find similar result to full sample analysis. We see that the there is no impact of reservation for below median sample and the overall positive effect is driven by above median sample. It implies that when a village become reserved from unreserved the nighttime light density only increases when there is significant SCs population in the village.

Education outcome: SC Enrollment

Main result: Table 4 represents the effect of political reservation for SC minority on the enrollment of SC students in the school. Column 1 and 2 is the result of specification 1 which shows the impact of political change i.e. the village experiencing a change in reservation status. Column 3 and 4 is the result for specification 2 which shows the result for the impact of reservation on SC enrollment when a village become reserved from unreserved (GEN $\Rightarrow$ *SC*) and when a village become unreserved from reserved (SC $\Rightarrow$ GEN).[8]

In Table 4 column 1, it can be seen that SC enrollment is .00678 points higher in the villages that experience a change in their political reservation status. In column 2, I control for the SC share in the village as the result may be driven simply by the increasing trend of SC demographics. We find that the SC enrollment is still higher in the villages experiencing political change but the magnitude is almost cut in half and reduced to 0.0038 points. To measure the impact of reservation, we have to explore whether the direction of change matters (GEN $\Rightarrow$ SC and SC $\Rightarrow$ GEN), column 3 and 4 provides the coefficient β_1 and β_2 of specification 2, where β_1 refers to the change from GEN to SC, and β_2 refers to the change from SC to GEN. In column 3, we see that the SC enrollment increase significantly by 0.0084 points or 3.6% as respect to the mean of the dependent variable when a village becomes part of a reserved constituency. When I control for the SC share in column 4 the impact of reservation on SC enrollment increased by 0.005 or 2.2% as respect to the mean of the dependent variable. For the villages which loses its political reservation status (SC $\Rightarrow$ GEN) we see in column 4 that there is no impact of reservation on the SC enrollment. The result hints towards the persistence of quota mandate.

The result can be explained as a consequence of two different dynamics (i) **Role Model Effect:** the SC community in newly reserved villages feel empowered by the fact that the leader of their local constituency belongs to their community or share the identity. Seeing someone from deprived community as theirs with a utmost authority in their area may motivate them that their children could also do the same and escape the deprivation. In order to escape such deprivation the best medium is education and this why we see this result. (ii) **Intended Ethnic Favoritism:** New elected politician from SC community could be someone who wants to contribute positively to their society. Given the relative low educational indicators among SC community

[8]The standard error are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation).

as compared to higher caste community, the SC leader will promote the policy to educate end enroll children from SC community.

In Figure 9 I do an event study to test the pre-trend assumption. The horizontal axis represents the years since the treatment, which varies from 6 or more years before the treatment to 5 and more years after the treatment. On the vertical axis, we have a 95% confidence interval of "Effect on SC school enrollment". Horizontal axis is regressed on a set of year dummies around the year of treatment. The blue line refers to the villages which become part of reserved constituency from unreserved constituency (GEN $\Rightarrow$ SC) and gray line refers to the villages which become part of unreserved constituency from reserved constituency (SC $\Rightarrow$ GEN). It can be seen that before the treatment, the coefficient is zero indicating no pre-trends. For newly reserved villages there is a significant rise in the SC enrollment and the effect remains positive even after 6 years of treatment. For the villages losing the reservation status we see that there is initial increase in the SC enrollment but the effect subsides and become 0 after 3 years. The initial increase could be explained as the lingering effect of previous quota mandate and also the impact of political churning introduced by reservation.

Heterogeneous treatment analysis: Similar to nightlights analysis, I divide the sample in two, (i) village with high share of SC, i.e. above median, (ii) villages with low share of SC, i.e. below median. The average share of SC in above median villages is 30.3% while in below median villages it is 6.8%. I run the specification 1 and 2 separately on high share and low share samples. In Figure 11 I plot the β_1 (GEN $\Rightarrow$ SC) and β_2 (SC $\Rightarrow$ GEN) coefficient of specification 2. We see that the positive impact of reservation is positive for both below and above median sample.

Contrary to the nightlights result, the impact of SC enrollment is higher in the villages with Low SC share. The result could be explained by the *discrimination channel*. As the *de facto* access to public amenities for SC is heavily restricted in the villages with low SC share villages in relative to villages with high SC share where SC has a louder voice. In the villages with low SC share the discrimination is relatively higher as the fear of violence and retaliation against SC is much more higher as SC are super minority. Once the reservations for SCs are are introduced in the villages where SC share is super low, the SC community feel more empowered and assert their rights as they have an authority figure who can fight and maintain that the rights of SC are not hindered.

In Figure 11 we also plots the β_2 (effect of reservation when a village become unreserved from reserved), the coefficient is 0 for both samples, implying that regardless

of the share of SC in the village there is no impact. Again the result make sense it's not rational politically to take away (or decrease the intensity) of the resources once already provided. In Table 22 I present the regression result.

Split sample analysis: Similarly, there is a probable concern in terms of inference as the two control groups (GEN ⇒ GEN and SC ⇒ SC) differs considerably from each other as can be seen in Table 2. To have a more clearer view, I split the sample (i) I define (GEN ⇒ SC) as treated group and (GEN ⇒ GEN) as control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group. The split sample specification is specified in the specification 3 and 4.

The result for the split sample analysis is presented in Table 21. In column 1-2 we see that the result is consisted with the main result, the SC enrollment increases significantly in the villages which become part of reserved constituency from unreserved ones. Similarly for the villages which loses the reservation status the reservation has no impact indicating persistence of quota mandate.

Similar to full sample analysis, I do an event study with the split sample. I present the the event study in the bottom panel of Figure 9. The result is similar to the event study with full sample. Similarly, it can be seen that before the treatment, the coefficient is zero indicating no pre-trends. For newly reserved villages (GEN ⇒ SC) there is a significant rise in the nighttime light density while for villages losing the reservation (SC ⇒ GEN) status there is very little residual impact.

I perform the heterogeneous treatment analysis with the split sample, I split the sample in two (i) high SC share, above median and (ii) low SC share, below median. I plot the coefficient β_1 (GEN ⇒ SC) obtained from specification 3 and β_2 (SC ⇒ GEN) obtained from specification 4 in the Figure 41. We find similar result to full sample analysis. We see that the impact of reservation is higher for the villages with low SC share (below median sample) than the high SC share sample. However there is no impact of reservation on Sc enrollment for the village which loses the reservation status.

Mechanism: Nighttime Light Density

(Asher et al., 2021) shows that nightlights are highly significant proxies for population, employment, per-capita consumption and electrification at very local level. Additionally the time frame of this analysis coincide with the launch of some of the biggest development program in the world. For instance Rural Electrification Program (RGGVY), Road Construction Program (PMGSY), Education for all (Sarva Sik-

sha Abhiyan and Right to Education)[9]. To explain the mechanism for I explore the mechanism of *electrification* apart from Education outcome already explored above.

Column 5-8 of Table 5 represents the result for the impact of reservation on the electrification outcome. Column 5 and 6 is the result of specification 1 which shows the impact of political change i.e. the village experiencing a change in reservation status. Column 7 and 8 is the result for specification 2 which shows the result for the impact of reservation on electrification when a village become reserved from unreserved (GEN $\Rightarrow$ *SC*) and when a village become unreserved from reserved (SC $\Rightarrow$ GEN). In Table 5 column 6, it can be seen that the probability of being electrified is 2.16% higher in the villages that experience a change in their political reservation status.

However the result in column 5 and 6 only shows how different is the villages that experiences a political change as respect to those who do not. To measure the impact of reservation, we have to explore whether the direction of change matters (GEN $\Rightarrow$ SC and SC $\Rightarrow$ GEN), column 7 and 8 provides the coefficient β_1 and β_2 of specification 2, where β_1 refers to the change from GEN to SC, and β_2 refers to the change from SC to GEN. In column 8, we see that the probability of being electrified is 2.8% is higher in the villages that becomes part of a reserved constituency. While we do not find any impact on the villages that loses the reservation status.

Similar to nightlights, I also perform a heterogeneous treatment result. I plot the β_1 (GEN $\Rightarrow$ SC) and β_2 (SC $\Rightarrow$ GEN) coefficient of specification 2 in the Figure 12. Similar to nightlights result, we see that the positive impact of reservation is only present for the villages which has high share of SC. We also see that the there is no impact of reservation for below median sample and the overall positive effect is driven by above median sample. The result is shown in the Table 15. I also perform the heterogeneous treatment analysis and I find the same result as in full sample analysis , the split sample result is plotted in Figure 36.

The result from electrification is very assuring and provides robustness to the nightlights result as the result is identical.

Mechanism: SC Enrollment

(Adukia et al., 2020) finds that Rural Road Construction (PMGSY) leads to higher

[9] According to Indian constitution under 86th Amendment act 2002, There is right to free and compulsory education up to 614 years of age.

student enrollment. I used the PMGSY data to investigate the channel for the higher enrollment for SC students in the newly reserved villages. For road construction (PMGSY) dataset, we have two policy variable: new road construction - when a village is awarded a new road and road upgrade - when an existing road is upgraded (revamped) in the village.

Road upgradation: Road upgrade aspect of PMGSY is largely overlooked in the literature. I employ the road up-gradation information to explore the channel. In Table 6, column 1-2 shows that reservation is associated with higher probability of road up-gradation in the villages whose political status has changed as a result of reservation. In column 4 we find that the villages that become part of newly reserved constituency has 1.4% higher probability of being electrified. While the villages which cease to exist being part of reserved constituency also has a positive impact of reservation although the magnitude is significantly lower than the newly reserved villages.

The positive result for both could be explained (GEN $\Rightarrow$ SC) and (SC $\Rightarrow$ GEN) coefficient makes sense as in both type of constituency the political class is almost entirely newcomers. In the (GEN $\Rightarrow$ SC) villages only SC can fight elections post reservation, this lead to influx of SC politician which replaces the Non-SC political class. Similarly in (SC $\Rightarrow$ GEN) constituency, although SC can fight elections but given the first-past the post electoral system mixed with SC rarely being in majority in a constituency results in total replacement of pre-reservation SC political class with Non-SC politician post-reservation. (Bhavnani, 2017) provides the evidence that in newly unreserved constituency the chances of SC being elected is almost none.

However the fact that political class is entirely new is true for all the other variable used in the paper so far. The reason why we see the positive impact for (SC $\Rightarrow$ GEN) in road up-gradation only is because of the nature of the road upgrade policy. Road Upgrade is very easy to implement for politician as it very cheap, quick, less bureaucratic, requires less political experience and caliber and mostly can be implemented with just a phone call from the politician. This is not true for the other variable under study in this paper. Given that there are new sets of politician in the to type of villages, politician in both type of villages want to establish a goodwill for their political future. Road up-gradation is a policy which policymaker can very implement so it works as a very robust signal for their political goodwill. I also perform a heterogeneous treatment analysis by the SC share. In Figure 39 we can see that impact is higher for villages with high SC share which is consistent with other result.

Road Construction: In contrast with road up-gradation, road construction is very different policy in terms of implementation. New road construction is expensive,

highly bureaucratic, requires political experience and caliber and can take a long time to see an actual implementation period. We find that the impact of reservation is positive but with lag as it can be seen in Figure 33 which suggest that the implementation can take an entire election cycle which may explain why politician doesn't see any incentive to invest in such policy if they want to make a quick political goodwill. This analysis with new road construction requires more investigation and currently the the author is working on it.

6 Conclusion

Our result shows that political reservation leads to higher local economic development (using nighttime light density), and discontinuation of the reservation does not have any immediate impact on the economic status of such villages. The result also shows that the positive impact of reservation economic development is primarily driven by the share of SC in the village. A similar result could explain the nightlight result in electrification.

The second result is that reservation leads to higher SC student enrollment. In the villages which become part of the reserved constituency. The role model effect can explain the result. The leader of their local constituency belongs SC community. It motivates the SC community to educate their children to escape social and economic deprivation. Second, intended ethnic favouritism, newly elected SC politicians promote the policy to educate and enrol children from the SC community. The impact of SC enrollment is higher in the villages with a Low SC share suggesting reservation leads to less discrimination against SC.

To explore the mechanism behind the increase in SC enrollment, I find evidence that reservation leads to higher upgrades of roads and that reservation leads to the construction of new roads but with a lag. It may explain the increase in enrollment as it will make education more accessible for students.

References

Adukia, A., Asher, S., and Novosad, P. (2020). Educational investment responses to economic opportunity: evidence from indian road construction. *American Economic Journal: Applied Economics*, 12(1):348–76.

Arrow, K. (1963). J. 1951. *Social choice and individual values*.

Asher, S., Lunt, T., Matsuura, R., and Novosad, P. (2019). The socioeconomic high-resolution rural-urban geographic dataset on india (shrug). *URL: https://doi.org/10.7910/DVN/DPESAK*.

Asher, S., Lunt, T., Matsuura, R., and Novosad, P. (2021). Development research at high geographic resolution: an analysis of night-lights, firms, and poverty in india using the shrug open data platform. *The World Bank Economic Review*, 35(4):845–871.

Asher, S. and Novosad, P. (2017). Politics and local economic growth: Evidence from india. *American Economic Journal: Applied Economics*, 9(1):229–73.

Besley, T. and Coate, S. (1997). An economic model of representative democracy. *The Quarterly Journal of Economics*, 112(1):85–114.

Bharti, N. K. et al. (2018). Wealth inequality, class and caste in india, 1961-2012. *WID. world Working Paper*, 14.

Bhavnani, R. R. (2017). Do the effects of temporary ethnic group quotas persist? evidence from india. *American Economic Journal: Applied Economics*, 9(3):105–23.

Burgess, R., Jedwab, R., Miguel, E., Morjaria, A., and Padró i Miquel, G. (2015). The value of democracy: evidence from road building in kenya. *American Economic Review*, 105(6):1817–51.

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

Chin, A. and Prakash, N. (2011). The redistributive effects of political reservation for minorities: Evidence from india. *Journal of development Economics*, 96(2):265–277.

Cox, G. W., McCubbins, M. D., et al. (2005). *Setting the agenda: Responsible party government in the US House of Representatives*. Cambridge University Press.

De Luca, G., Hodler, R., Raschky, P. A., and Valsecchi, M. (2018). Ethnic favoritism: An axiom of politics? *Journal of Development Economics*, 132:115–129.

Downs, A. (1957). An economic theory of political action in a democracy. *Journal of political economy*, 65(2):135–150.

Elvidge, C. D., Hsu, F.-C., Baugh, K. E., and Ghosh, T. (2014). National trends in satellite-observed lighting. *Global urban monitoring and assessment through earth observation*, 23:97–118.

Eynde, O. V. and Wren-Lewis, L. (2021). Complementarities in infrastructure: Evidence from rural india.

Franck, R. and Rainer, I. (2012). Does the leader's ethnicity matter? ethnic favoritism, education, and health in sub-saharan africa. *American Political Science Review*, 106(2):294–325.

Girard, V. (2018). Dont touch my road. evidence from india on affirmative action and everyday discrimination. *World Development*, 103:1–13.

Gulzar, S., Haas, N., and Pasquale, B. (2020). Does political affirmative action work, and for whom? theory and evidence on indias scheduled areas.

Henderson, J. V., Storeygard, A., and Weil, D. N. (2012). Measuring economic growth from outer space. *American economic review*, 102(2):994–1028.

Hodler, R. and Raschky, P. A. (2014). Regional favoritism. *The Quarterly Journal of Economics*, 129(2):995–1033.

Horowitz, D. L. (2000). *Ethnic groups in conflict, updated edition with a new preface*. Univ of California Press.

Iyer, L. and Reddy, M. (2013). *Redrawing the Lines: Did Political Incumbents Influence Electoral Redistricting in the World's Largest Democracy?* Harvard Business School.

Jensenius, F. R. (2015). Development from representation? a study of quotas for the scheduled castes in india. *American Economic Journal: Applied Economics*, 7(3):196–220.

Kaletski, E. and Prakash, N. (2016). Does political reservation for minorities affect child labor? evidence from india. *World Development*, 87:50–69.

Kjelsrud, A., Moene, K. O., and Vandewalle, L. (2020). The political competition over life and death: Evidence from infant mortality in india. Technical report, Graduate Institute of International and Development Studies Working Paper.

Kramon, E. and Posner, D. N. (2016). Ethnic favoritism in education in kenya. *Quarterly Journal of Political Science*, 11(1):1–58.

Osborne, M. J. and Slivinski, A. (1996). A model of political competition with citizen-candidates. *The Quarterly Journal of Economics*, 111(1):65–96.

Pande, R. (2003). Can mandated political representation increase policy influence for disadvantaged minorities? theory and evidence from india. *American Economic Review*, 93(4):1132–1151.

Thorat, A. and Joshi, O. (2020). The continuing practice of untouchability in india. *Economic & Political Weekly*, 55(2):37.

Figure 2: Constituency before redrawing in 2008

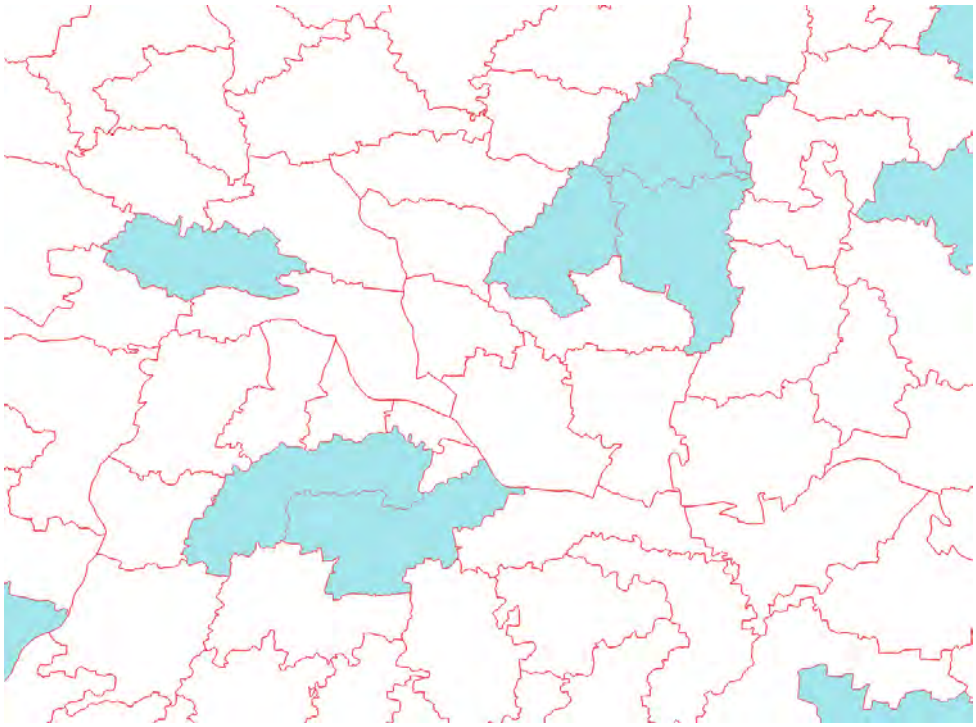
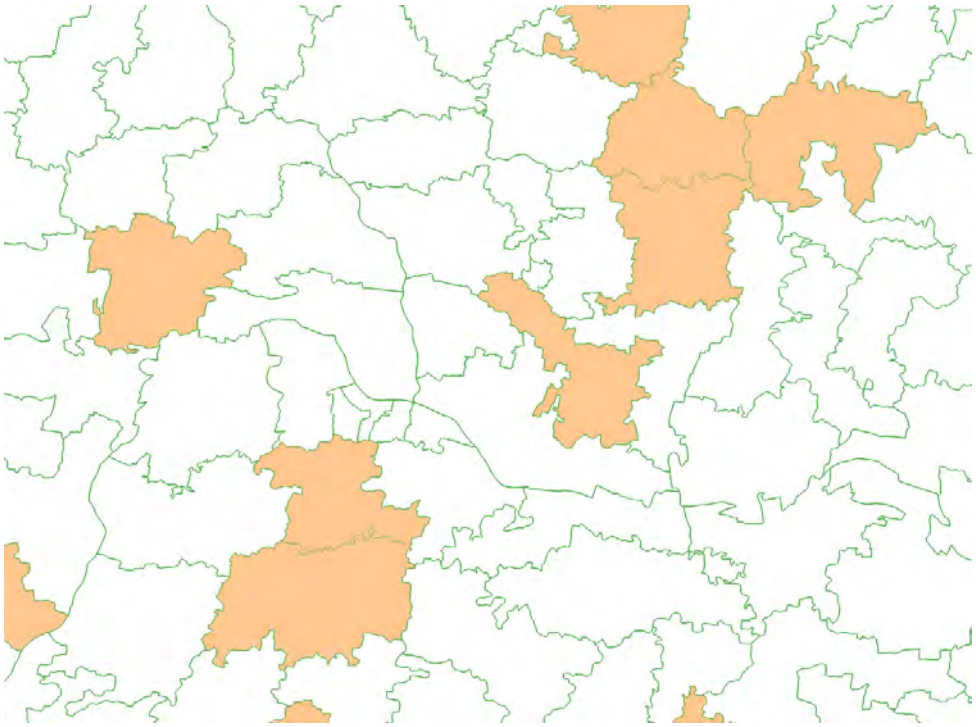


Figure 3: Constituency after redrawing in 2008



Note: Figure 2 shows the electoral constituency before the redistricting. The red line represents the constituency boundary with blue shaded constituency regions are reserved for SCs. Figure 3 shows the electoral constituency after the redistricting with constituency shaded as orange are reserved for SC.

Figure 4: Constituencies after and before redrawing in 2008

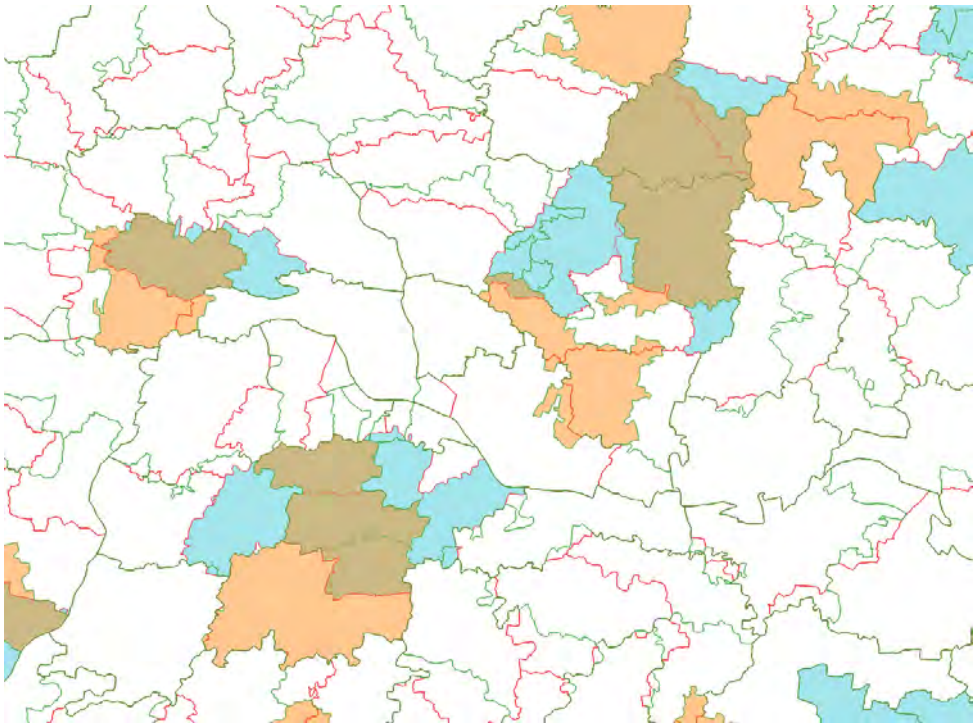
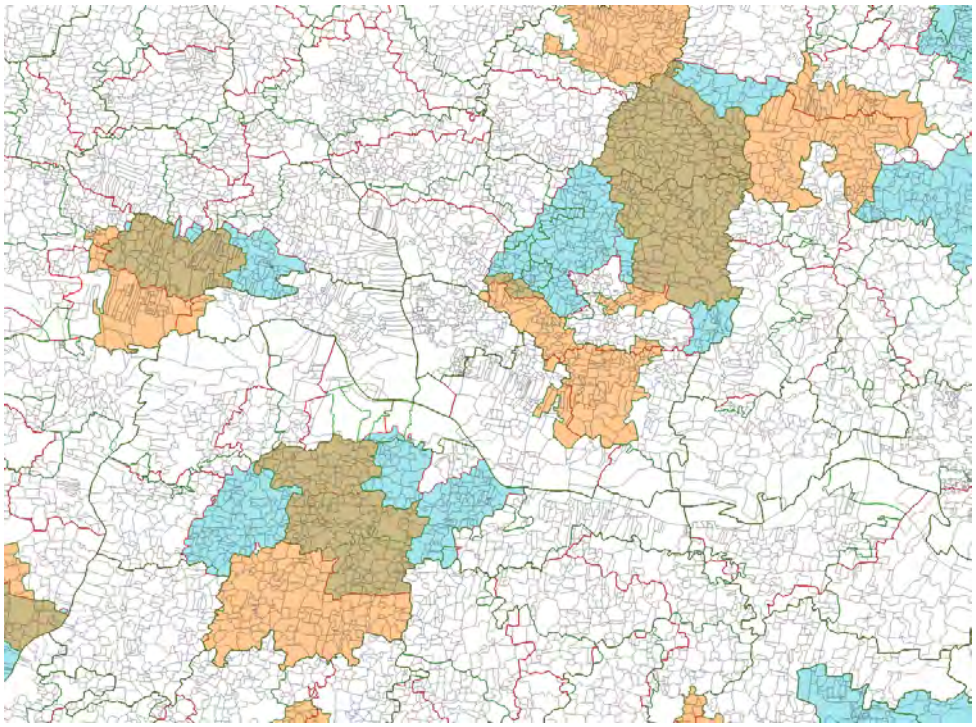
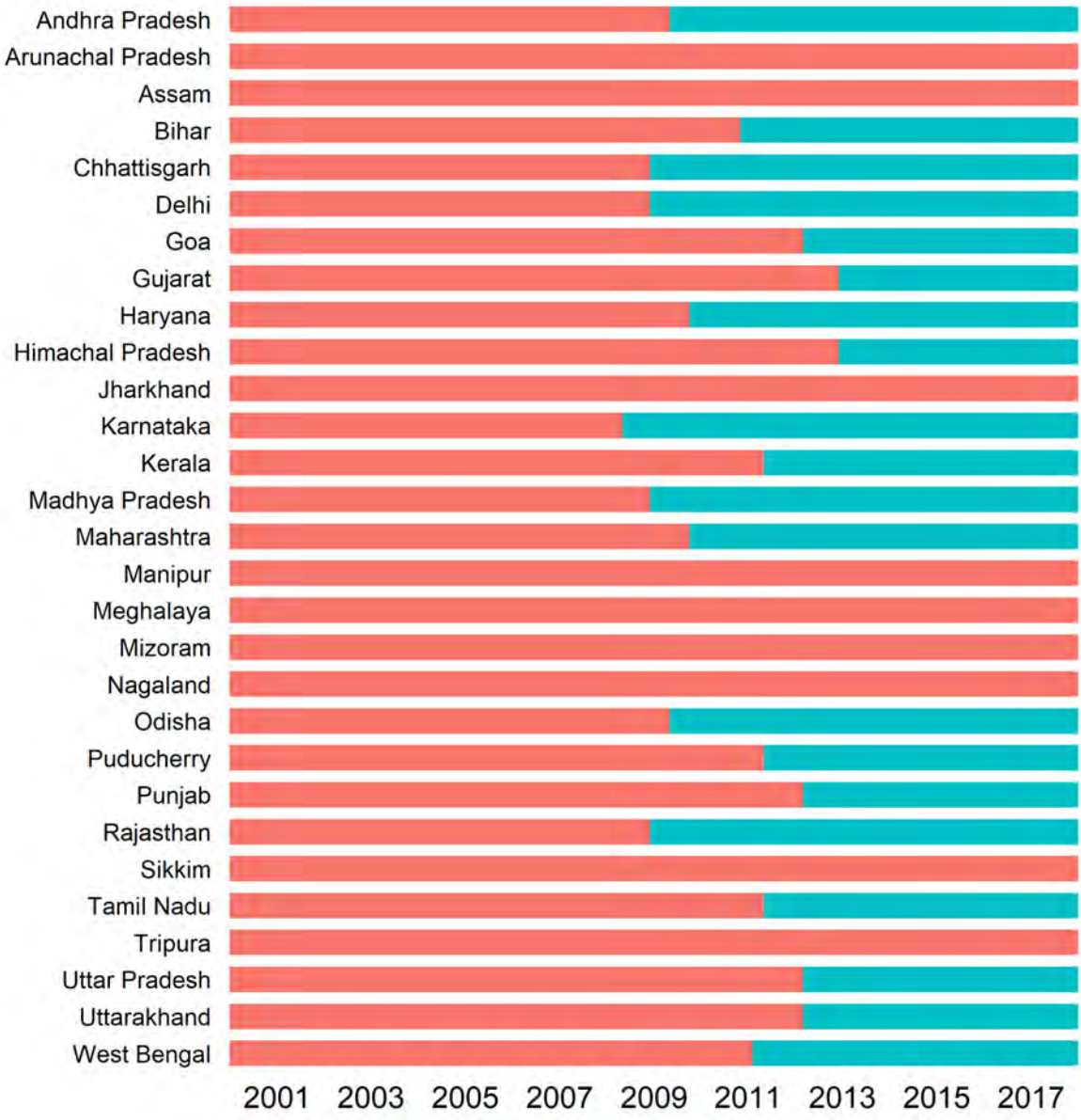


Figure 5: Constituencies after and before redrawing with village



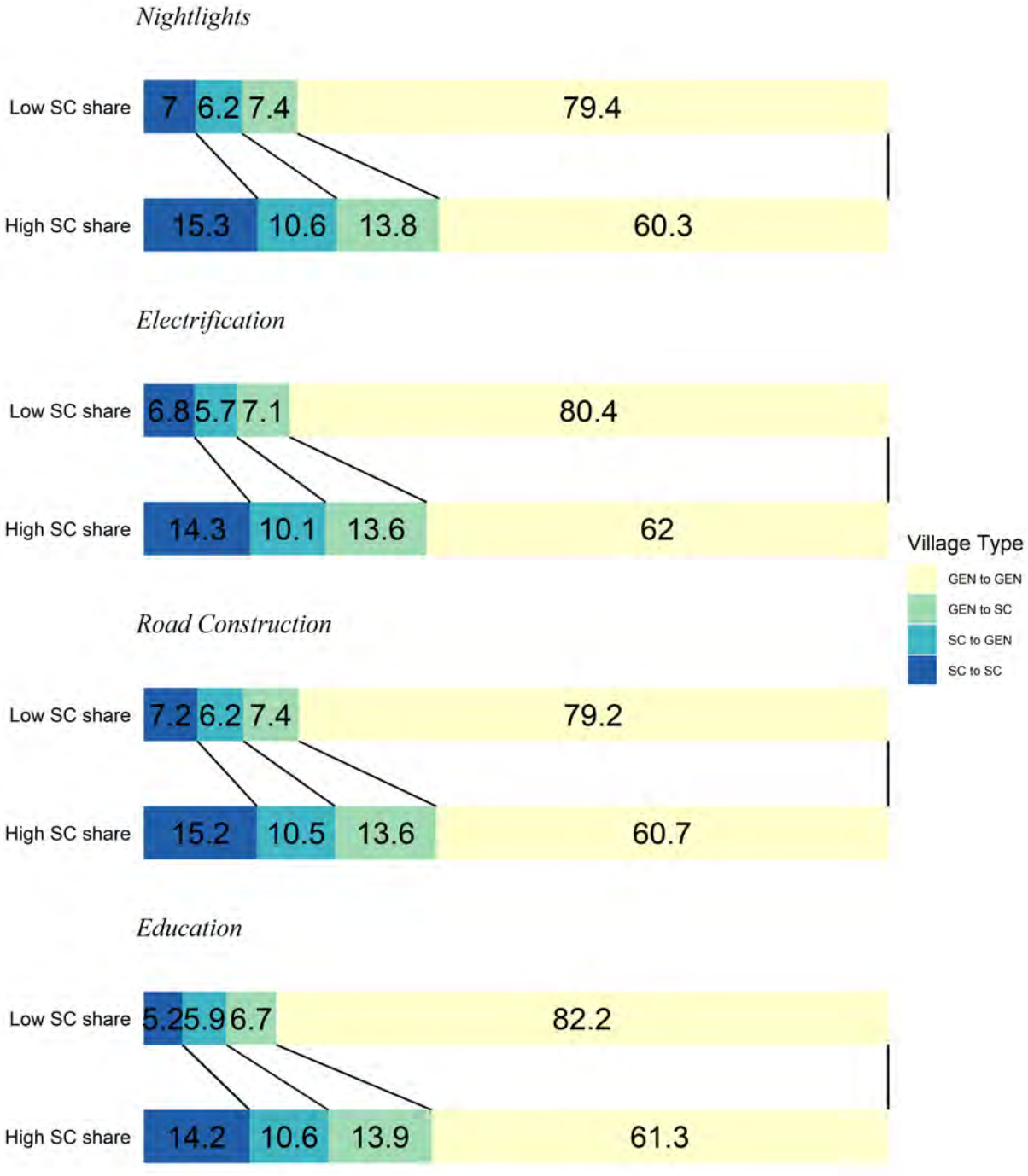
Note: In Figure 4 I combine the pre and post redistricting map and we can see that there is considerable variation both with the boundary and the area which is reserved for SC. Finally in Figure 5, I introduce the villages and we can now visualize the variation at the village level.

Figure 6: Timeline of treatment



Note: Delimitation for all states was completed by the year 2008. But the effective treatment begins once the elections took place with the new maps. As the election took place at different times in different states of India we see that there is staggered treatment. Red refers to the time period pre-redrawing and blue refers to post-redrawing. In states of Arunachal Pradeh, Assam , Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura the delimitation exercise was not conducted.

Figure 7: Vt Share



Note: This Figure shows the share of different type of villages when the sample were split based on Low and High SC share. It shows the composition for all four dataset, nightlights, electrification, road construction and education. The numbers represents the percentages of different villages. For nightlights data in low SC share, 7.4% (15,511 villages) and 6.2% (13,000 villages) of villages are of of type (GEN $\Rightarrow$ SC) and (SC $\Rightarrow$ GEN) respectively.

Table 1: Type of village by political status

Change in Status	**Freq**	%	% **Cum.**
GEN ⇒ GEN	297,795	69.77	69.77
GEN ⇒ SC	45,134	10.57	80.34
SC ⇒ GEN	36,243	8.49	88.83
SC ⇒ SC	47,653	11.16	100
Total	426,825	100.00	100

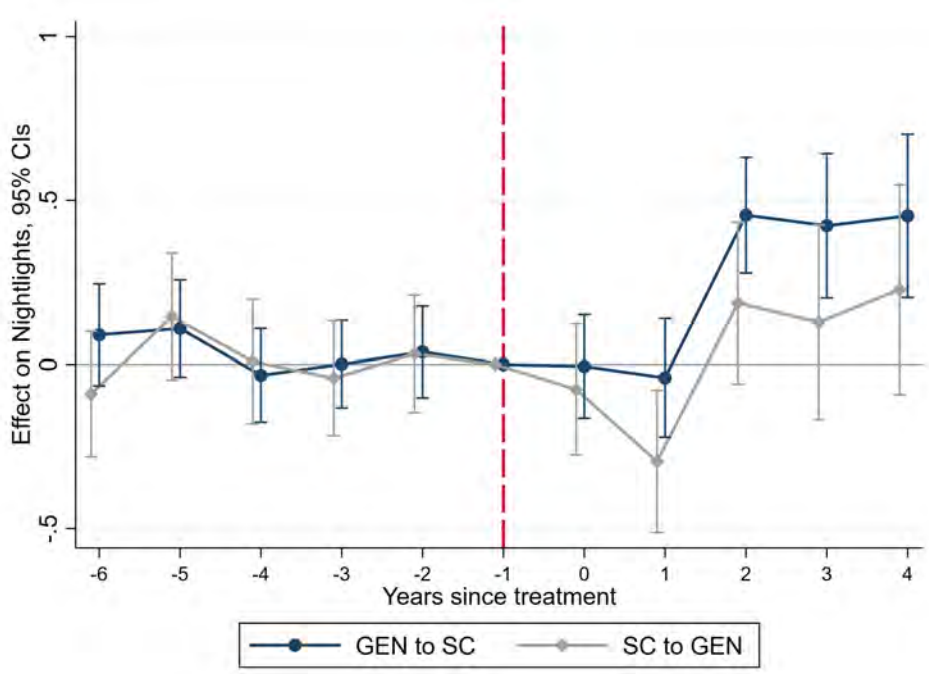
Note: In this analysis we focus only on the reservation for Scheduled Caste minority. This reduces the type of village to four. This table shows the frequency of the four types of villages. Out of 426,825 villages, the political status of 19.1% villages changes their political status (GEN ⇒ SC) or (SC ⇒ GEN).

Table 2: Descriptive Statistics for the different types of villages

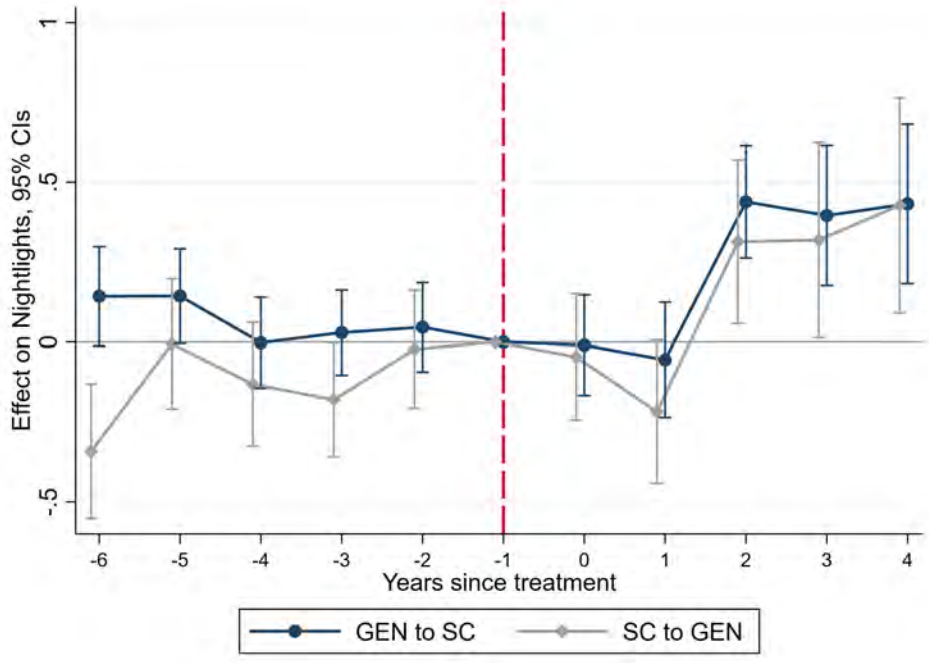
Village Type	GEN ⇒ GEN	GEN ⇒ SC	SC ⇒ GEN	SC ⇒ SC
Total Population	1514.543	1496.364	1476.565	1342.440
	[1.421]	[3.174]	[3.987]	[2.640]
Number of households	281.221	281.006	270.497	246.172
	[0.285]	[0.651]	[0.813]	[0.524]
Percentage of SC	16.619	25.400	24.596	29.829
	[0.011]	[0.031]	[0.035]	[0.036]
Percentage of ST	8.604	6.045	5.639	5.855
	[0.012]	[0.025]	[0.027]	[0.025]
Literacy Rate	48.199	49.957	47.819	47.014
	[0.009]	[0.022]	[0.025]	[0.023]
Accessibility by paved road	0.592	0.616	0.577	0.518
	[0.000]	[0.001]	[0.001]	[0.001]
Accessibility by mud road	0.763	0.738	0.759	0.774
	[0.000]	[0.001]	[0.001]	[0.001]
Number of primary schools	1.238	1.190	1.170	1.110
	[0.001]	[0.002]	[0.002]	[0.002]
Number of middle schools	0.373	0.377	0.342	0.298
	[0.000]	[0.001]	[0.001]	[0.001]
Number of secondary schools	0.143	0.145	0.130	0.107
	[0.000]	[0.001]	[0.001]	[0.001]
Number of senior secondary schools	0.038	0.041	0.038	0.032
	[0.000]	[0.000]	[0.000]	[0.000]
Number of college	0.009	0.009	0.008	0.007
	[0.000]	[0.000]	[0.000]	[0.000]
Power supply for agriculture (0/1)	0.388	0.456	0.383	0.342
	[0.000]	[0.001]	[0.001]	[0.001]
Power supply for domestic use (0/1)	0.775	0.758	0.721	0.707
	[0.000]	[0.001]	[0.001]	[0.001]
Power supply for all users (0/1)	0.618	0.648	0.589	0.509
	[0.000]	[0.001]	[0.001]	[0.001]

Note: This Table represents the descriptive statistics based on the 2001 Indian census for the villages which are part of the analysis. The village-type are as following, 1. GEN ⇒ GEN (villages which are unreserved always), 2. GEN ⇒ SC (villages which change from unreserved to reserved), 3. SC ⇒ GEN (villages which change from reserved to unreserved), and 4. SC ⇒ SC (villages which are always reserved). The Table reports the mean of demographic variables, village and town amenities, educational institutions. It can be seen from the Table that village type (GEN ⇒ SC) and (SC ⇒ GEN) are relatively similar.

Figure 8: Event Study: Nightlights 2004-2013



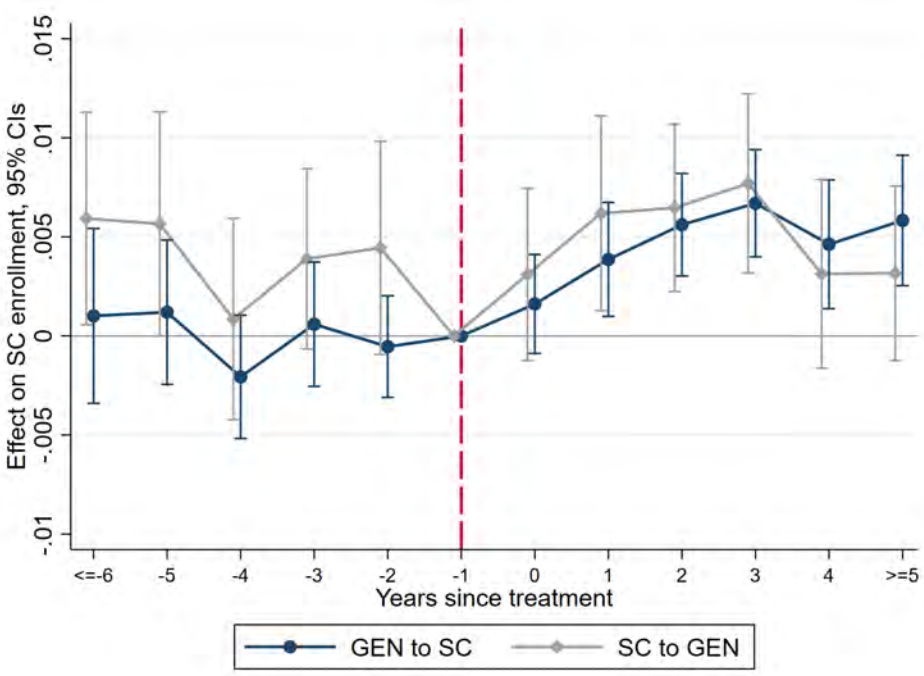
(a) Full Sample



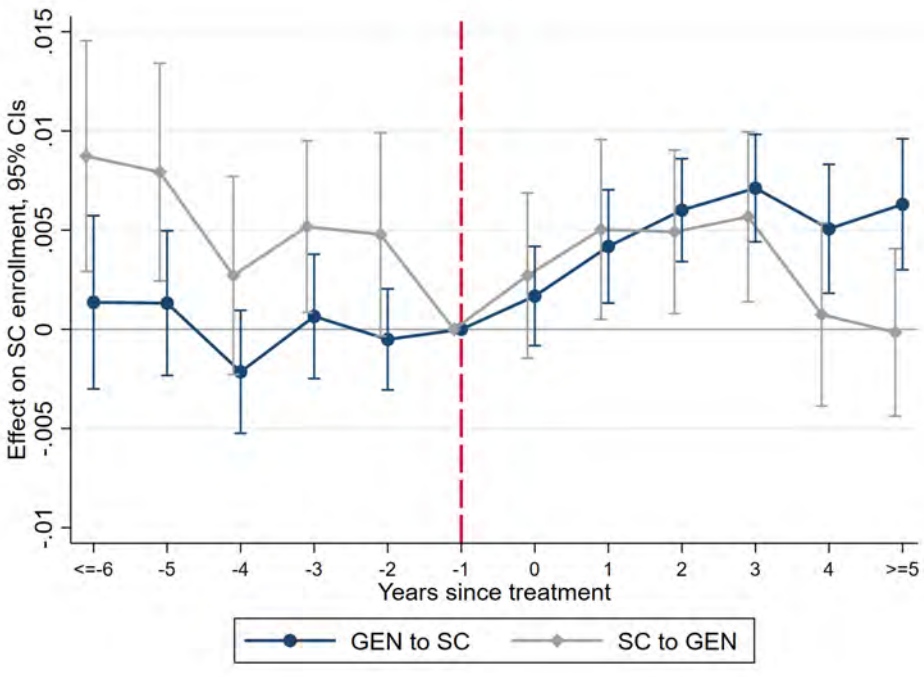
(b) Split Sample

Note: Figure 8 (a) presents an event study, in which nighttime light density on horizontal axis is regressed on a set of year dummies around the year of treatment. Blue line represents the newly reserved villages (GEN ⇒ SC) and the gray line represents previously reserved villages (SC ⇒ GEN). Figure 8 (b) shows the same event study but with split samples. For blue line (GEN ⇒ SC) is treated group and (GEN ⇒ GEN) is control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group.

Figure 9: Event Study: SC Enrollment



(a) Full Sample



(b) Split Sample

Note: Figure 9 (a) presents an event study, in which SC enrollment on horizontal axis is regressed on a set of year dummies around the year of treatment. Blue line represents the newly reserved villages (GEN ⇒ SC) and the gray line represents previously reserved villages (SC ⇒ GEN). Figure 9 (b) shows the same event study but with split samples. For blue line (GEN ⇒ SC) is treated group and (GEN ⇒ GEN) is control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group.

Figure 10: Impact of political quotas on nightlights by share of SC

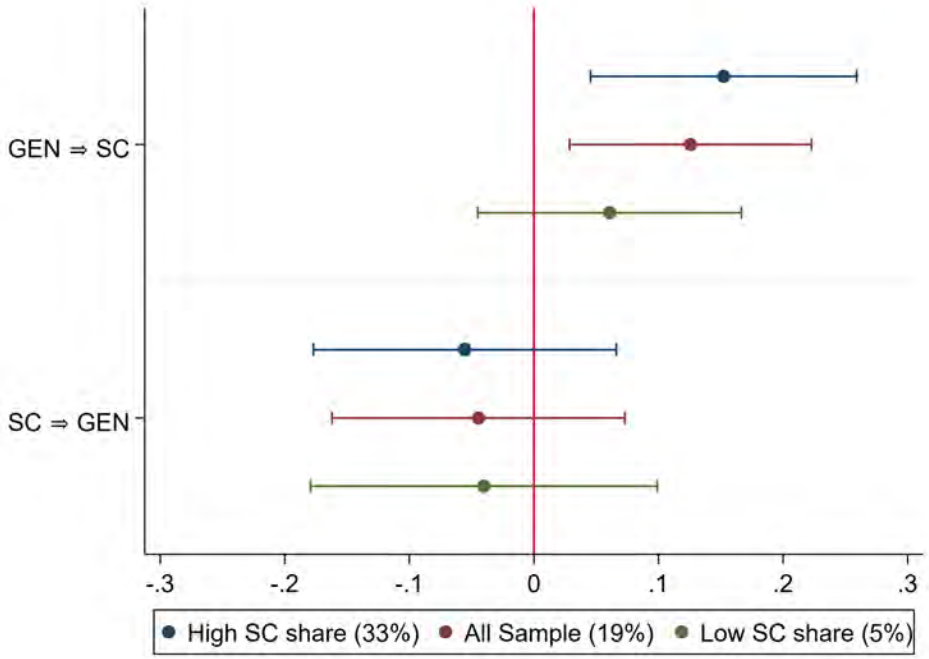
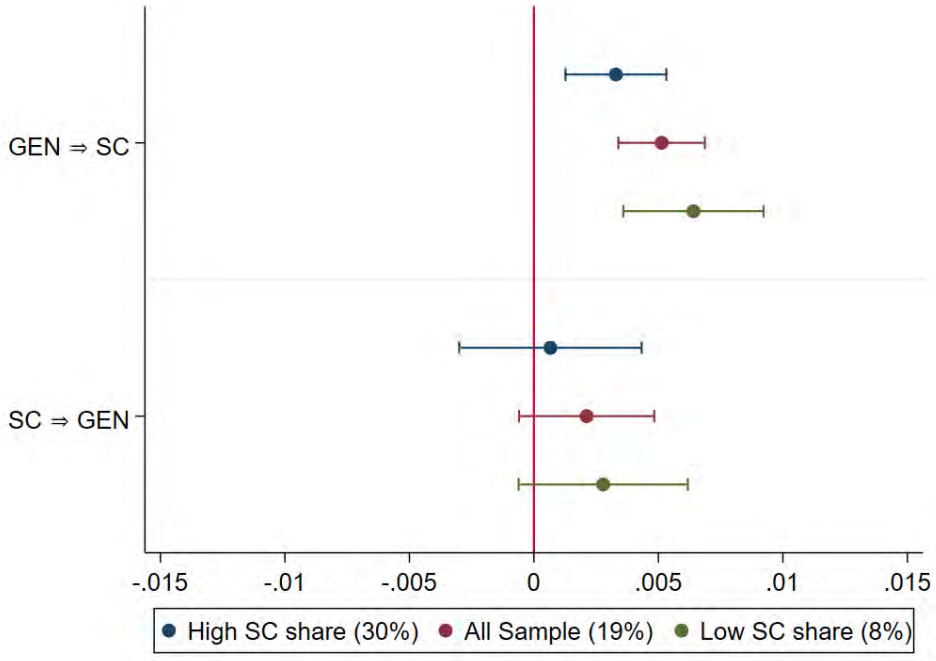
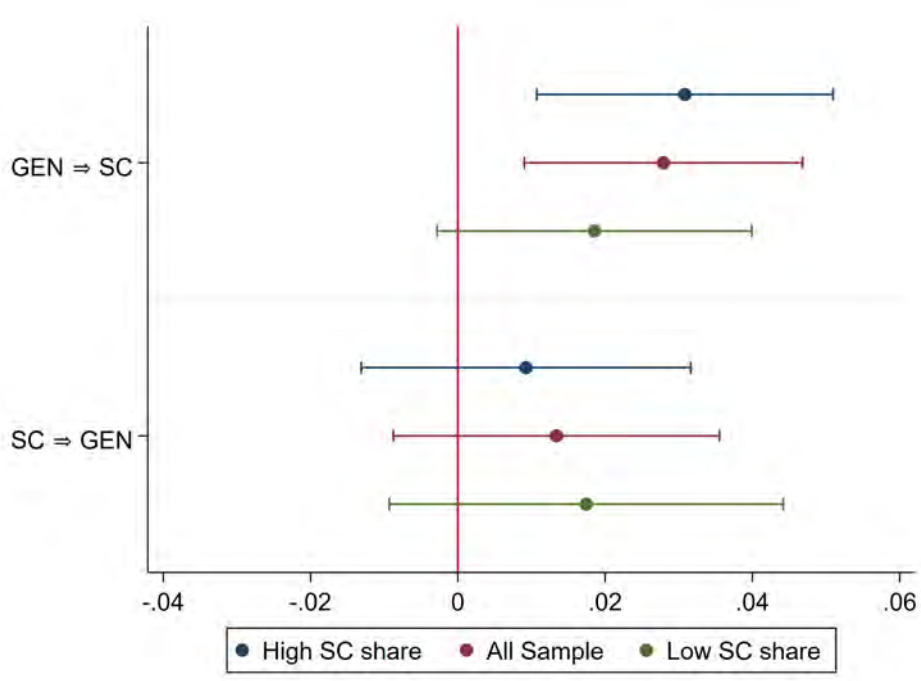


Figure 11: Impact of political quotas on SC enrollment by share of SC



Note: Figure 10 shows the heterogeneous effect of reservation on nighttime light density. The data is divided into two parts to do a above and below median analysis based on the share of Scheduled Castes in the village. I run three different regressions (i) All sample, (ii) High SC share and (iii) Low SC share. I plot the coefficient (GEN ⇒ SC) and (SC ⇒ GEN). We can see that the positive effect of reservation on nighttime light density is driven by the High SC share sample. The coefficient for (SC ⇒ GEN) indicates that there is no impact regardless of the share of SCs in the village. Figure 11 present the same result for SC enrollment.

Figure 12: Impact of political quotas on electrification by share of SC



Note: Figure 12 shows the heterogeneous effect of reservation on electrification. The data is divided into two parts to do a above and below median analysis based on the share of Scheduled Castes in the village. I run three different regressions (i) All sample, (ii) High SC share and (iii) Low SC share. I plot the coefficient (GEN ⇒ SC) and (SC ⇒ GEN). We can see that the positive effect of reservation on electrification is driven by the the High SC share sample. The coefficient for (SC ⇒ GEN) indicates that there is no impact regardless of the share of SCs in the village.

Table 3: Effect of Political Quotas on Nightlights

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Average Nightlights in the village							
Sample:	Main Analysis (2004-2013)				Placebo Treatment (1994-2003)			
Political change	0.0689*	0.0509			0.0181	0.0185		
	(0.0395)	(0.0390)			(0.0204)	(0.0202)		
(GEN $\Rightarrow$ SC)$_i \times$post$_t$			0.144***	0.126**			0.0296	0.0301
			(0.0501)	(0.0495)			(0.0265)	(0.0263)
(SC $\Rightarrow$ GEN)$_i \times$post$_t$			-0.0267	-0.0446			0.00338	0.00361
			(0.0605)	(0.0600)			(0.0311)	(0.0310)
R-Squared	.896	.896	.896	.896	.942	.942	.942	.942
Number of Village	419,225	419,225	419,225	419,225	419,225	419,225	419,225	419,225
Observations	4,192,250	4,192,250	4,192,250	4,192,250	4,192,250	4,192,250	4,192,250	4,192,250
Mean of Dep. Var.	4.608	4.608	4.608	4.608	3.432	3.432	3.432	3.432
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No of Village Cluster	419,225	419,225	419,225	419,225	419,225	419,225	419,225	419,225
No. of AC-Year Cluster	31,230	31,230	31,230	31,230	31,230	31,230	31,230	31,230

Note: * $p < .10$, ** $p < .05$, *** $p < .01$ The dependent variable is a continuous variable measuring the average nightlight in the village. Average nightlight is calculated by dividing total light in the village by the number of pixels. Political Change is a dummy which takes value = 1, when the village is either of type (GEN $\Rightarrow$ SC) or (SC $\Rightarrow$ GEN). Column 1 and 2 presents the result for specification 1. Column 3 and 4 presents the result for specification 2. The nightlights data is available at the village level for the period of 1994-2013. Column 5 to 8 presents the result for specification 1 and 2 for the first ten year of data (1994 - 2003) for is pretend test with placebo treatment. Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation).

Table 4: Effect of Political Quotas on SC school enrollment

	(1)	(2)	(3)	(4)
Dependent Variable:	SC Enrollment			
Political change	0.00678***	0.00377***		
	(0.000812)	(0.000814)		
(GEN $\Rightarrow$ SC) $\times$ post$_t$			0.00840***	0.00513***
			(0.000920)	(0.000886)
(SC $\Rightarrow$ GEN) $\times$ post$_t$			0.00483***	0.00212
			(0.00135)	(0.00139)
R-Squared	.448	.447	.448	.447
Number of School	1,343,563	1,343,563	1,292,512	1,292,512
Observations	13,009,106	12,539,711	13,009,106	12,539,711
Mean of Dep. Var.	.235	.235	.235	.235
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	335,929	320,525	335,929	320,525
No. of AC-Year cluster	41,097	40,333	41,097	40,333

Note: * $p < .10$, ** $p < .05$, *** $p < .01$
The dependent variable is a continuous variable measuring SC enrollment village. Political Change is a dummy which takes value = 1, when the village is either of type (GEN $\Rightarrow$ SC) or (SC $\Rightarrow$ GEN). Column 1 and 2 presents the result for specification 1. Column 3 and 4 presents the result for specification 2. In column 2 and 4 we additionally control for the SC share in the village.

Table 5: Effect of Political Quotas on Electrification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Average Nightlights in the village				Electrification in the village			
Political change	0.0689*	0.0509			0.0243***	0.0216***		
	(0.0395)	(0.0390)			(0.00768)	(0.00756)		
(GEN ⇒ SC)$_i$×post$_t$			0.144***	0.126**			0.0317***	0.0279***
			(0.0501)	(0.0495)			(0.00979)	(0.00964)
(SC ⇒ GEN)$_i$×post$_t$			-0.0267	-0.0446			0.0145	0.0134
			(0.0605)	(0.0600)			(0.0114)	(0.0113)
R-Squared	.896	.896	.896	.896	.69	.692	.69	.692
Number of Village	419,225	419,225	419,225	419,225	272,018	269,815	272,018	269,815
Observations	4,192,250	4,192,250	4,192,250	4,192,250	2,992,198	2,967,965	2,992,198	2,967,965
Mean of Dep. Var.	4.608	4.608	4.608	4.608	.4474	.4474	.4474	.4474
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No of Village Cluster	419,225	419,225	419,225	419,225	419,225	419,225	419,225	419,225
No. of AC-Year Cluster	31,230	31,230	31,230	31,230	31,230	31,230	31,230	31,230

Note: * $p < .10$, ** $p < .05$, *** $p < .01$

The dependent variable is a binary variable indicating if the village is electrified under the Indian government electrification scheme. In column 5-8, the dependent variable is a binary variable taking value 1 when there is electrification in the village. The dummy variable remains "1" for the years after electrification. Political Change is a dummy which takes value = 1, when the village is either of type (GEN ⇒ SC) or (SC ⇒ GEN). Column 5 and 6 presents the result for specification 1. Column 7 and 8 presents the result for specification 2. I also present the nightlights result in the column 1-4 for easy comparison. Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation).

Table 6: Effect of Political Quotas on road upgrade

	(1)	(2)	(3)	(4)
Dependent Variable:	Road Upgrade			
Political change	0.0130***	0.0119***		
	(0.00120)	(0.00120)		
(GEN ⇒ SC)$_i$×post$_t$			0.0148***	0.0138***
			(0.00157)	(0.00158)
(SC ⇒ GEN)$_i$×post$_t$			0.0106***	0.00953***
			(0.00177)	(0.00177)
R-Squared	.606	.606	.606	.606
Number of Village	469,357	464,607	469,357	464,607
Observations	7,509,712	7,433,712	7,509,712	7,433,712
Mean of Dep. Var.	.0427	.0427	.0427	.0427
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	469,357	464,607	469,357	464,607
No. of AC-Year cluster	50,608	50,560	50,608	50,560

Note: * $p < .10$, ** $p < .05$, *** $p < .01$ The dependent variable is binary, it takes value 1 when an existing road is upgraded under the Indian government road construction scheme. Political Change is a dummy which takes value = 1, when the village is either of type (GEN ⇒ SC) or (SC ⇒ GEN). Column 1 and 2 reports the effect of reservation on road up-gradation as per the specification 1. Column 3 and 4 reports the effect of reservation on road upgrade as per the specification 2. Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation).

Appendix A : Data

A.1: Census 2001 and 2011

The information available in the Indian Census of 2001 and 2011 at village level.

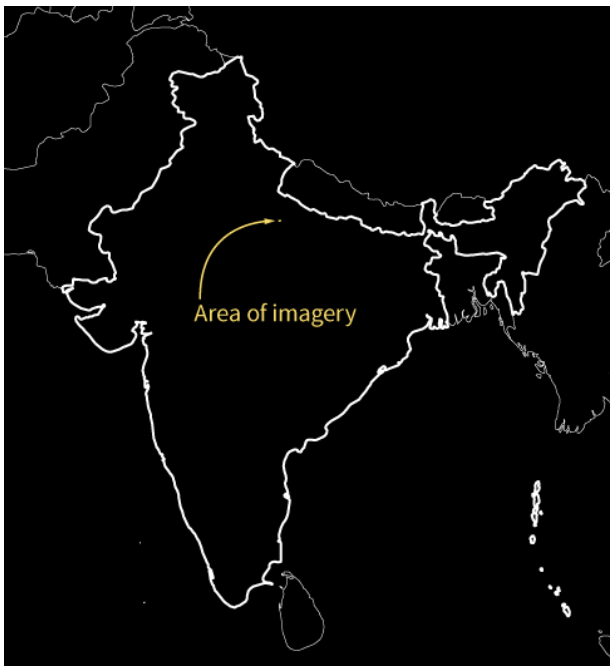
- *Population:*
  - Total population
  - Rural population
  - Urban population
  - SC total population
  - ST total population
  - Literate total population
- *Village amenities:*
  - Number of primary schools
  - Number of middle schools
  - Number of secondary schools
  - Number of college
  - Number of senior secondary schools
  - Road Accessibility by paved (pucca) road (Only in 2001 Census)
  - Road Accessibility by mud (kuchcha) road or better
  - Power supply for domestic use
  - Power supply for agriculture
  - Power supply for all users
- *Town amenities:*
  - Number of primary schools
  - Number of middle schools Sum
  - Number of secondary schools
  - Number of college
  - Number of senior secondary schools

A.2. Nighttime light density

The Defense Meteorological Satellite Program (DMSP) has taken pictures of the Earth every night from 1994 to 2013. Researchers at the University of Michigan, in collaboration with the World Bank, used the DMSP images to extract the data. The DMSP raster images have a resolution of 30 arc-seconds, equal to roughly 1 square kilometre at the equator. Each pixel of the image is assigned a number on a relative scale from 0 to 63, with 0 indicating no light output and 63 indicating the highest level of output.

Let's see an example of how does this data looks like with an example using the city of Hardoi from north India. In Figure 13, we can see the location of Hardoi on the map of India. The Figure 14, shows the nighttime imagery of Hardoi region from the DMSP satellite where villages are shown as yellow dots and Figure 16 shows the same area during the daytime.[10]

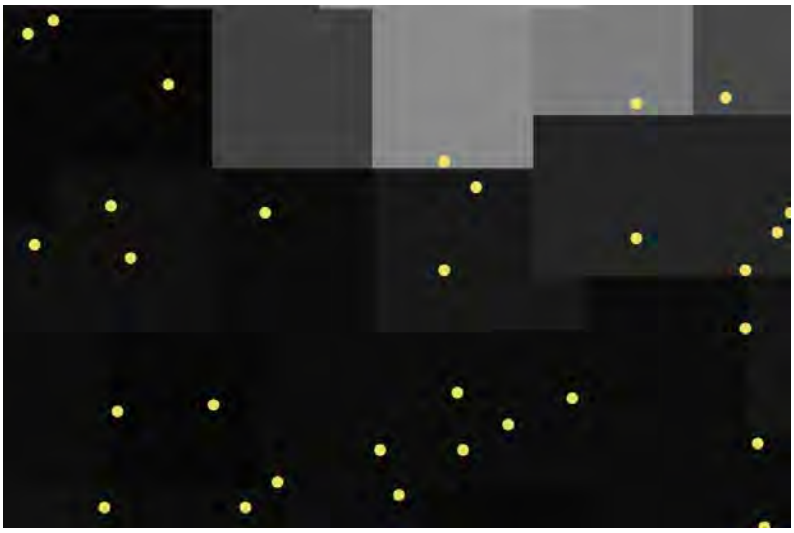
Figure 13: Hardoi



To get a single measurement, the researcher first extracts the light output values from the raster image for each date for the pixel corresponding to latitude and longitude of each village. After this, they process the data through various filtering and aggregation steps.

[10]Example is provided for Hardoi on the website http://india.nightlights.io/ (accessed on 15th April 2020

Figure 14: Hardoi - Night



Note: This figure shows the nighttime imagery of Hardoi region from the DMSP satellite. The villages are shown as yellow dots.

Figure 15: Hardoi - Day

Note: This figure shows the daytime imagery of Hardoi region from the DMSP satellite. The villages are shown as yellow dots.

A.3. Electrification

Data Preparation: The original data is transformed into a panel data structure. As the data exist from 2005 through 2015, so 11 rows (11 years) were created for each village/town. If a village is electrified on 16th October 2008, then for this village the dummy variable “electrification" takes value 0 for the year 2005 - 2008, for the year 2009 it takes the value **1** and remains 1 for the subsequent years until the year 2015. But if the village is electrified during the first six months of the year, then I code that village is electrified in the same year. For instance, if a village is electrified on 24th April 2010, then for this village the dummy variable "electrification" takes value 0 for the year 2005 - 2009, for the year 2010 it takes the value **1** and remains 1 for the subsequent years.

A.4. Road Construction

Data Preparation: The original data is transformed into a panel data structure. As the data exist from 2000 to 2015, so 15 rows (15 years) were created for each village/town. If a village is awarded a road on 16th October 2008, then for this village the dummy variable "road_award" takes value 0 for the year 2000 - 2008, for the year 2009 it takes the value **1** and remains 1 for the subsequent years until the year 2015. But if the village is awarded a road during the first six months of the year, then I code that village is awarded a road in the same year. For instance, if a village is awarded road on 24th April 2010, then for this village the dummy variable "road_award" takes value 0 for the year 2000 - 2009, for the year 2010 it takes the value **1** and remains 1 for the subsequent years.

A.5. School Enrollment

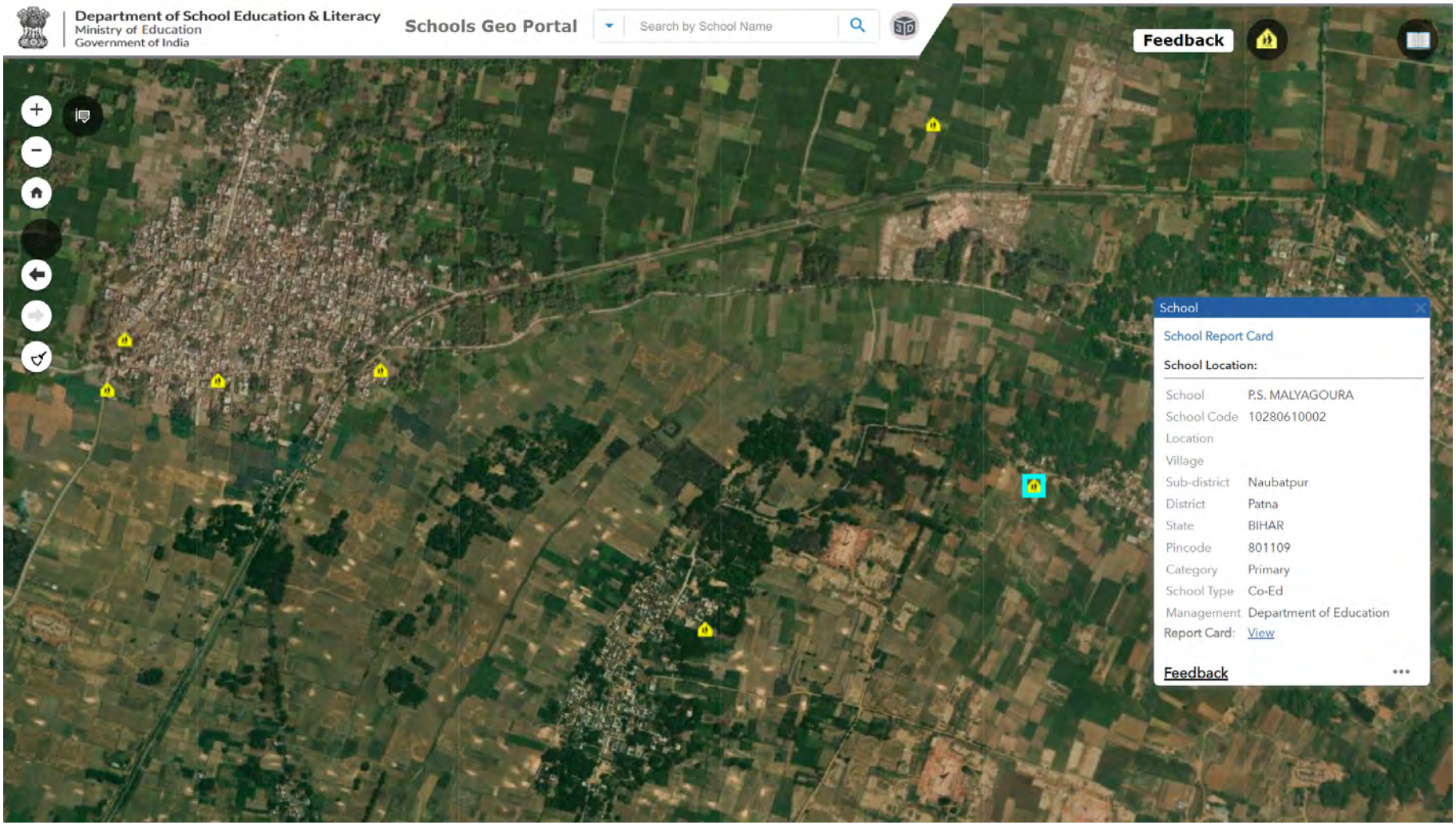
The Data for School enrollment come from the DISE (District Information System for Education) database. The DISE data is maintained by NIEPA (National University of Educational Planning and Administration). The data DISE data provides unique 11 digit school code with state, district, block and village name. To match the dataset with 2011 villages census, I first scrapped the precise geo-location of school[11] with 11 digit unique school code. I merged the DISE data with School GIS data with the 11 digit UDISE code. Table 7 shows the shares of DISE schools matched with geo-location data. 83% of schools were matched using UDISE 11 digit code. 14% of schools were matched using 9 last digit of UDISE code. It was due to change in state code for Andhra Pradesh as it was split in two different states in 2014 (Andhra Pradesh and Telangana). 2.4% of schools were matched using village, district and state name. 0.6% of villages are matched using village, district, and state name with fuzzy merge.

Table 7: Merging of School GIS and DISE data

Merged Using	**Number of School**	%
UDISE 11	992,000	82.98
UDISE 9	167,711	14.02
String	28,453	2.4
Fuzzy-String	7,256	0.6
Total	1,195,420	100.00

[11]The school geo location is availbe on the website: https://schoolgis.nic.in/. Accessed on 8th August 2021

Figure 16: Snapshot of School GIS website



Appendix B : Descriptive Statistics

B.1: Descriptive Statistics : Demography

In our analysis, I only employ those villages whose status was either SC or GEN before and after the delimitation. This reduces the type of villages in this analysis to four i.e. village type M1 (GEN ⇒ GEN) - villages which are unreserved both before and after the delimitation, M2 (GEN ⇒ SC) - villages which become reserved after the delimitation, M4 (SC ⇒ GEN) - villages which become unreserved after the delimitation and M5 (SC ⇒ SC) - villages which are reserved both before and after the delimitation. As we can see in Table 1, the total number of villages in my analysis reduces to 426,825, of which 19.1% (GEN ⇒ SC and SC ⇒ GEN) change their status while the status of 80.9% (GEN ⇒ GEN and SC ⇒ SC) villages remains the same. For simplicity, I will be referring to type of villages as M1, M2, M4 and M5 in this section.

For different type of villages in Table 1, we can see in top-left panel of Figure 17 that the share of SCs is highest (29.8%) in villages which remain SC during all periods (M5) and lowest (16.6%) in the villages which remains unreserved for all time (M1). For the villages which changes from unreserved to reserved (M2), the SC share in the village on average is 25.4%, and villages which change from reserved to unreserved (M4) the average share of SC minority in the village is 24.6%. We can see that in terms of SC share, M2 and M4 are quite similar. In the top-right panel, we can see that for the ST population, the share of ST in M1 is 8.6% and around 6% in M2, M4, and M5.

We can see in top-left panel of Figure 18 that M2 villages have the highest literacy rate while the M5 has the lowest literacy rate. It's important to note that the difference in literacy rate among four different types of the village is not more than 2%. In top-right panel we can see that M2 has the lowest share of population below six years old. In Figure 19, top-left panel shows that percentage of agricultural labor is highest in M2 and M4 villages, and there is no significant difference between M2 and M4. In top-right panel, it can be seen that M1 villages have the highest share of total cultivators, while the percentage of a total cultivator in M2 and M4 is not significantly different. In Figure 20, the top-left panel shows that the share of industrial labor in M2 and M4 is slightly different, and in top-right panel, it shows that the percentage of other workers is significantly higher in M4 villages than M2 villages.

We can see in top-left panel of Figure 22 that the share of the villages which has power supply for domestic use is highest in M1 and lowest in M5 type of villages. In top-right panel we can see that the power supply for agricultural use is highest in M2 and lowest in M5. In Figure 23, top-left shows that M2 villages are the least

connected with dirt road but most connected with the tar road (top-right). It can also be seen that villages that always remain SC have the lowest tar road connectivity (top-right) and highest dirt road connectivity (top-left), which illustrates the level of underdevelopment in villages with the highest SC population share.

Now we will have a look at how does the character of villages looks before and after the delimitation. As expected, given the nature of the delimitation process, we can see in Figure 17 (two bottom-left panel) that, on average, the share of SCs in the villages reserved for SC higher than the unreserved villages (GEN) both before and after the delimitation. We can also see in two bottom-right panel that the percentage of STs in the villages reserved for SC is lower in unreserved villages. So this suggests that there is no significant difference between SCs and STs share in the villages before and after the delimitation.[12]

We can see in Figure 18, two bottom-left panels shows that before delimitation the literacy rate in the villages reserved for SC is 1% less than the unreserved (GEN) villages and in contrast, after the delimitation, the villages reserved for SC take a lead of 0.2% Over unreserved villages. Similarly the two bottom-right panels shows that the share of the population below six years of age is higher in villages reserved for SC before the delimitation but relatively lower after the delimitation. In Figure 19, two bottom-left panels shows that there is no difference between the proportion of agricultural labor in the villages reserved for SC and unreserved villages before the delimitation, while villages reserved for SC has a higher share of agrarian labor post delimitation, it is however important to note that the difference is minuscule. The two bottom-right panels shows that the proportion of total cultivator remains higher in unreserved villages both before and after the delimitation.

In Figure 20, the two bottom-left panel shows that the unreserved villages have a higher share of industrial workers for both pre and post delimitation periods and the the two bottom right panels shows that unreserved villages have a higher share of other workers for both pre and post delimitation periods . In Figure 21, two bottom left panel shows that unreserved villages have a higher share of total workers both before and after the delimitation. On the contrary, the two bottom right panels shows that the proportion of non-worker in the villages reserved for SC is higher than the unreserved villages before the delimitation and lower after the delimitation.

In Figure 22, in the two bottom-left panels, it shows that that the power supply for domestic use is higher in unreserved villages both before and after the delimitation.

[12]I am using Census of India 2001 for my descriptive statistics for all the datasets.

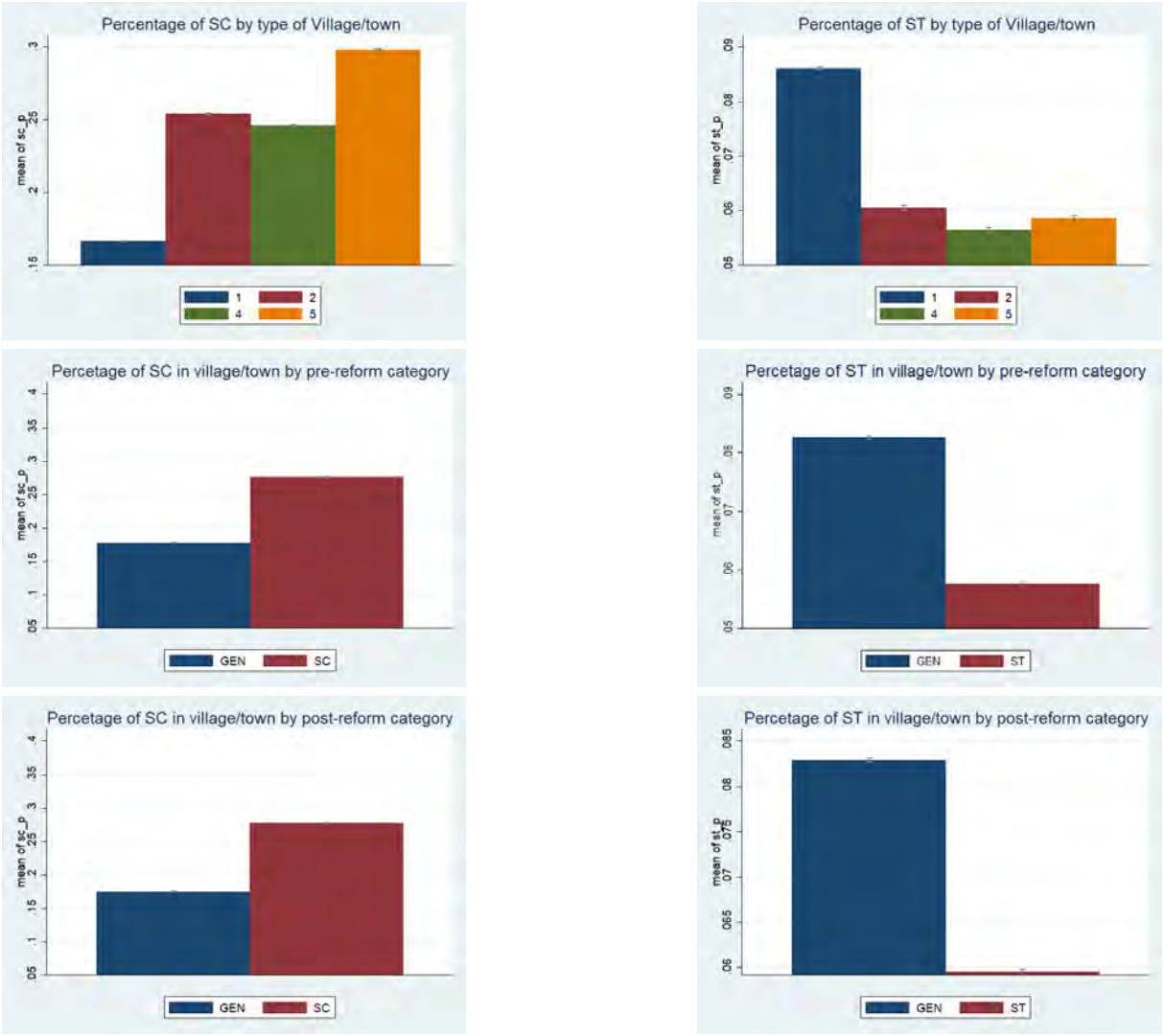
In the two bottom-right panels the power supply for agriculture use is higher in unreserved villages before the delimitation but lower than reserved villages after the delimitation.[13]

In Figure 23, two bottom-right panels shows that villages that are reserved for SC have lower connectivity using a pucca (tar) road than the unreserved villages both before and after the delimitation. In the two bottom-left panels, the villages reserved for SC have higher connectivity by dirt road before the delimitation but lower then unreserved villages after the delimitation.[14]

[13]The descriptive analysis is done using only non-missing observation. 58% of data for domestic use power supply and 65% of data for agriculture use power supply is missing. Also, the census has a question regarding "Power Supply for all uses" but census booklet doesn't clarify what does "all" implies here so I am not using "all" variable.

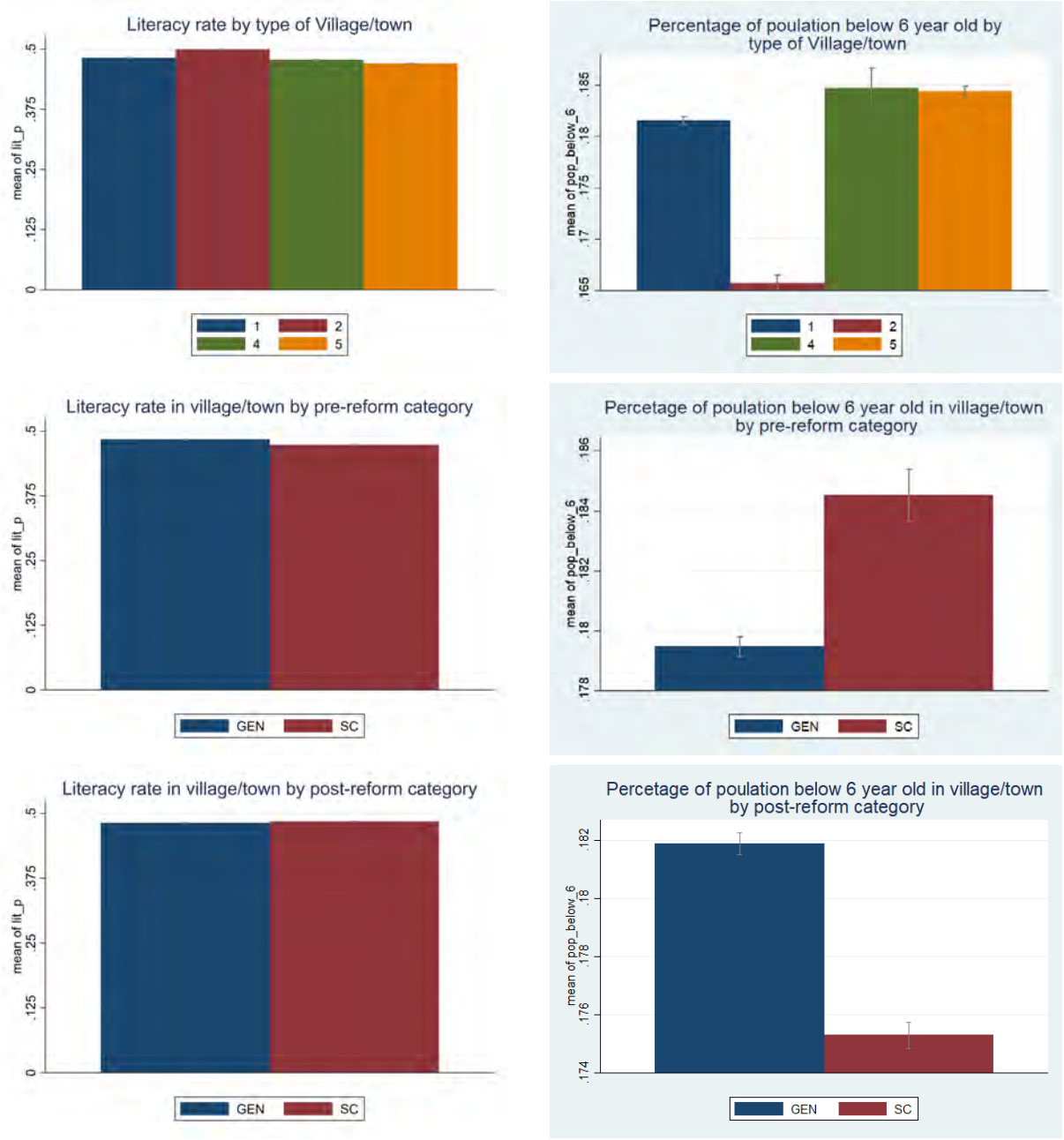
[14]3% of data for tar road and 18% of data for dirt road is missing. So, the descriptive analysis is done using only non-missing observation

Figure 17: Percentage of Scheduled Castes and Scheduled Tribes population



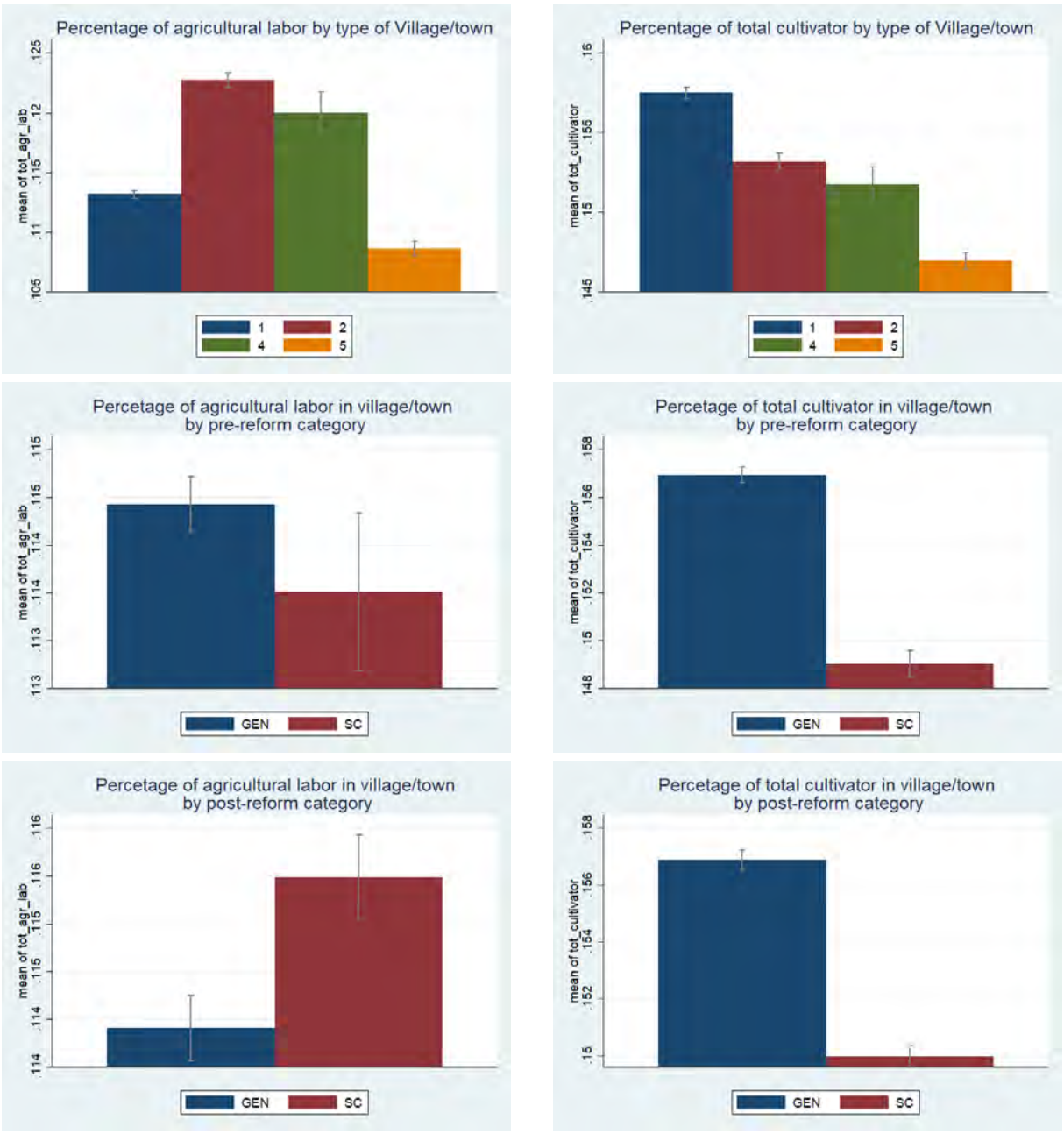
Note: This Figure presents the proportion of Scheduled Castes and Scheduled Tribes in the villages based on the 2001 Indian Census. The top-left panel shows the proportion of SCs in a different type of villages 1: GEN ⇒ GEN (villages which are unreserved always), 2: GEN ⇒ SC (villages which change from unreserved to reserved), 4: SC ⇒ GEN (villages which change from reserved to unreserved), and 5: SC ⇒ SC (villages which are always reserved). Two remaining left panel shows the share of SC's in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the proportion of STs in a different type of villages. Two remaining right panel shows the share of STs in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

Figure 18: Literacy rate and Percentage of population below age of 6.



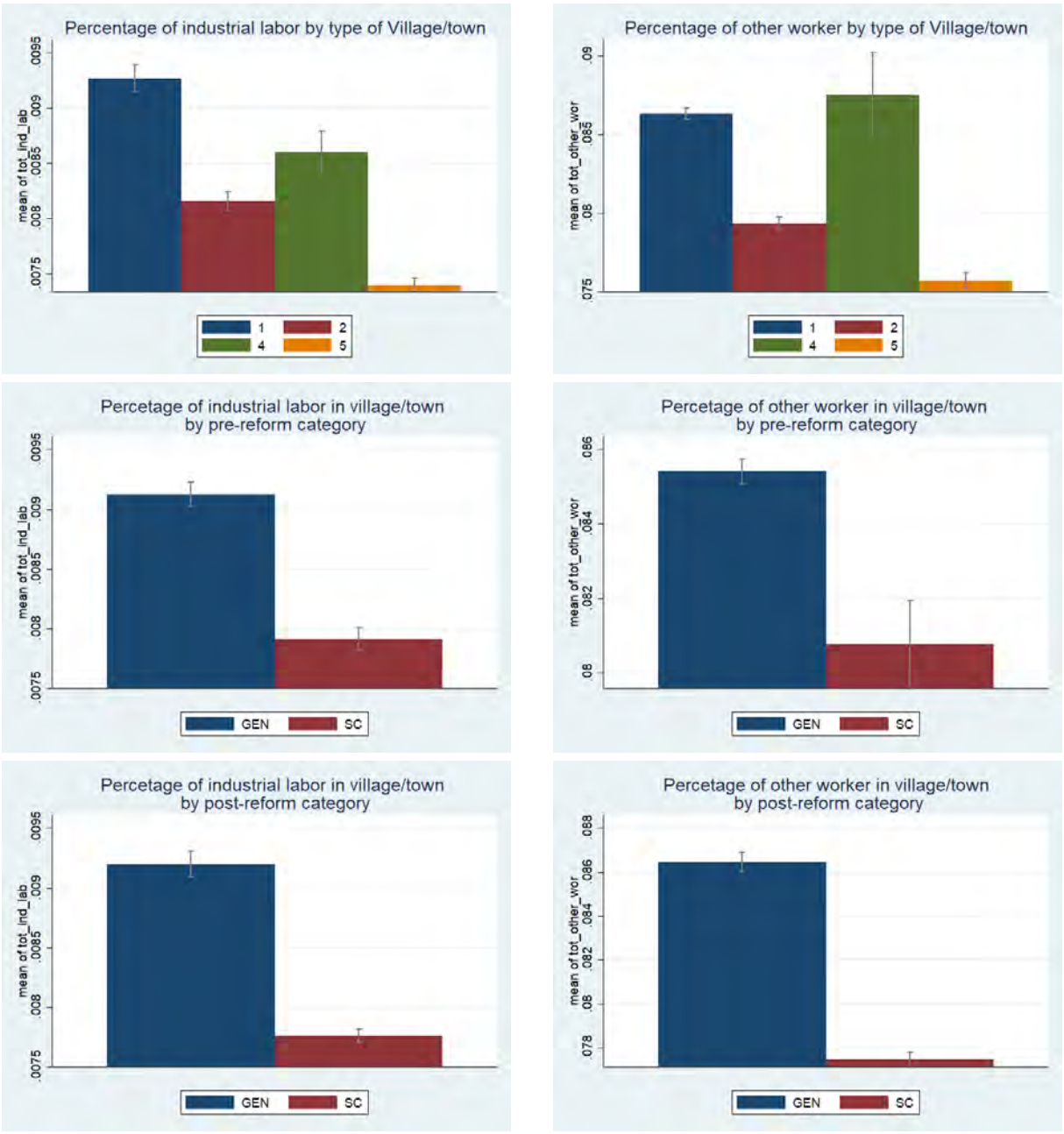
Note: This Figure presents the proportion of literate population and share of population below six years of age in the villages based on the 2001 Indian Census. The top-left panel shows the literacy rate in the different type of villages 1: GEN ⇒ GEN (villages which are unreserved always), 2: GEN ⇒ SC (villages which change from unreserved to reserved), 4: SC ⇒ GEN (villages which change from reserved to unreserved), and 5: SC ⇒ SC (villages which are always reserved). Two remaining left panel shows the literacy rate in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the share of the population below six years of age in a different type of villages. Two remaining right panel shows the share of population below six years of age in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

Figure 19: Percentage of agricultural labour and cultivator



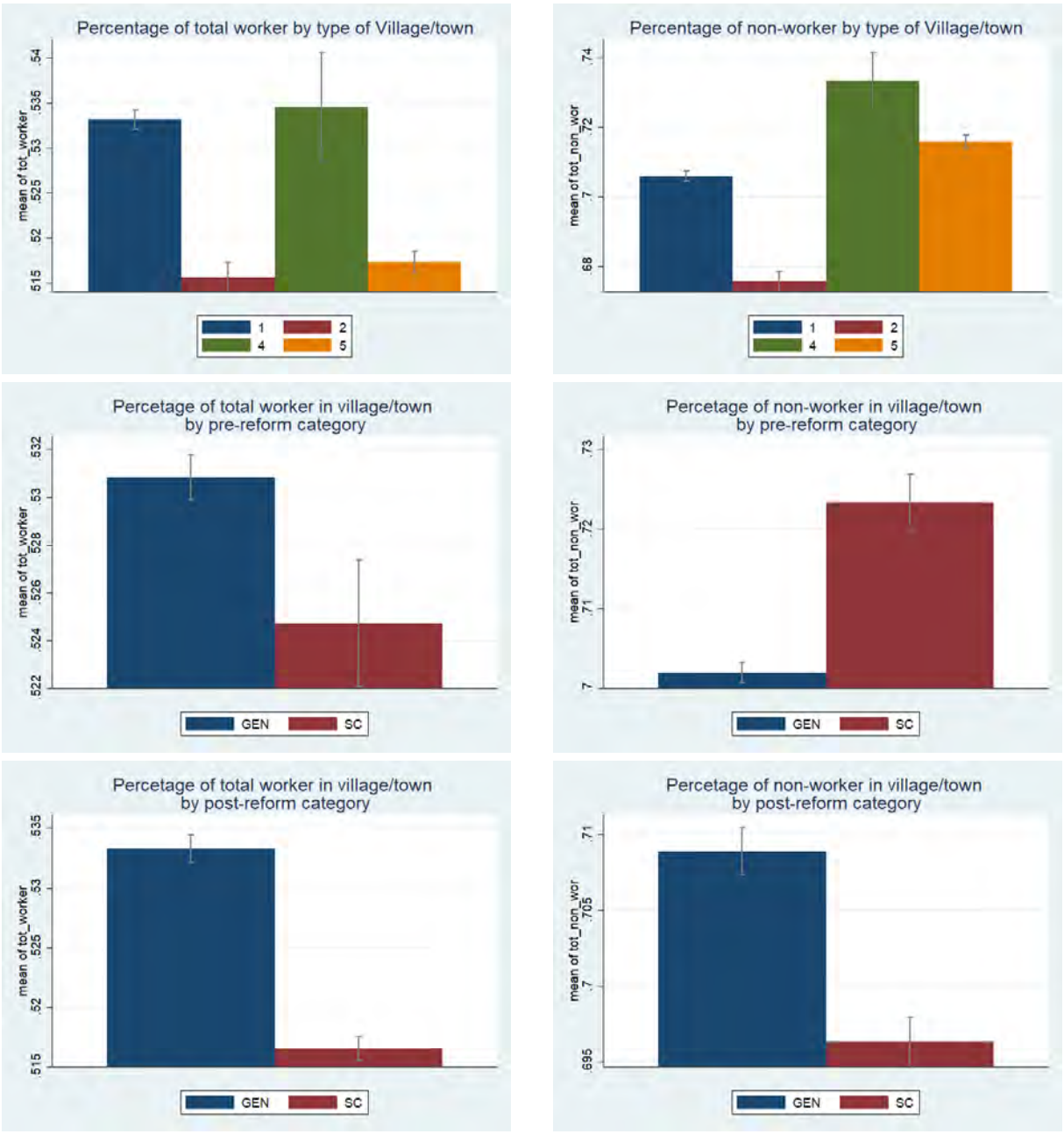
Note: This Figure presents the proportion of agricultural labour and cultivator in the villages based on the 2001 Indian Census. The top-left panel shows the proportion of agricultural labour for the different type of villages 1: GEN ⇒ GEN (villages which are unreserved always), 2: GEN ⇒ SC (villages which change from unreserved to reserved), 4: SC ⇒ GEN (villages which change from reserved to unreserved), and 5: SC ⇒ SC (villages which are always reserved). Two remaining left panel shows the share of agricultural labour in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the proportion of cultivator in a different type of villages. Two remaining right panel shows the share of a cultivator in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

Figure 20: Percentage of industrial labour and other workers



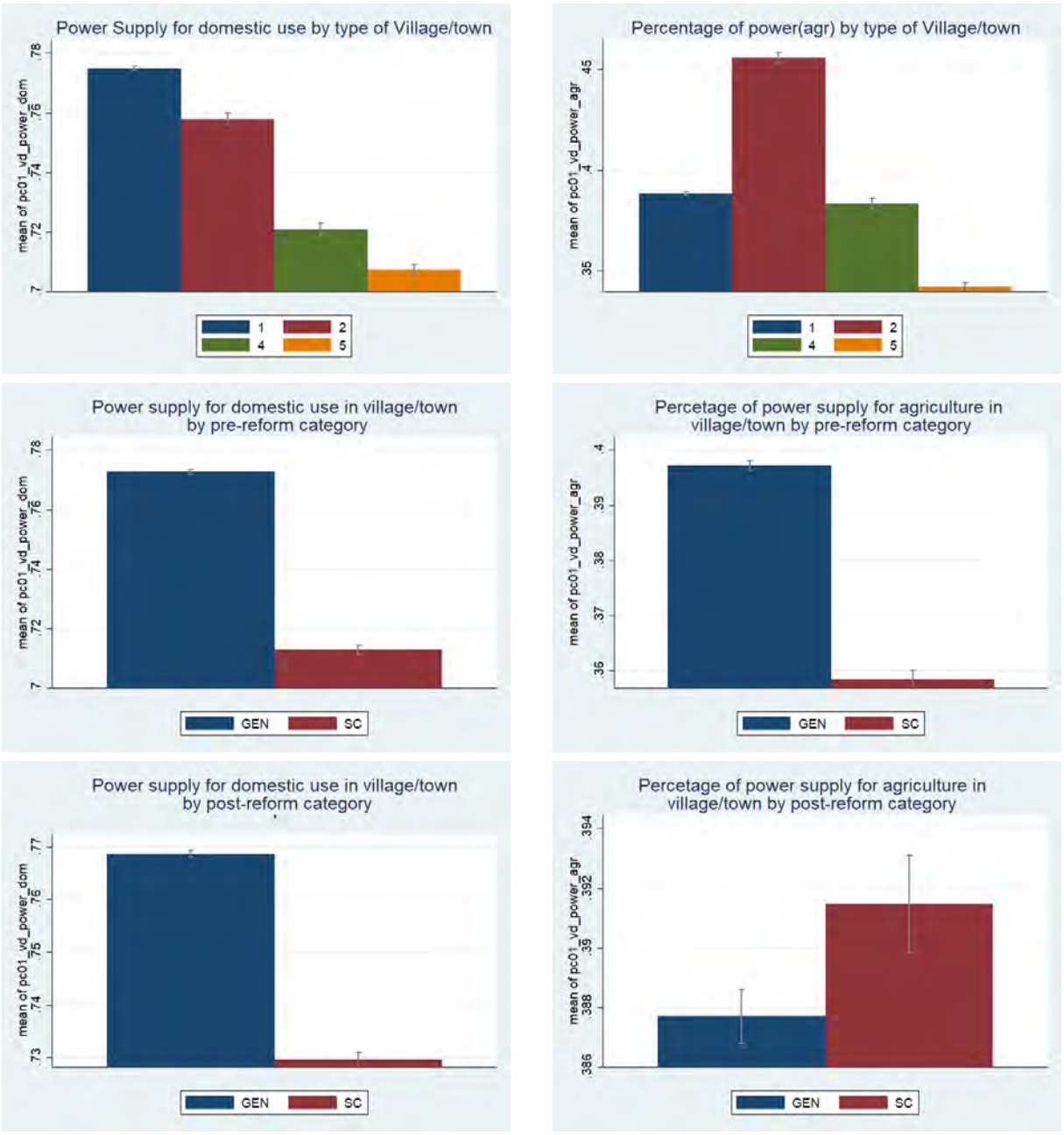
Note: This Figure presents the proportion of industrial labour and other workers in the villages based on the 2001 Indian Census. The top-left panel shows the proportion of industrial labour in a different type of villages 1: GEN ⇒ GEN (villages which are unreserved always), 2: GEN ⇒ SC (villages which change from unreserved to reserved), 4: SC ⇒ GEN (villages which change from reserved to unreserved), and 5: SC ⇒ SC (villages which are always reserved). Two remaining left panel shows the share of industrial labour in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the proportion of other workers in a different type of villages. Two remaining right panel shows the share of other workers in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

Figure 21: Percentage of Total worker and non-workers



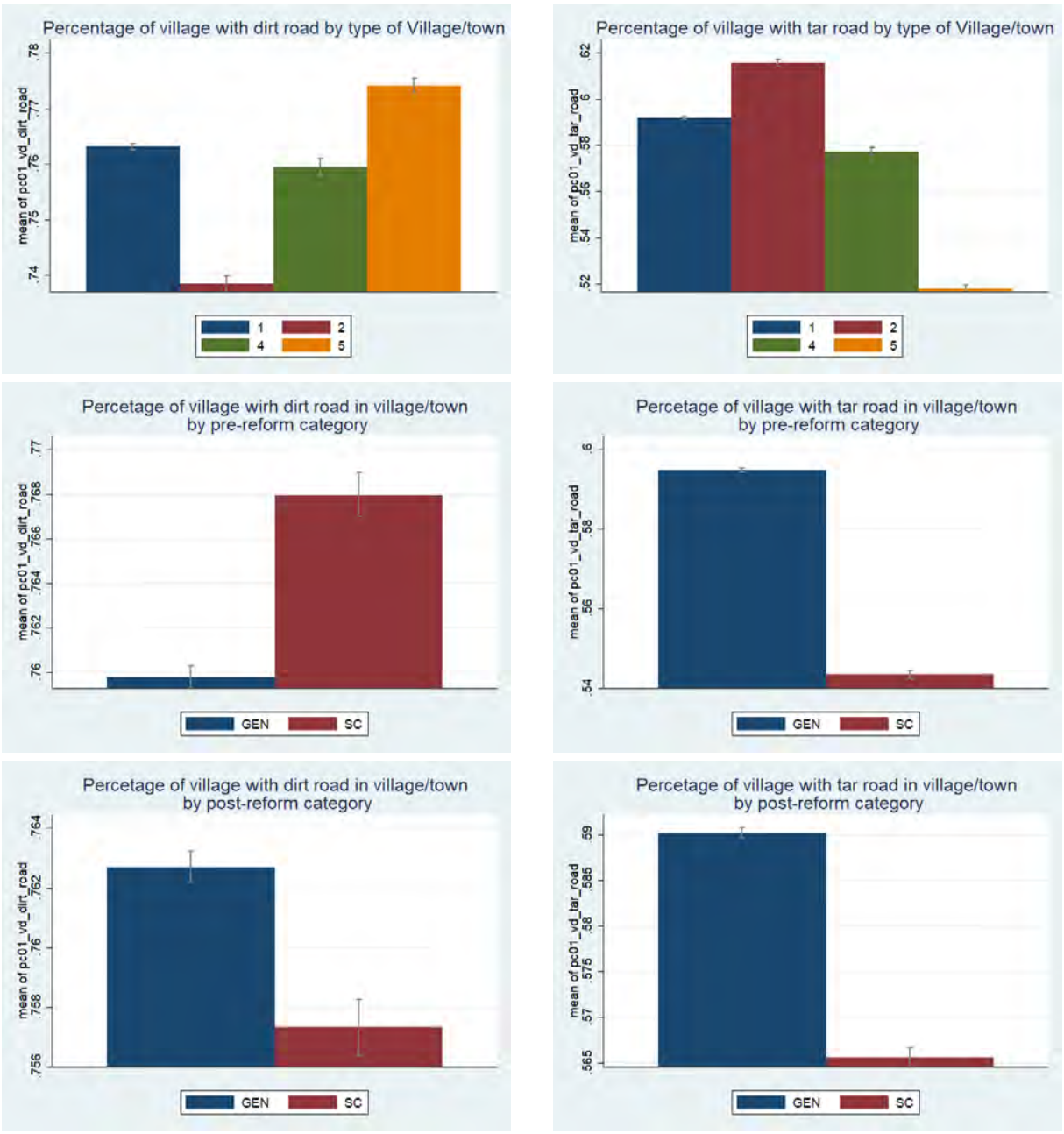
Note: This Figure presents the proportion of total worker and non-worker in the villages based on the 2001 Indian Census. The top-left panel shows the proportion of total worker in a different type of villages 1: GEN ⇒ GEN (villages which are unreserved always), 2: GEN ⇒ SC (villages which change from unreserved to reserved), 4: SC ⇒ GEN (villages which change from reserved to unreserved), and 5: SC ⇒ SC (villages which are always reserved). Two remaining left panel shows the share of total worker in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the proportion of non-worker in a different type of villages. Two remaining right panel shows the share of non-worker in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

Figure 22: Percentage of villages with electric supply for domestic and agricultural use



Note: This Figure presents the proportion of villages which has an electric supply for domestic use and agricultural use based on the 2001 Indian Census. The top-left panel shows the proportion of villages which has an electric supply for domestic use in a different type of villages 1: GEN $\Rightarrow$ GEN (villages which are unreserved always), 2: GEN $\Rightarrow$ SC (villages which change from unreserved to reserved), 4: SC $\Rightarrow$ GEN (villages which change from reserved to unreserved), and 5: SC $\Rightarrow$ SC (villages which are always reserved). Two remaining left panel shows the share of villages which has an electric supply for domestic use before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the proportion of villages with electric supply for agricultural use in a different type of villages. Two remaining right panel shows the share of the proportion of villages with electric supply for agricultural use in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

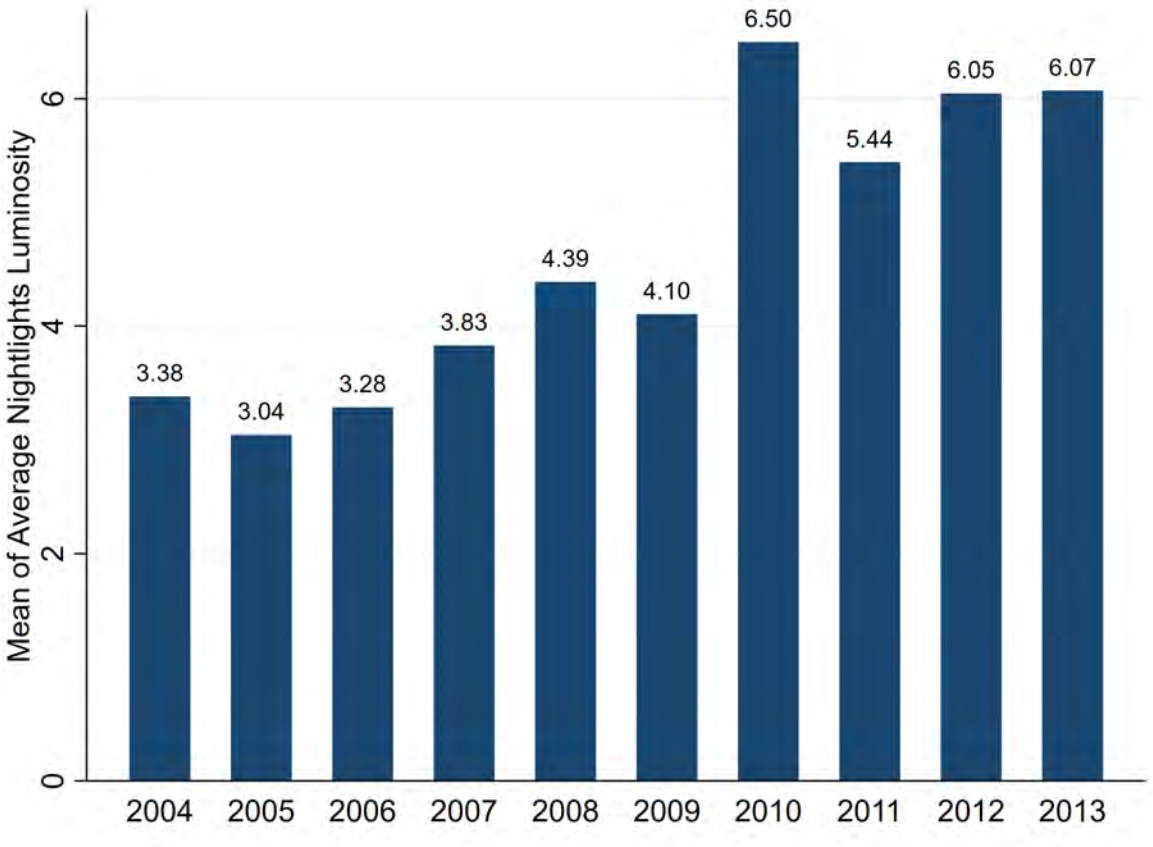
Figure 23: Percentage of villages with dirt road and tar road



Note: This Figure presents the proportion of villages which are connected with dirt road or with tar road based on the 2001 Indian Census. The top-left panel shows the proportion of villages connected with dirt road in a different type of villages 1: GEN $\Rightarrow$ GEN (villages which are unreserved always), 2: GEN $\Rightarrow$ SC (villages which change from unreserved to reserved), 4: SC $\Rightarrow$ GEN (villages which change from reserved to unreserved), and 5: SC $\Rightarrow$ SC (villages which are always reserved). Two remaining left panel shows the share of villages connected with dirt road before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency. The top-right panel shows the proportion of villages connected with tar road in a different type of villages. Two remaining right panel shows the share of the proportion of villages connected with tar road in the village before and after the delimitation in the unreserved (GEN) and reserved (SC) constituency.

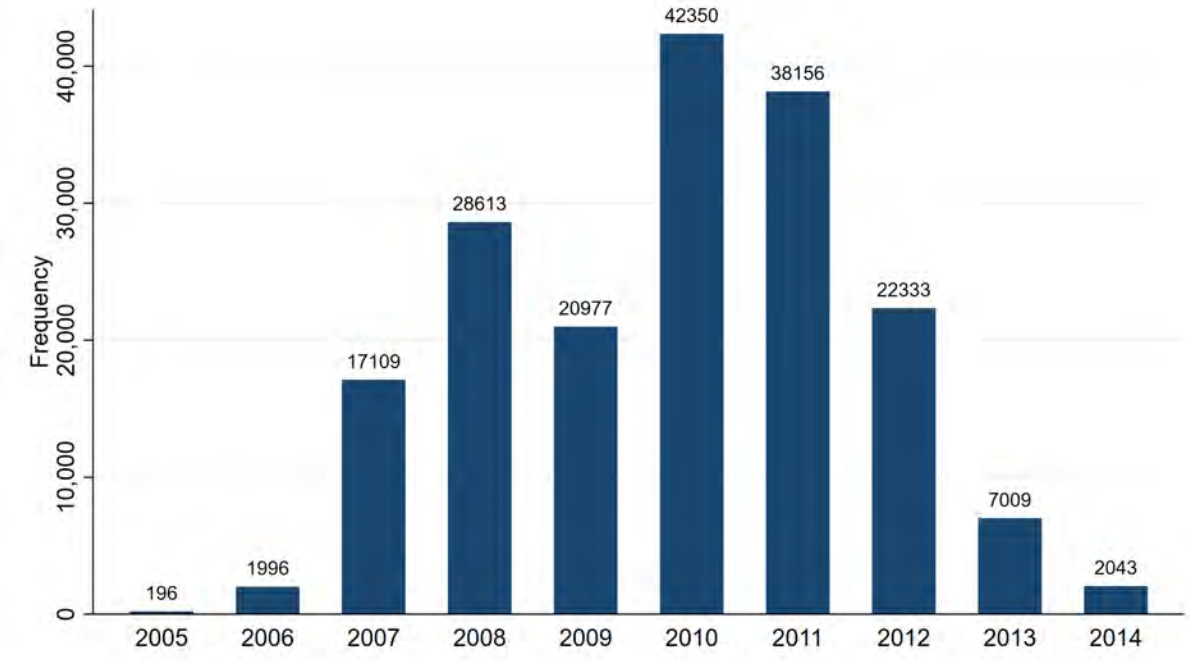
B.2. Descriptive Statistics : Data

Figure 24: Average nighttime light density over the years



Note: This Figure shows the average nightlight in the village over the years. Average nightlight of a village is calculated by dividing total light from all the pixels in the village by the number of pixels. Nightlight data is calibrated for consistent estimation across time using the method of (Elvidge et al., 2014).

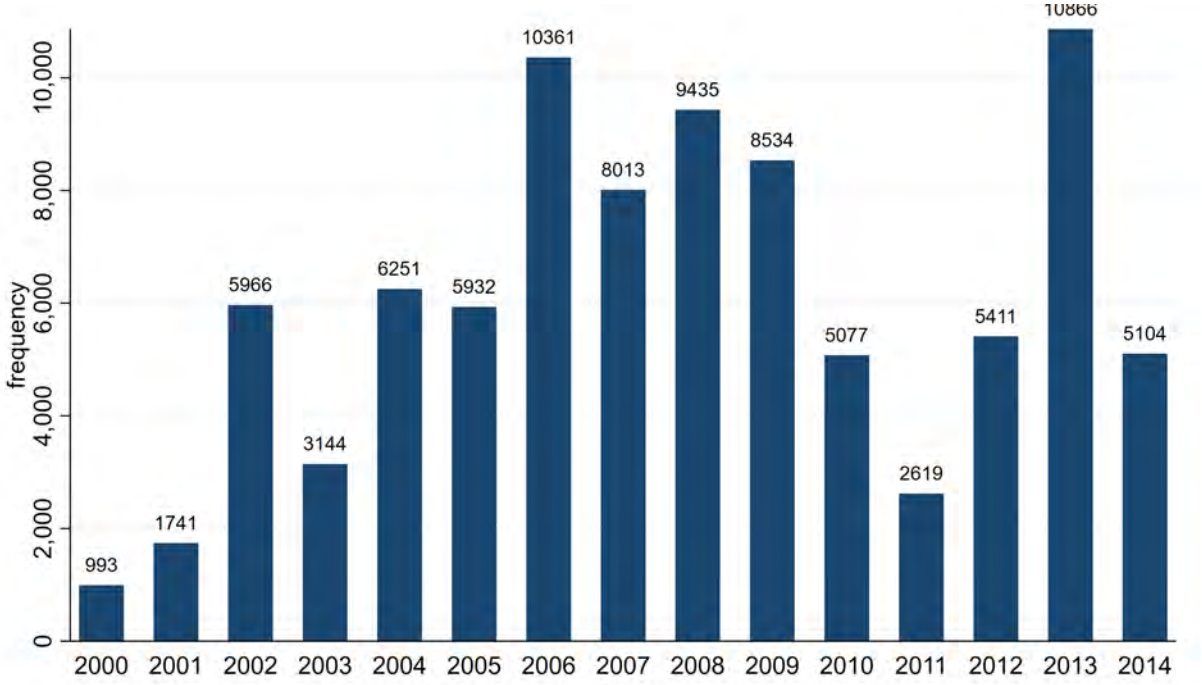
Figure 25: Electrification by the year



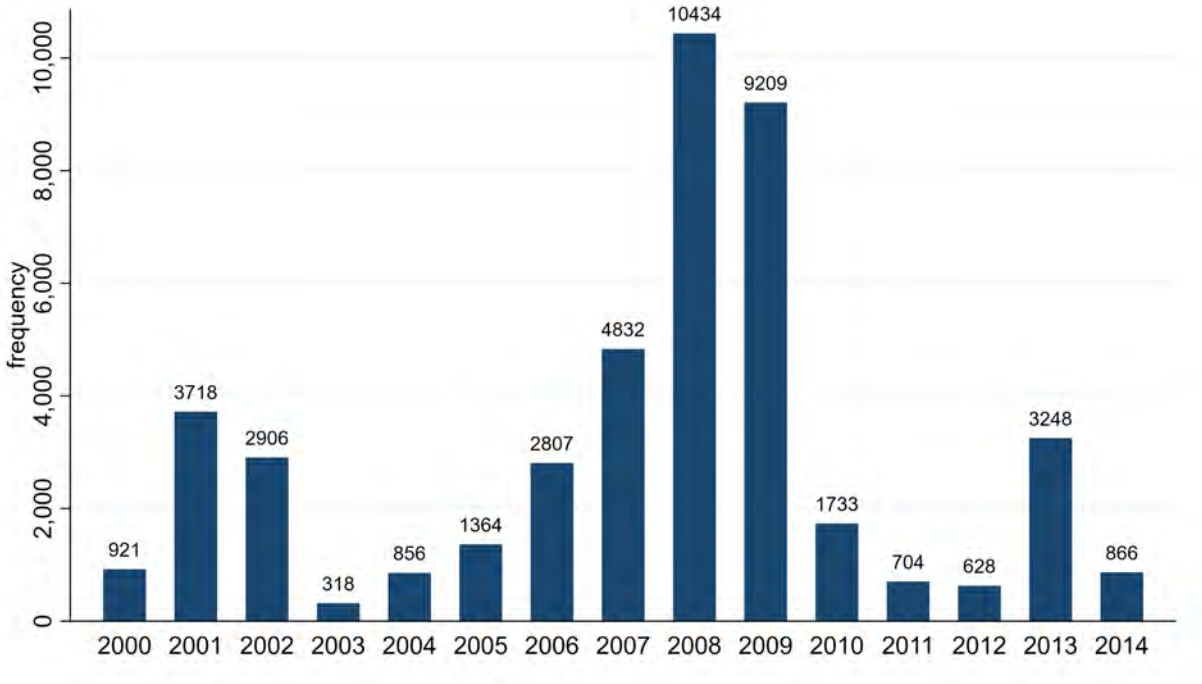
Note: The top panel shows the number of villages electrified under the electrification program of Indian government (RGGVY) from 2005 through 2014.

Figure 26: Construction of new road and road upgraded over the years

(a) Count of new roads completed under PMGSY by year



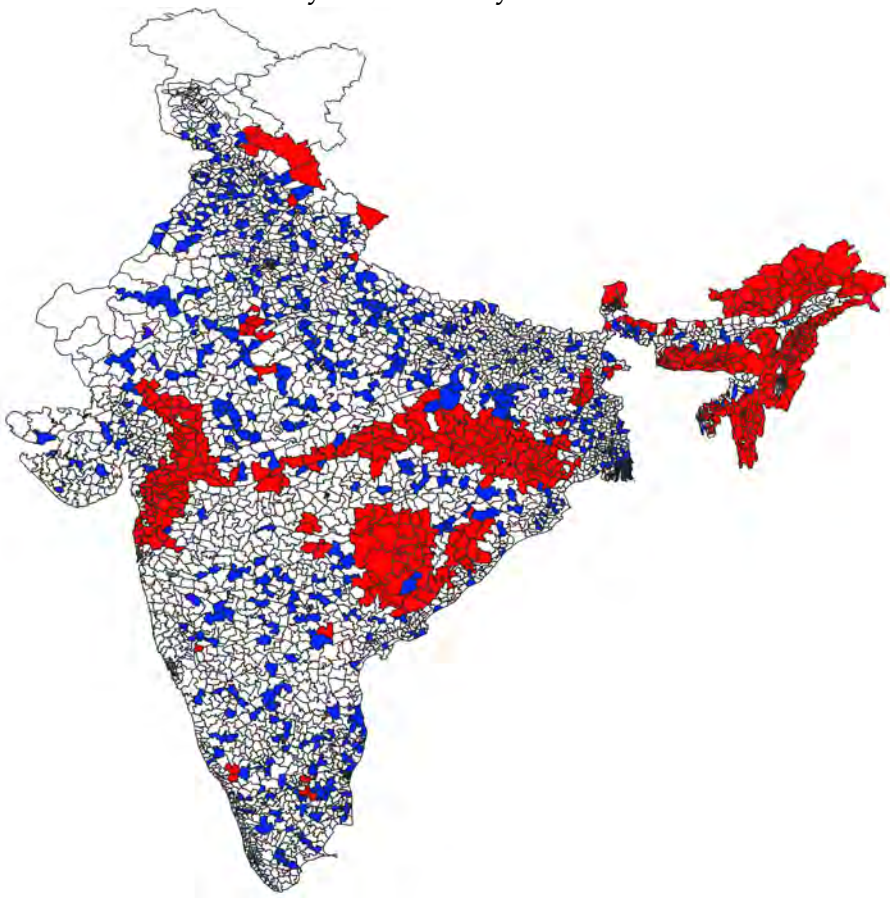
(b) Count of road upgrade under PMGSY by year



Note: The top panel shows the number of villages which were awarded new road under the road construction program of the Indian government from 2000 through 2014. The bottom panel shows the number of villages where the existing road is upgraded under the road construction program of the Indian government from 2000 to 2014.

Appendix C : Figures

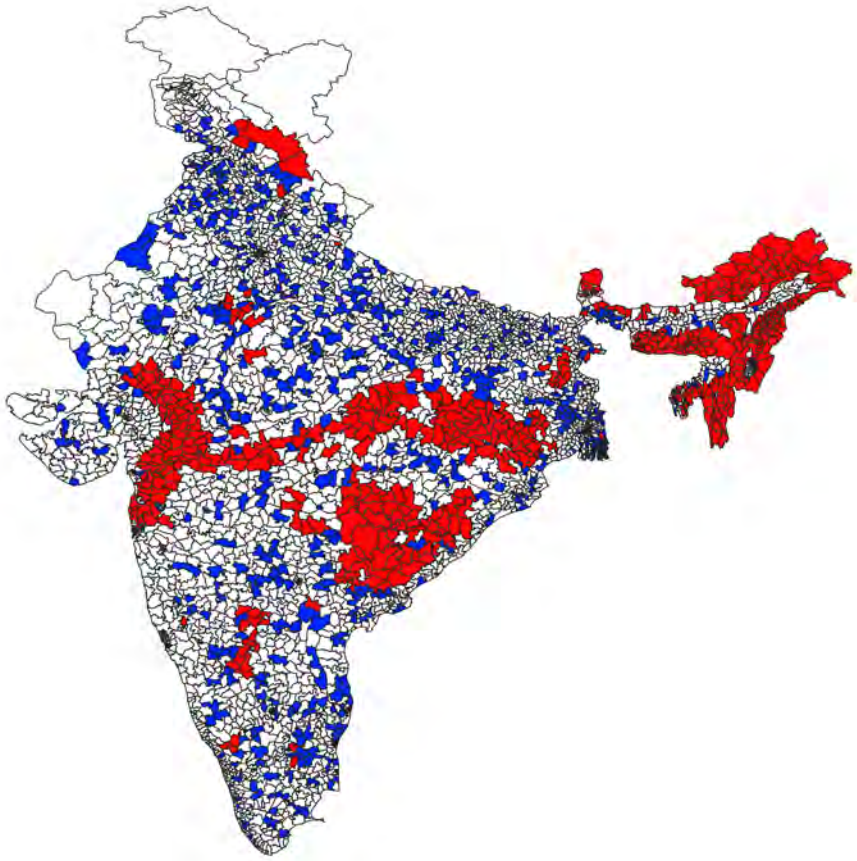
Figure 27: Political Status of assembly constituency before the delimitation



GEN : Non-reserved (General)
ST : ST
SC : SC

Note: This figure shows the assembly constituency of all the Indian states and union territories. The figure represents the political reservation status of legislative assembly constituency before the delimitation of 2008. Red means that the assembly constituency is reserved for the Scheduled Tribe minority. Blue means that the assembly constituency is reserved for the Scheduled Castes minority. White (Blank) means that the constituency is unreserved, so everyone, including people belonging to SC and ST, is eligible to contest elections. It is quite evident from the figure that assembly consistency reserved for SC is quite spread out while the ST reserved constituency are clustered in specific pockets.

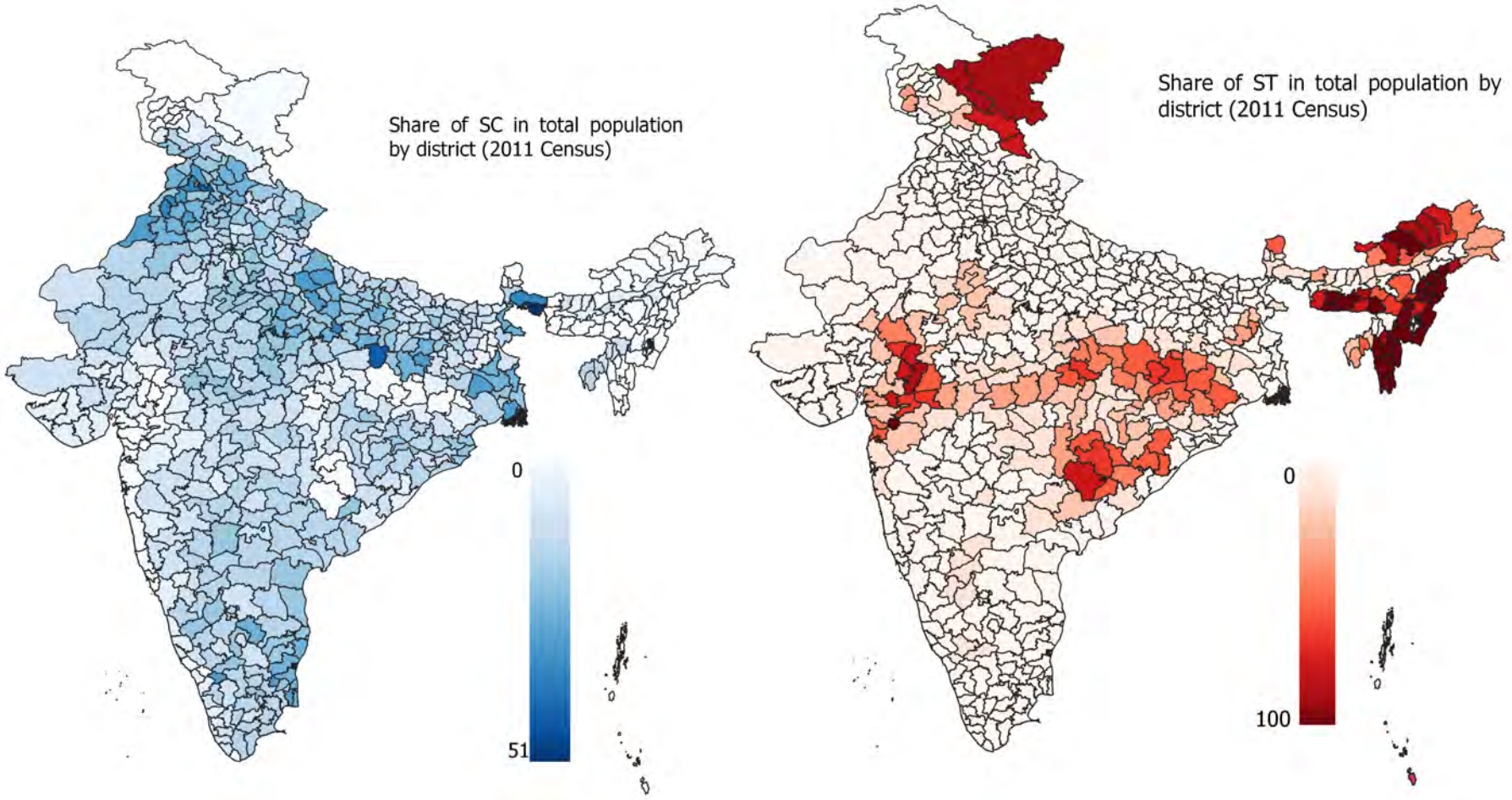
Figure 28: Political Status of assembly constituency after the delimitation



GEN : Non-reserved (General)
ST : ST
SC : SC

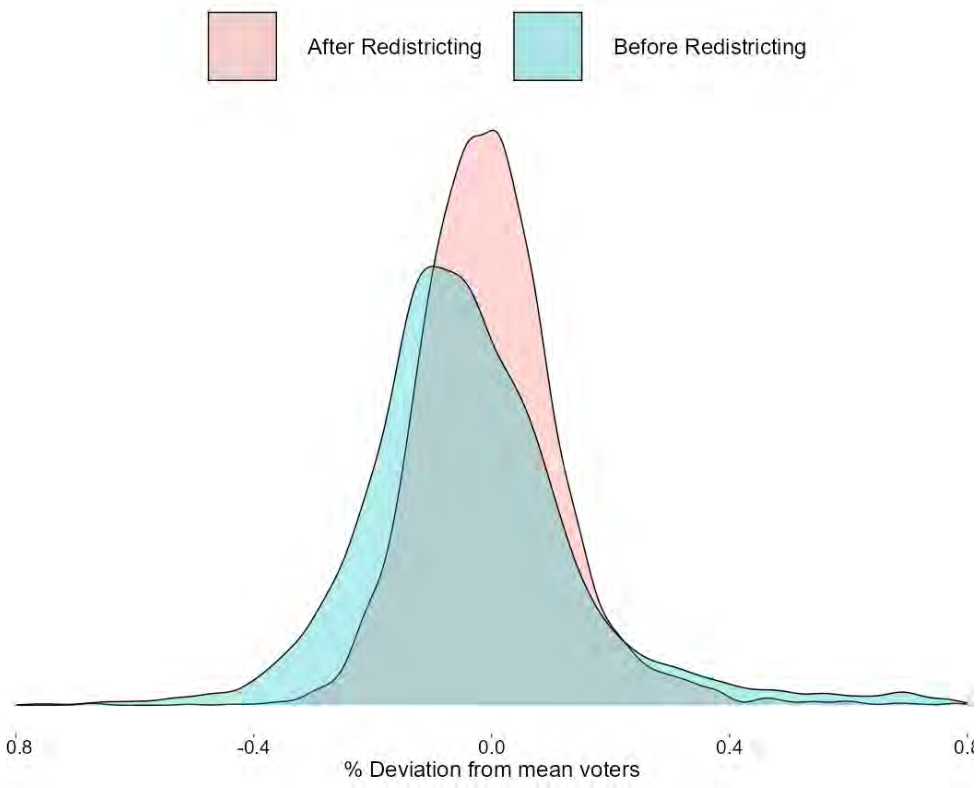
Note: This figure shows the assembly constituency of all the Indian states and union territories. The figure represents the political reservation status of legislative assembly constituency before the delimitation of 2008. Red means that the assembly constituency is reserved for the Scheduled Tribe minority. Blue means that the assembly constituency is reserved for the Scheduled Castes minority. White (Blank) means that the constituency is unreserved, so everyone, including people belonging to SC and ST, is eligible to contest elections. It is quite evident from the figure that assembly consistency reserved for SC is quite spread out while the ST reserved constituency are clustered in specific pockets.

Figure 29: Concentration of SC and ST population



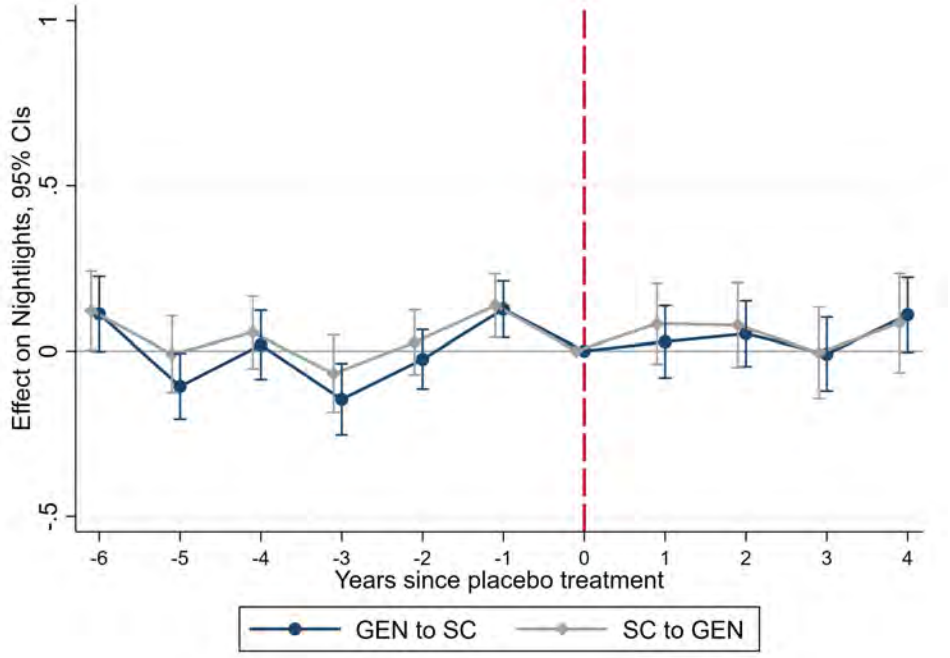
Note: This figure shows the spatial distribution of Scheduled Caste(SC) community in the left panel and spatial distribution of Scheduled Tribes (ST) in the right panel. We can see that the SC population is relatively spread out and rarely is in majority. However the ST population is clustered in certain pockets of India. Given the spatial distribution and electoral system (first past the post system) it is empirically more viable to study the reservation for SC)

Figure 30: Size of constituencies before and after redistricting



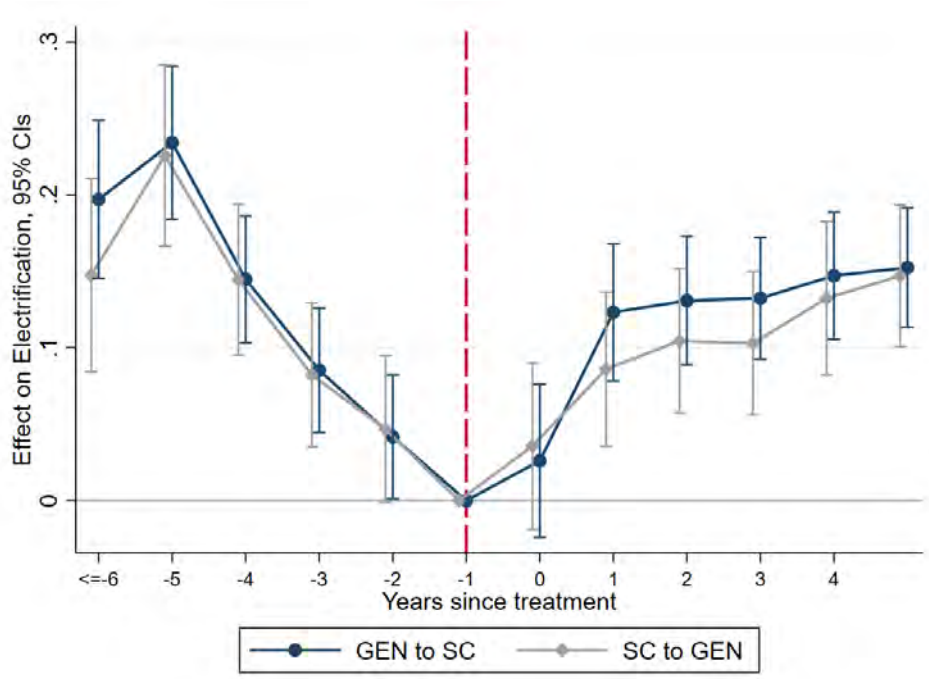
Note: In this figure, I plot the variation from mean numbers of voters within a state before redistricting and after redistricting. The figure suggest that the main objective of redistricting was achieved as we see that the deviation from mean voters decreases considerably after redrawing. After redistricting we see a relatively more uniform distribution with less variation in the voter size of constituency.

Figure 31: Event Study: Nightlights 1994-2003

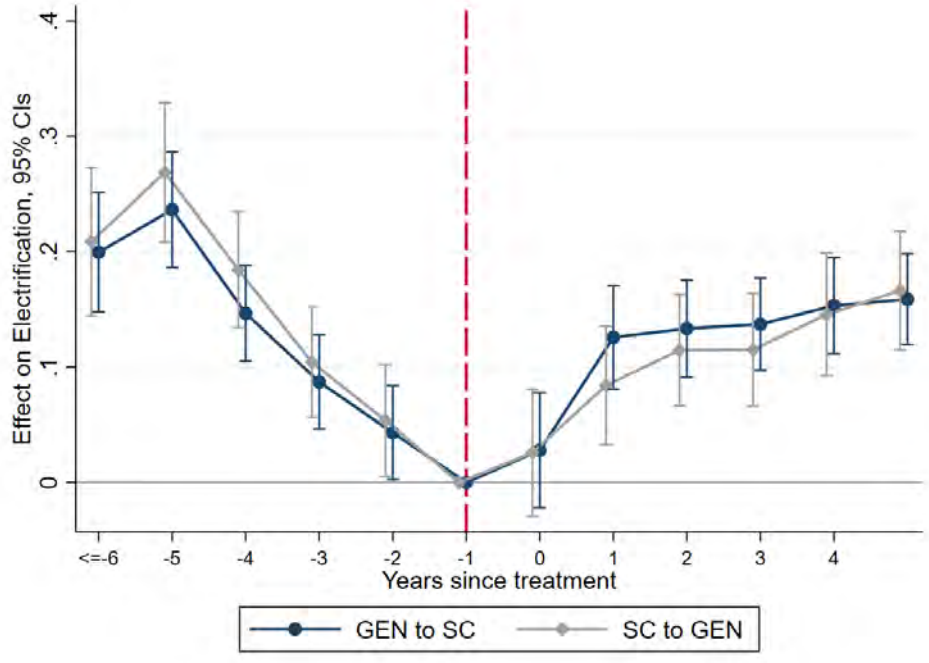


Note: Figure 31 presents an event study for the nightlight 1994-2003 sample, in which nighttime light density on horizontal axis is regressed on a set of year dummies around the year of treatment. Blue line represents the newly reserved villages (GEN $\Rightarrow$ SC) and the gray line represents previously reserved villages (SC $\Rightarrow$ GEN). We can see that there is no pretend.

Figure 32: Event Study: Electrification



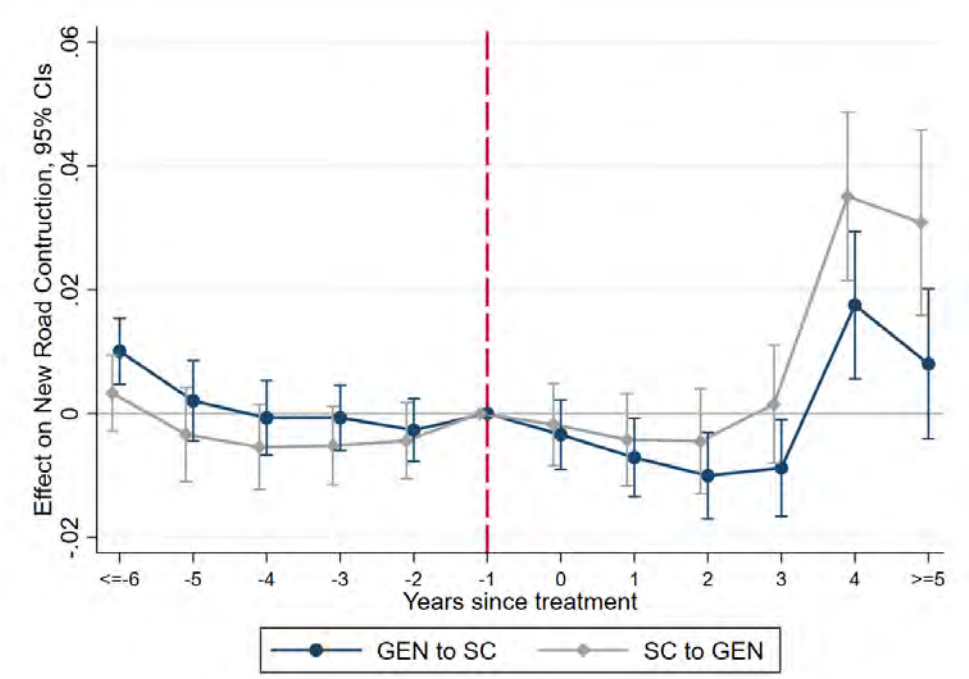
(a) Full Sample



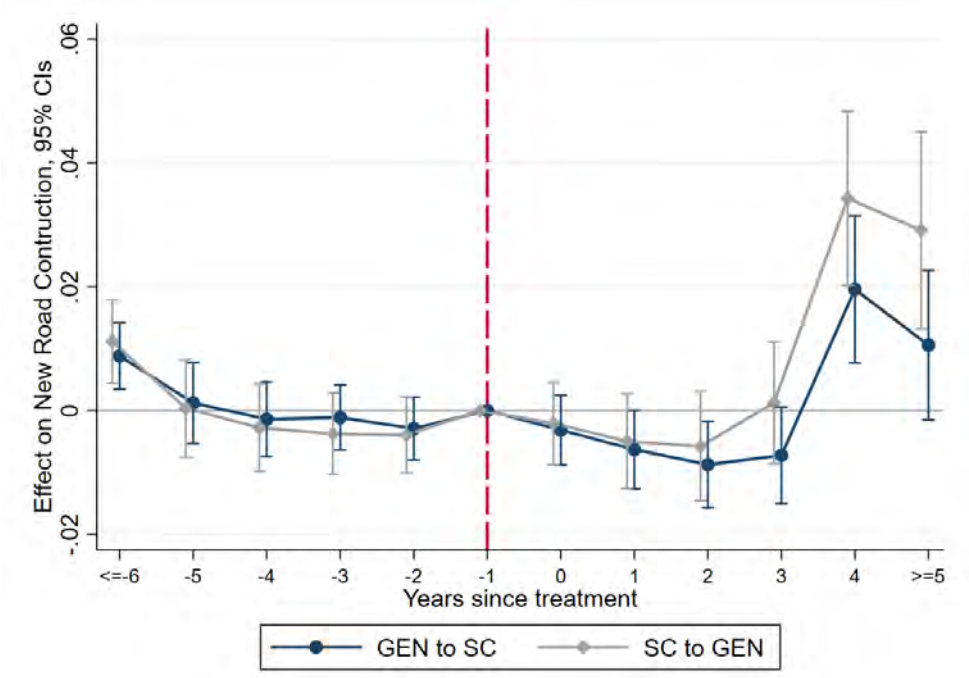
(b) Split Sample

Note: Figure 32 (a) presents an event study, in which electrification on horizontal axis is regressed on a set of year dummies around the year of treatment. Blue line represents the newly reserved villages (GEN ⇒ SC) and the gray line represents previously reserved villages (SC ⇒ GEN). Figure 8 (b) shows the same event study but with split samples. For blue line (GEN ⇒ SC) is treated group and (GEN ⇒ GEN) is control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group.

Figure 33: Event Study: New Road



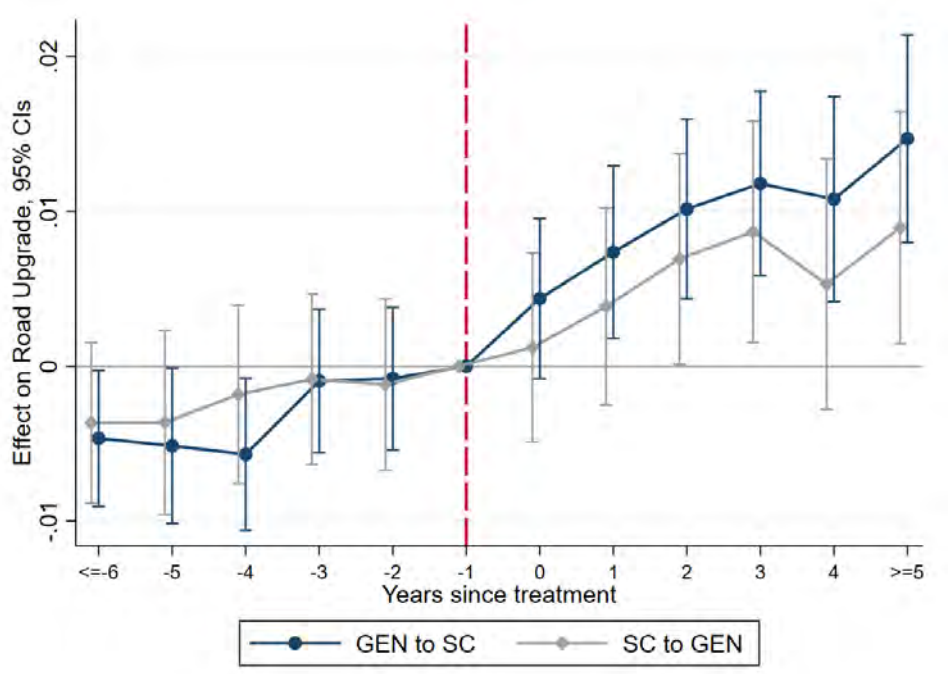
(a) Full Sample



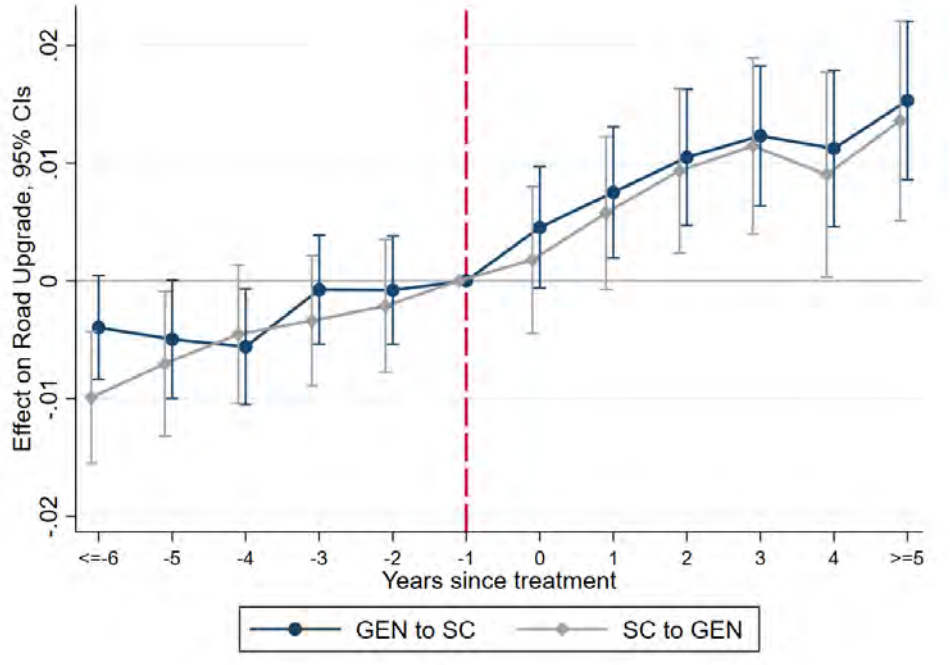
(b) Split Sample

Note: Figure 33 (a) presents an event study, in which new road construction on horizontal axis is regressed on a set of year dummies around the year of treatment. Blue line represents the newly reserved villages (GEN ⇒ SC) and the gray line represents previously reserved villages (SC ⇒ GEN). Figure 33 (b) shows the same event study but with split samples. For blue line (GEN ⇒ SC) is treated group and (GEN ⇒ GEN) is control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group.

Figure 34: Event Study: Road Upgrade



(a) Full Sample



(b) Split Sample

Note: Figure 33 (a) presents an event study, in which road up-gradation on horizontal axis is regressed on a set of year dummies around the year of treatment. Blue line represents the newly reserved villages (GEN ⇒ SC) and the gray line represents previously reserved villages (SC ⇒ GEN). Figure 33 (b) shows the same event study but with split samples. For blue line (GEN ⇒ SC) is treated group and (GEN ⇒ GEN) is control group; (ii) when (SC ⇒ GEN) is treated, (SC ⇒ SC) is the control group.

Figure 35: Impact of political quotas on nightlights by share of SC (split)

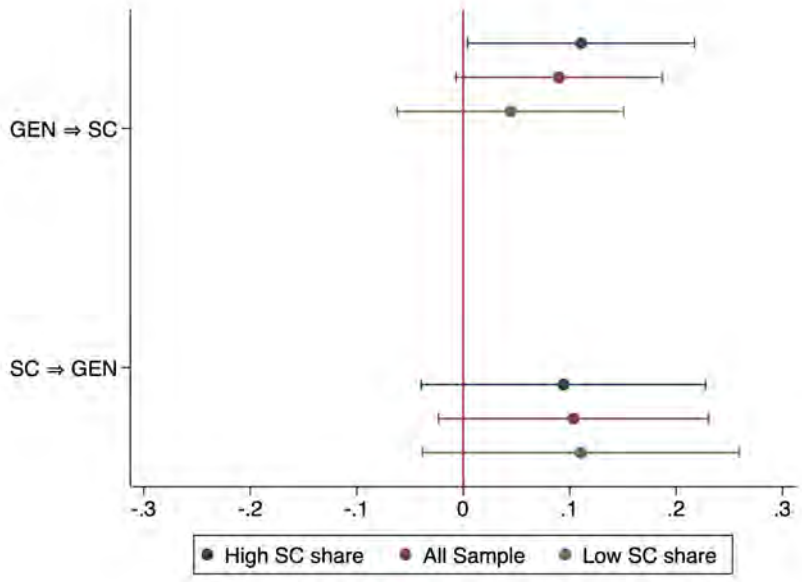
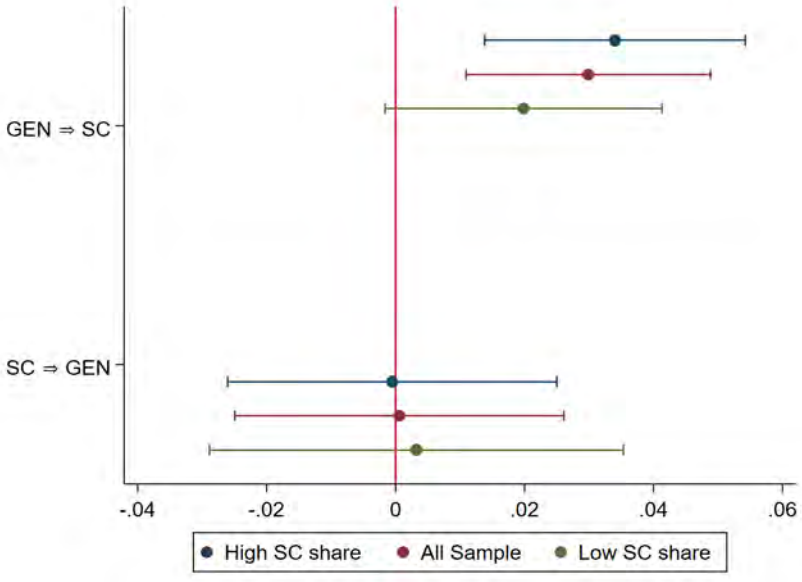


Figure 36: Impact of political quotas on electrification by share of SC (split)



Note: Figure 35 shows the heterogeneous effect of reservation on nighttime light density with split sample. The data is divided into two parts to do a above and below median analysis based on the share of Scheduled Castes in the village. I run three different regressions (i) All sample, (ii) High SC share and (iii) Low SC share. I plot the coefficient (GEN ⇒ SC) and (SC ⇒ GEN). We can see that the positive effect of reservation on nighttime light density is driven by the High SC share sample. The coefficient for (SC ⇒ GEN) indicates that there is no impact regardless of the share of SCs in the village. Figure 36 present the same result for electrification.

Figure 37: Impact of political quotas on new road by share of SC

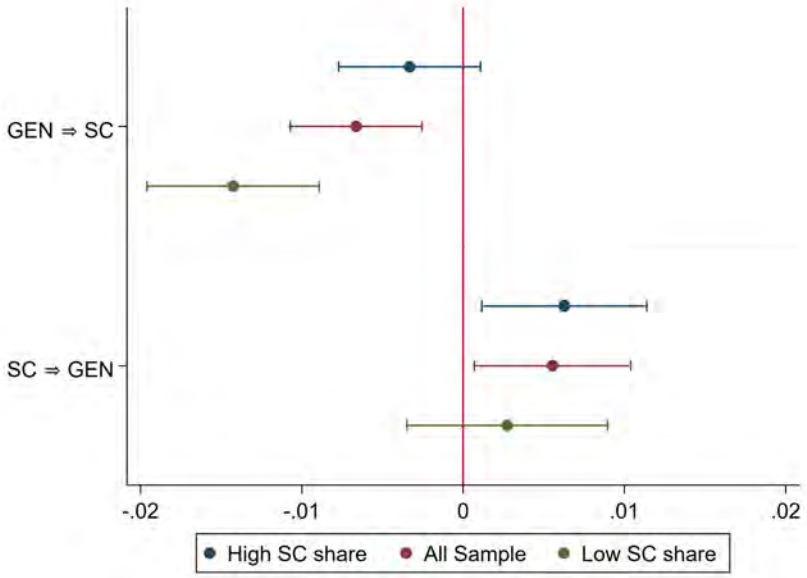
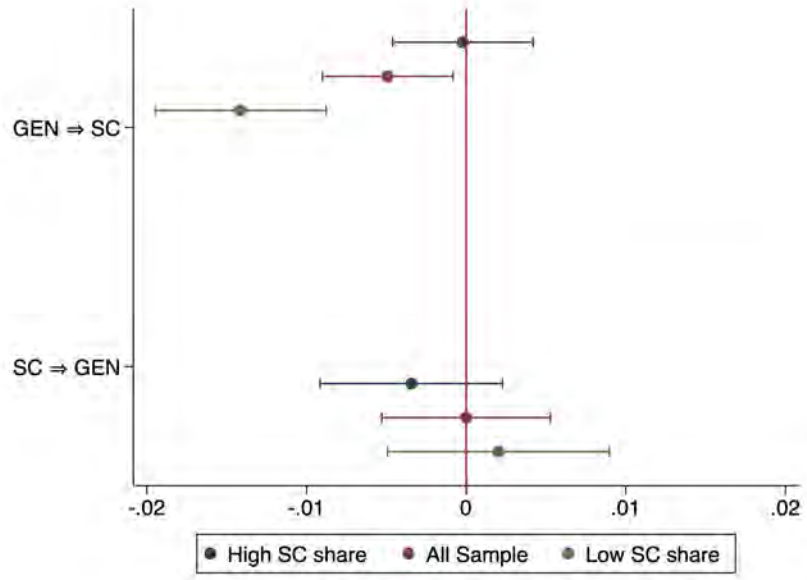


Figure 38: Impact of political quotas on new road by share of SC (split)



Note: Figure 37 shows the heterogeneous effect of reservation on new road construction The data is divided into two parts to do a above and below median analysis based on the share of Scheduled Castes in the village. I run three different regressions (i) All sample, (ii) High SC share and (iii) Low SC share. I plot the coefficient (GEN ⇒ SC) and (SC ⇒ GEN). In Figure 38, I present the same result with split sample.

Figure 39: Impact of political quotas on road upgrade by share of SC

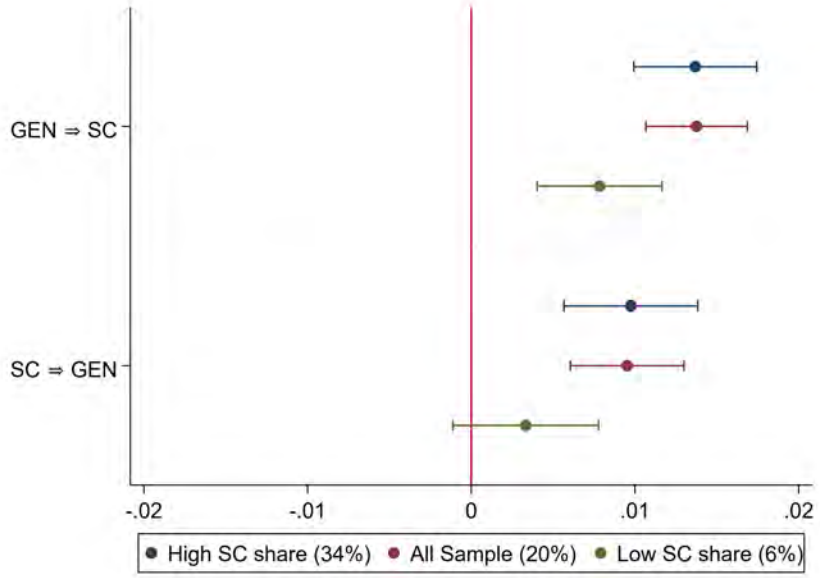
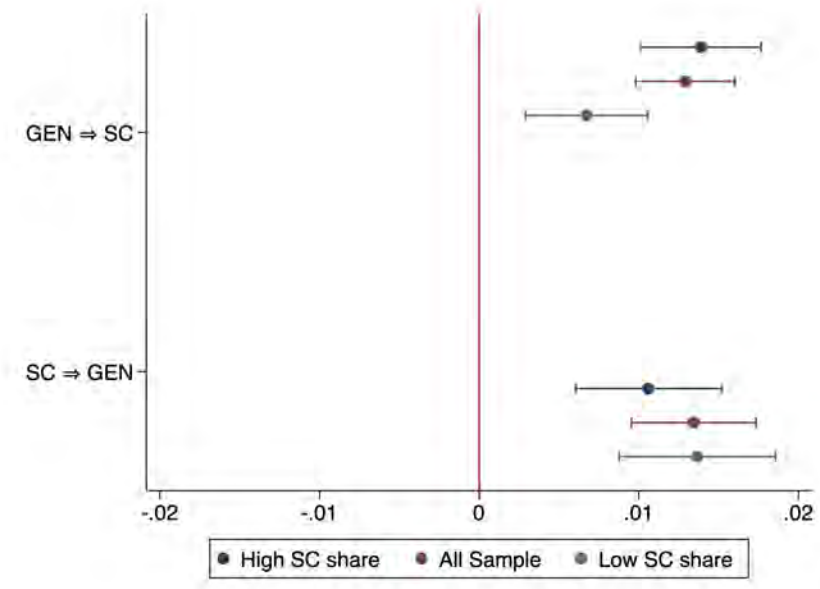
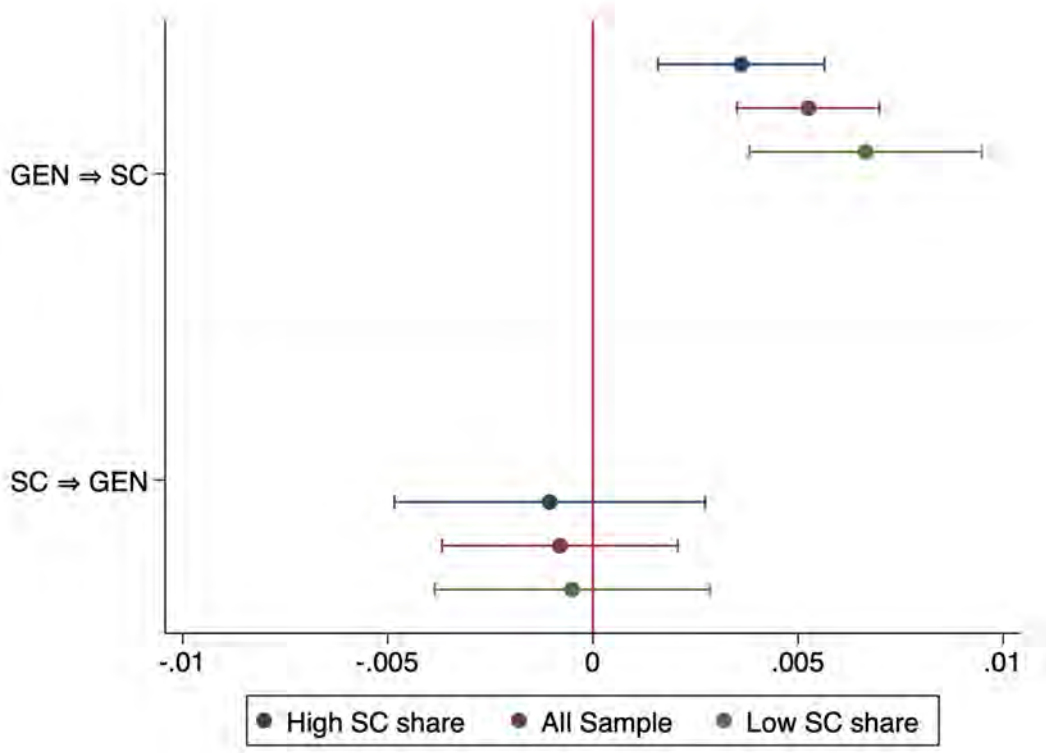


Figure 40: Impact of political quotas on road upgrade by share of SC (split)



Note: Figure 39 shows the heterogeneous effect of reservation on road up-gradation The data is divided into two parts to do a above and below median analysis based on the share of Scheduled Castes in the village. I run three different regressions (i) All sample, (ii) High SC share and (iii) Low SC share. I plot the coefficient (GEN ⇒ SC) and (SC ⇒ GEN). In Figure 40, I present the same result with split sample.

Figure 41: Impact of political quotas on SC enrollment by share of SC (split)



Note: Figure 10 shows the heterogeneous effect of reservation on SC enrollment with split sample. The data is divided into two parts to do a above and below median analysis based on the share of Scheduled Castes in the village. I run three different regressions (i) All sample, (ii) High SC share and (iii) Low SC share. I plot the coefficient (GEN ⇒ SC) and (SC ⇒ GEN). We can see that the positive effect of reservation on SC enrollment is higher in the villages with Low SC shares. The coefficient for (SC ⇒ GEN) indicates that there is no impact regardless of the share of SCs in the village.

Appendix D : Tables

Table 8: **Treatment Status on the basis of Election**

State	Election Date	Effective treatment begins..
Andhra Pradesh *(Including Telangana)*	April 2009	2009
Assam**	April 2011	2011
Bihar	November 2010	2011
Chhattisgarh	December 2008	2009
Goa	March 2012	2012
Gujarat	December 2012	2013
Haryana	October 2009	2010
Himachal Pradesh	November 2012	2013
Jharkhand**	December 2008	2009
Karnataka	May 2008	2008
Kerala	April 2011	2011
Madhya Pradesh	December 2008	2009
Maharashtra	October 2009	2010
Manipur**	March 2012	2012
Meghalaya***	March 2008	2008
Mizoram***	December 2008	2009
Nagaland**	March 2008	2008
NCT of Delhi	November 2008	2009
Odisha	April 2009	2009
Puducherry	April 2011	2011
Punjab	January 2012	2012
Rajasthan	December 2008	2009
Sikkim***	May 2009	2009
Tamil Nadu	April 2011	2011
Tripura***	March 2008	2008
Uttarakhand	January 2012	2012
Uttar Pradesh	March 2012	2012
West Bengal	April 2011	2011

Note:* ** *** refer to Table 9. This table shows when effective treatment begins in different states. The delimitation process was finished in 2008, but the new constituency with renewed political status only came into effect when there was an election to elect the government of the state. The election is not held simultaneously in all the states, so there is heterogeneity regarding the beginning of the treatment. Additionally, if the election takes place during the first sixth month of the year, then that year is considered treated and if the election takes in the second half of the year then the treatment begins the next year.

Table 9: **Change in SC & ST assembly constituency**

STATE	Pre-Delimitation			Post-Delimitation			Change	
	Total	SC	ST	Total	SC	ST	SC	ST
Andhra Pradesh *(Including Telangana)*	294	39	15	294	48	19	9	4
Arunachal Pradesh**	60	0	59	60	0	59	0	0
Assam**	126	8	16	126	8	16	0	0
Bihar	243	39	0	243	38	2	-1	2
Chhattisgarh	90	10	34	90	10	29	0	-5
Goa	40	1	0	40	1	0	0	0
Gujarat	182	13	26	182	13	27	0	1
Haryana	90	17	0	90	17	0	0	0
Himachal Pradesh	68	16	3	68	17	3	1	0
Jharkhand**	81	9	28	81	9	28	0	0
Karnataka	224	33	2	224	36	15	3	13
Kerala	140	13	1	140	14	2	1	1
Madhya Pradesh	230	34	41	230	35	47	1	6
Maharashtra	288	18	22	288	29	25	11	3
Manipur**	60	1	20	60	1	20	0	0
Meghalaya***	60	0	55	60	0	55	0	0
Mizoram***	40	0	39	40	0	39	0	0
Nagaland**	60	0	59	60	0	59	0	0
NCT of Delhi	70	13	0	70	12	0	-1	0
Odisha	147	22	34	147	24	33	2	-1
Puducherry	30	5	0	30	5	0	0	0
Punjab	117	29	0	117	34	0	5	0
Rajasthan	200	33	24	200	34	25	1	1
Sikkim***	31	2	12*	31	2	12*	0	0
Tamil Nadu	234	42	3	234	44	2	2	-1
Tripura***	60	7	20	60	10	20	3	0
Uttarakhand	70	12	3	70	13	2	1	-1
Uttar Pradesh	403	89	0	403	85	0	-4	0
West Bengal	294	59	17	294	68	16	9	-1
Total	3645	564	521	4032	607	543	43	22

Note: The table shows the changes in the composition State Legislative Assembly of Indian States as a result of Delimitation of 2008. The total number of seats in the state legislative assemblies were not affected by the delimitation process. Still, the seats for different minorities like Scheduled Castes (SCs) and Scheduled Tribes (STs) were adjusted based on their share in the local population.

*: 12 seats are reserved for Sikkimese of Bhutia-Lepcha (BL) origin under Section 7 (1C) of the Representation of the People Act, 1950.

**: Delimitation exercise is not implemented in the state of Assam, Manipur, Nagaland, Arunachal Pradesh and Jharkhand.

***: No changes were made in the state Meghalaya, Mizoram, Tripura and Sikkim for ST (BL for Sikkim) constituency as per the Section 7 (1C) of the Representation of the People Act, 1950.

Table 10: Type of village by political status

Change in Status	**Frequency**	%	% **Cum.**
GEN ⇒ GEN	360044	57.74	57.74
GEN ⇒ SC	53644	8.60	66.34
GEN ⇒ ST	13732	2.20	68.54
SC ⇒ GEN	43189	6.93	75.47
SC ⇒ SC	57117	9.16	84.62
SC ⇒ ST	2691	0.43	85.06
ST ⇒ GEN	5490	0.88	85.94
ST ⇒ SC	2357	0.38	86.31
ST ⇒ ST	85343	13.69	100.00
Total	623607	100.00	100.00

Note: Depending on the variation in the political status of the villages as a result of delimitation. There could be nine types of villages. For instance, the villages which were unreserved (GEN) before the delimitation, can be unreserved after the delimitation as well (M1), changes from unreserved to reserved for SC (M2) and changes from unreserved to reserved for ST minority (M3). Similarly for the villages which were SC and ST before the delimitation. This table shows the frequency of the type of villages. In total, the political status of 80.58% (M1 + M5 + M9) of villages don't change while the reservation status is altered in 19.42% of the villages.

Table 11: Effect of Political Quotas on Nightlights (split sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Average Nightlights in the village							
Sample:	Main Analysis (2004-2013)				Placebo Treatment (1994-2003)			
	(GEN⇒SC) & (GEN⇒GEN)		(SC⇒GEN) & (SC⇒SC)		(GEN⇒SC) & (GEN⇒GEN)		(SC⇒GEN) & (SC⇒SC)	
(GEN ⇒ SC)$_i$×post$_t$	0.126**	0.0900*			0.0232	0.0253		
	(0.0503)	(0.0495)			(0.0265)	(0.0262)		
(SC ⇒ GEN)$_i$×post$_t$			0.0684	0.104			0.0358	0.0463
			(0.0654)	(0.0647)			(0.0335)	(0.0336)
R-Squared	.896	.897	.892	.892	.943	.943	.939	.939
Number of Village	337,080	337,080	82,145	82,145	337,080	337,080	82,145	82,145
Observations	3,370,800	3,370,800	821,450	821,450	3,370,800	3,370,800	821,450	821,450
Mean of Dep. Var.	4.662	4.662	4.387	4.387	3.497	3.497	3.168	3.168
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	337,080	337,080	82,145	82,145	337,080	337,080	82,145	82,145
No. of AC-Year cluster	26,000	26,000	5,310	5,310	26,000	26,000	5,310	5,310

Note: * $p < .10$, ** $p < .05$, *** $p < .01$

Table 12: Effect of political reservation on nightlights (2004-2013)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Average Nightlights in the village							
Sample:	Low SC Share: 5%				High SC Share: 35%			
Political change	0.0293	0.0146			0.0520	0.0633		
	(0.0458)	(0.0447)			(0.0419)	(0.0418)		
(GEN ⇒ SC)$_i$×post$_t$			0.0668	0.0605			0.142***	0.152***
			(0.0556)	(0.0540)			(0.0546)	(0.0545)
(SC ⇒ GEN)$_i$×post$_t$			-0.0154	-0.0402			-0.0684	-0.0555
			(0.0723)	(0.0710)			(0.0622)	(0.0620)
R-Squared	.892	.893	.892	.893	.898	.899	.898	.899
Number of Village	209,613	209,613	209,613	209,613	209,612	209,612	209,612	209,612
Observations	2,096,130	2,096,130	2,096,130	2,096,130	2,096,120	2,096,120	2,096,120	2,096,120
Mean of Dep. Var.	4.282	4.282	4.282	4.282	4.934	4.934	4.934	4.934
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	209,613	209,613	209,613	209,613	209,612	209,612	209,612	209,612
No. of AC-Year cluster	30,760	30,760	30,760	30,760	29,360	29,360	29,360	29,360

Note: * $p < .10$, ** $p < .05$, *** $p < .01$. The dependent variable is a continuous variable measuring the average nightlight in the village. Average nightlight is calculated by dividing total light in the village by the number of grids. SC is a dummy which takes value one whenever a village is part of assembly constituency reserved for Scheduled Caste. GEN ⇒ SC is a dummy which takes value 1 when a village becomes part of an SC reserved constituency from the unreserved constituency as a result of delimitation (vice versa for SC ⇒ GEN). Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation). To check for heterogeneity, the main data is divided into four parts based on the share of the scheduled caste population in the year 2001. On average, 0.7% of the village's population is SC in the first quartile, and the share of SC population is 47% on average in the fourth quartile. Column 1-2 reports the result for specification 3 and 4 for the first quartile, column 3-4 for the second quartile, column 5-6 for third quartile and column 7-8 for the fourth quartile.

Table 13: Effect of political reservation on nightlights by quartile (1994-2003)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Average Nightlights in the village							
Sample:	Low SC Share: 5%				High SC Share: 35%			
Political change	-0.0121	-0.00967			0.0421*	0.0409*		
	(0.0219)	(0.0216)			(0.0219)	(0.0218)		
(GEN ⇒ SC)$_i$×post$_t$			0.00652	0.00961			0.0493*	0.0482*
			(0.0282)	(0.0278)			(0.0282)	(0.0281)
(SC ⇒ GEN)$_i$×post$_t$			-0.0343	-0.0327			0.0325	0.0312
			(0.0331)	(0.0329)			(0.0340)	(0.0339)
R-Squared	.941	.941	.941	.941	.944	.944	.944	.944
Number of Village	209,613	209,613	209,613	209,613	209,612	209,612	209,612	209,612
Observations	2,096,130	2,096,130	2,096,130	2,096,130	2,096,120	2,096,120	2,096,120	2,096,120
Mean of Dep. Var.	3.195	3.195	3.195	3.195	3.67	3.67	3.67	3.67
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	209,613	209,613	209,613	209,613	209,612	209,612	209,612	209,612
No. of AC-Year cluster	30,760	30,760	30,760	30,760	29,360	29,360	29,360	29,360

Note: * $p < .10$, ** $p < .05$, *** $p < .01$. The dependent variable is a continuous variable measuring the average nightlight in the village. Average nightlight is calculated by dividing total light in the village by the number of grids. SC is a dummy which takes value one whenever a village is part of assembly constituency reserved for Scheduled Caste. GEN ⇒ SC is a dummy which takes value 1 when a village becomes part of an SC reserved constituency from the unreserved constituency as a result of delimitation (vice versa for SC ⇒ GEN). Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation). To check for heterogeneity, the main data is divided into four parts based on the share of the scheduled caste population in the year 2001. On average, 0.7% of the village's population is SC in the first quartile, and the share of SC population is 47% on average in the fourth quartile. Column 1-2 reports the result for specification 3 and 4 for the first quartile, column 3-4 for the second quartile, column 5-6 for third quartile and column 7-8 for the fourth quartile.

Table 14: Effect of political quotas on electrification (split sample)

	(1)	(2)	(3)	(4)
Dependent Variable:	Electrification in the village			
Sample:	(GEN⇒SC) & (GEN⇒GEN)		(SC⇒GEN) & (SC⇒SC)	
(GEN ⇒ SC)$_i$×post$_t$	0.0347***	0.0299***		
	(0.00984)	(0.00967)		
(SC ⇒ GEN)$_i$×post$_t$			-0.00346	0.000578
			(0.0131)	(0.0130)
R-Squared	.689	.691	.692	.694
Number of Village	221,817	219,970	50,201	49,845
Observations	2,439,987	2,419,670	552,211	548,295
Mean of Dep. Var.	.4437	.4437	.464	.464
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	221,817	219,970	50,201	49,845
No. of AC-Year cluster	23,727	23,727	5,159	5,159

Note: * $p < .10$, ** $p < .05$, *** $p < .01$

Table 15: Effect of political reservation on electrification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Electrification in the village							
Sample:	Low SC Share: 4.3%				High SC Share: 33%			
Political change	0.0174*	0.0181**			0.0214***	0.0217***		
	(0.00909)	(0.00885)			(0.00794)	(0.00789)		
(GEN ⇒ SC)$_i$×post$_t$			0.0190*	0.0186*			0.0313***	0.0309***
			(0.0112)	(0.0109)			(0.0103)	(0.0103)
(SC ⇒ GEN)$_i$×post$_t$			0.0155	0.0175			0.00799	0.00929
			(0.0139)	(0.0136)			(0.0115)	(0.0114)
R-Squared	.688	.691	.688	.691	.692	.693	.692	.693
Number of Village	134,908	134,908	134,908	134,908	134,907	134,907	134,907	134,907
Observations	1,483,988	1,483,988	1,483,988	1,483,988	1,483,977	1,483,977	1,483,977	1,483,977
Mean of Dep. Var.	.4372	.4372	.4372	.4372	.4567	.4567	.4567	.4567
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	134,908	134,908	134,908	134,908	134,907	134,907	134,907	134,907
No. of AC-Year cluster	27,764	27,764	27,764	27,764	27,896	27,896	27,896	27,896

Note: * $p < .10$, ** $p < .05$, *** $p < .01$. The dependent variable is a binary variable indicating if the village is electrified under the Indian government electrification scheme. SC is a dummy which takes value one whenever a village is part of assembly constituency reserved for Scheduled Caste. GEN ⇒ SC is a dummy which takes value 1 when a village becomes part of an SC reserved constituency from the unreserved constituency as a result of delimitation (vice versa for SC ⇒ GEN). Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation). To check for heterogeneity, the electrification data is divided into four parts based on the share of the scheduled caste population in the year 2001. On average, 0.7% of the village's population is SC in the first quartile, and the share of SC population is 47% on average in the fourth quartile. Column 1-2 reports the results for specification 5 and 6 for the first quartile, column 3-4 for the second quartile, column 5-6 for third quartile and column 7-8 for the fourth quartile.

Table 16: Effect of Political Quotas on new road construction

	(1)	(2)	(3)	(4)
Dependent Variable:	New Road			
Political change	-0.00277*	-0.00128		
	(0.00164)	(0.00163)		
(GEN $\Rightarrow$ SC)$_i \times$post$_t$			-0.00806***	-0.00665***
			(0.00208)	(0.00208)
(SC $\Rightarrow$ GEN)$_i \times$post$_t$			0.00396	0.00553**
			(0.00250)	(0.00247)
R-Squared	.609	.61	.609	.61
Number of Village	469,357	464,607	469,357	464,607
Observations	7,509,712	7,433,712	7,509,712	7,433,712
Mean of Dep. Var.	.068	.068	.068	.068
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	469,357	464,607	469,357	464,607
No. of AC-Year cluster	50,608	50,560	50,608	50,560

Note: * $p < .10$, ** $p < .05$, *** $p < .01$

Table 17: Effect of political quotas on new road construction (split sample)

	(1)	(2)	(3)	(4)
Dependent Variable:	New Road			
Sample:	(GEN⇒SC) & (GEN⇒GEN)		(SC⇒GEN) & (SC⇒SC)	
$(\text{GEN} \Rightarrow \text{SC})_i \times \text{post}_t$	-0.00741***	-0.00494**		
	(0.00209)	(0.00209)		
$(\text{SC} \Rightarrow \text{GEN})_i \times \text{post}_t$			0.000259	-0.000000131
			(0.00273)	(0.00269)
R-Squared	.61	.61	.606	.607
Number of Village	377,580	373,723	91,777	90,884
Observations	6,041,280	5,979,568	1,468,432	1,454,144
Mean of Dep. Var.	.0673	.0673	.0707	.0707
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	377,580	373,723	91,777	90,884
No. of AC-Year cluster	42,240	42,192	8,496	8,496

Note: * $p < .10$, ** $p < .05$, *** $p < .01$

Table 18: Effect of political reservation on new road construction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	New Road							
Sample:	Low SC Share: 4.7%				High SC Share: 35%			
Political change	-0.00635***	-0.00651***			0.000628	0.000798		
	(0.00215)	(0.00213)			(0.00178)	(0.00175)		
$(\text{GEN} \Rightarrow \text{SC})_i \times \text{post}_t$			-0.0139***	-0.0143***			-0.00346	-0.00334
			(0.00272)	(0.00272)			(0.00228)	(0.00224)
$(\text{SC} \Rightarrow \text{GEN})_i \times \text{post}_t$			0.00269	0.00274			0.00602**	0.00626**
			(0.00322)	(0.00317)			(0.00268)	(0.00261)
R-Squared	.602	.602	.602	.602	.616	.618	.616	.618
Number of Village	232,304	232,304	232,304	232,304	232,303	232,303	232,303	232,303
Observations	3,716,864	3,716,864	3,716,864	3,716,864	3,716,848	3,716,848	3,716,848	3,716,848
Mean of Dep. Var.	.0689	.0689	.0689	.0689	.0683	.0683	.0683	.0683
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	232,304	232,304	232,304	232,304	232,303	232,303	232,303	232,303
No. of AC-Year cluster	49,776	49,776	49,776	49,776	47,232	47,232	47,232	47,232

Note: * $p < .10$, ** $p < .05$, *** $p < .01$. The dependent variable is a continuous variable measuring the average nightlight in the village. Average nightlight is calculated by dividing total light in the village by the number of grids. SC is a dummy which takes value one whenever a village is part of assembly constituency reserved for Scheduled Caste. GEN $\Rightarrow$ SC is a dummy which takes value 1 when a village becomes part of an SC reserved constituency from the unreserved constituency as a result of delimitation (vice versa for SC $\Rightarrow$ GEN). Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation). To check for heterogeneity, the main data is divided into four parts based on the share of the scheduled caste population in the year 2001. On average, 0.7% of the village's population is SC in the first quartile, and the share of SC population is 47% on average in the fourth quartile. Column 1-2 reports the result for specification 3 and 4 for the first quartile, column 3-4 for the second quartile, column 5-6 for third quartile and column 7-8 for the fourth quartile.

Table 19: Effect of political quotas on road upgrade (split sample)

	(1)	(2)	(3)	(4)
Dependent Variable:	Road Upgrade			
Sample:	(GEN⇒SC) & (GEN⇒GEN)		(SC⇒GEN) & (SC⇒SC)	
$(\text{GEN} \Rightarrow \text{SC})_i \times \text{post}_t$	0.0145***	0.0129***		
	(0.00158)	(0.00159)		
$(\text{SC} \Rightarrow \text{GEN})_i \times \text{post}_t$			0.0123***	0.0134***
			(0.00199)	(0.00199)
R-Squared	.611	.612	.582	.582
Number of Village	377,580	373,723	91,777	90,884
Observations	6,041,280	5,979,568	1,468,432	1,454,144
Mean of Dep. Var.	.0434	.0434	.04	.04
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	377,580	373,723	91,777	90,884
No. of AC-Year cluster	42,240	42,192	8,496	8,496

Note: * $p < .10$, ** $p < .05$, *** $p < .01$

Table 20: Effect of political reservation on road upgrade

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Road Upgrade							
Sample:	Low SC Share: 4.7%				High SC Share: 35%			
Political change	0.00860***	0.00578***			0.0114***	0.0120***		
	(0.00154)	(0.00152)			(0.00146)	(0.00145)		
(GEN ⇒ SC)$_i$×post$_t$			0.0104***	0.00784***			0.0130***	0.0137***
			(0.00198)	(0.00195)			(0.00193)	(0.00192)
(SC ⇒ GEN)$_i$×post$_t$			0.00646***	0.00333			0.00928***	0.00976***
			(0.00230)	(0.00227)			(0.00209)	(0.00208)
R-Squared	.615	.617	.615	.617	.6	.6	.6	.6
Number of Village	232,304	232,304	232,304	232,304	232,303	232,303	232,303	232,303
Observations	3,716,864	3,716,864	3,716,864	3,716,864	3,716,848	3,716,848	3,716,848	3,716,848
Mean of Dep. Var.	.0372	.0372	.0372	.0372	.049	.049	.049	.049
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	232,304	232,304	232,304	232,304	232,303	232,303	232,303	232,303
No. of AC-Year cluster	49,776	49,776	49,776	49,776	47,232	47,232	47,232	47,232

Note: * $p < .10$, ** $p < .05$, *** $p < .01$. The dependent variable is a continuous variable measuring the average nightlight in the village. Average nightlight is calculated by dividing total light in the village by the number of grids. SC is a dummy which takes value one whenever a village is part of assembly constituency reserved for Scheduled Caste. GEN ⇒ SC is a dummy which takes value 1 when a village becomes part of an SC reserved constituency from the unreserved constituency as a result of delimitation (vice versa for SC ⇒ GEN). Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation). To check for heterogeneity, the main data is divided into four parts based on the share of the scheduled caste population in the year 2001. On average, 0.7% of the village's population is SC in the first quartile, and the share of SC population is 47% on average in the fourth quartile. Column 1-2 reports the result for specification 3 and 4 for the first quartile, column 3-4 for the second quartile, column 5-6 for third quartile and column 7-8 for the fourth quartile.

Table 21: Effect of political quotas on SC enrollment (split sample)

	(1)	(2)	(3)	(4)
Dependent Variable:	Effect of political quotas on SC enrollment			
Sample:	(GEN⇒SC) & (GEN⇒GEN)		(SC⇒GEN) & (SC⇒SC)	
(GEN ⇒ SC) × post$_t$	0.00935***	0.00525***		
	(0.000925)	(0.000885)		
(SC ⇒ GEN) × post$_t$			-0.00142	-0.000804
			(0.00148)	(0.00147)
R-Squared	.432	.431	.449	.447
Number of School	1,102,758	1,060,897	240,805	231,615
Observations	10,673,717	10,289,813	2,335,389	2,249,898
Mean of Dep. Var.	.2177	.2177	.3141	.3141
Village & Year FE	✓	✓	✓	✓
Control	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	270,869	258,438	65,060	62,087
No. of AC-Year cluster	34,242	33,609	6,959	6,828

Note: * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 22: Effect of political reservation on SC enrollment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	SC enrollment							
Sample:	Low SC Share: 6.8%				High SC Share: 30.3%			
Political change	0.00545***	0.00464***			0.00293***	0.00215**		
	(0.00110)	(0.00111)			(0.00104)	(0.00104)		
(GEN $\Rightarrow$ SC)$_i \times$post$_t$			0.00710***	0.00641***			0.00402***	0.00329***
			(0.00136)	(0.00144)			(0.00103)	(0.00103)
(SC $\Rightarrow$ GEN)$_i \times$post$_t$			0.00373**	0.00278			0.00151	0.000663
			(0.00180)	(0.00173)			(0.00188)	(0.00187)
R-Squared	.369	.369	.369	.369	.381	.381	.381	.381
Number of School	155,898	155,898	155,898	155,898	164,627	164,627	164,627	164,627
Observations	6,270,175	6,270,175	6,270,175	6,270,175	6,269,536	6,269,536	6,269,536	6,269,536
Mean of Dep. Var.	.1533	.1533	.1533	.1533	.3225	.3225	.3225	.3225
Village & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Control	✗	✓	✗	✓	✗	✓	✗	✓
Cluster 1	Village	Village	Village	Village	Village	Village	Village	Village
Cluster 2	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year	AC-Year
No. of Village cluster	155,898	155,898	155,898	155,898	164,627	164,627	164,627	164,627
No. of AC-Year cluster	39,175	39,175	39,175	39,175	37,292	37,292	37,292	37,292

Note: * $p < .10$, ** $p < .05$, *** $p < .01$. The dependent variable is a continuous variable measuring the average nightlight in the village. Average nightlight is calculated by dividing total light in the village by the number of grids. SC is a dummy which takes value one whenever a village is part of assembly constituency reserved for Scheduled Caste. GEN $\Rightarrow$ SC is a dummy which takes value 1 when a village becomes part of an SC reserved constituency from the unreserved constituency as a result of delimitation (vice versa for SC $\Rightarrow$ GEN). Standard errors are in parenthesis are corrected for two-way clusters at the level of the village (to account for correlation over time) and at the level of pre-delimitation assembly constituency in each year (to account for within-constituency-year correlation). To check for heterogeneity, the main data is divided into four parts based on the share of the scheduled caste population in the year 2001. On average, 0.7% of the village's population is SC in the first quartile, and the share of SC population is 47% on average in the fourth quartile. Column 1-2 reports the result for specification 3 and 4 for the first quartile, column 3-4 for the second quartile, column 5-6 for third quartile and column 7-8 for the fourth quartile.