The Importance of Being Local? Administrative Decentralization and Human Development*

Latika Chaudhary
Naval Postgraduate School

Lakshmi Iyer
University of Notre Dame

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Abstract

We examine the human development consequences of transferring responsibility for public service provision from state to local governments in India using state-level variation in the timing of administrative decentralization reforms. We find that devolving responsibility for health and education functions does not improve child mortality or school completion. Further, partial devolution of service responsibility, without concomitant authority over personnel or taxation, results in a significant worsening of neonatal, infant and under-5 child mortality. Our results cannot be attributed to differential pre-trends, omitted variables bias, or heterogeneous treatment effects.

JEL codes: H77; H75; D73; H41

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1 Introduction

This paper examines the human development consequences of administrative decentralization. Administrative decentralization refers to the transfer of responsibility for providing public services from the central government and its agencies to sub-national or subordinate levels of government.[1] It is distinct from fiscal decentralization, which involves the transfer of tax-and-spend powers to sub-national governments enabling them to increase their revenues or financial autonomy. Administrative decentralization is also distinct from political decentralization, which refers to the extent to which local governments are directly elected by citizens. The effectiveness of administrative decentralization depends on the incentives and capabilities of local officials, rather than fiscal powers or electoral accountability.

Administrative decentralization is very common across the world: 123 countries have implemented administrative decentralization reforms between 1970 and 2014 (Tester, 2021). The development consequences of administrative decentralization are theoretically ambiguous. For instance, public service provision may improve as a result of better information or greater accountability of local officials, or it may deteriorate if local officials are less capable or less supervised after decentralization. Previous empirical studies have also found conflicting results on the impact of decentralization.

We examine a major decentralization reform in India, which was implemented via a constitutional amendment. The *Panchayati Raj* Act of 1993 required all states to establish a three-tier system of local government, comprising of village, interme-

[1] Technically, administrative decentralization can occur via "deconcentration" to different levels of the central government, "delegation" to semi-autonomous bodies or "devolution" of authority to lower level governments. In a devolved system, local governments have clear and legally recognized geographical boundaries over which they exercise authority and within which they perform public functions (World Bank, 2001). We focus on administrative devolution in this paper, and will be using the terms "decentralization" and "devolution" interchangeably.

diate and district level governance bodies. The Act contained many provisions for a comprehensive program of administrative, fiscal and political decentralization. For administrative decentralization, 29 functional areas were slated for administrative devolution to these local government bodies, including education and public health facilities and staff, water provision, and sanitation. Based upon a detailed reading of many official reports and documents, we find that only 18 of 25 major states had implemented *de facto* administrative decentralization by 2015, with considerable variation in timing across states. We also document variation in the process of administrative decentralization: while some states transferred (some) authority over employees to local governments as part of devolution (we call this "full administrative devolution"), other states did not ("partial administrative devolution"). Using these data, we conduct a difference-in-difference (DiD) estimation of the impact of administrative decentralization on health and education outcomes, comparing outcomes in each state before and after partial or full administrative devolution, relative to the changes in states that did not introduce any administrative devolution.

We document two main findings from our analysis. First, we find that full administrative decentralization does not lead to any improvement in health outcomes such as neonatal, infant or under-5 child mortality. There is also no improvement in education outcomes such as primary or middle school completion. Second, partial administrative devolution, namely the devolution of responsibility to local governments without concomitant authority over personnel, is detrimental to child mortality. Relative to nationwide improvements in child health outcomes, infant mortality in states that conducted partial devolution increased by 1.34 percentage points (24% of the mean). Our findings imply that devolution resulted in 0.94-1.03 million additional infant deaths (0.13-0.14% of total births) over the period 1990-2015.

We conduct a number of robustness checks and verify that our results are not driven by state- and time-varying factors such as other ongoing initiatives (particularly political decentralization), changes in state health budgets, differential pre-

trends between the treated and untreated states, or heterogeneous treatment effects across early and late adopters of devolution. We also examine the interaction with other dimensions of decentralization. Political decentralization occurred prior to administrative decentralization in all the states, and controlling for its timing does not change our findings. Fiscal decentralization, as measured by local governments collecting (some) revenue from their own sources, had occurred in only five states as of 2015. We find that the negative effects of partial administrative devolution are not present when there is such fiscal decentralization. This suggests that having control over funding can compensate, to some extent, for a lack of authority over employees.

In further analysis, we find no significant improvements in health service provision. Full administrative devolution does not increase the number of health facilities, the delivery of prenatal care, or vaccination, while partial administrative devolution leads to a decline in prenatal care and vaccination. Consistent with the idea that partial administrative decentralization results in poorer public service provision, we find that child mortality increases are higher among poor households that are the most reliant on public services. This is disappointing, since improving service delivery was one of the goals of the decentralization reforms. Our findings of no improvement in health outcomes and public service delivery suggests that the potential theoretical benefits of administrative devolution (better information, preference matching or employee monitoring) were counteracted by the potential downsides (elite capture, losing economies of scale, less capable local administrators). Partial administrative decentralization carries the risk of losing more of these potential benefits, while still bearing all the costs.

We make three main contributions to the large literature on decentralization. First, we provide a well-identified study on the effects of administrative decentralization, that is not confounded with other dimensions of decentralization. Many prior reviews have found conflicting or inconclusive effects of decentralization on a range of outcomes (Bardhan and Mookherjee, 2006a; Treisman, 2007; Faguet and Pal, 2023).

This is often due to conflating different concepts and definitions of decentralization (Faguet, 2021), as well as employing relatively weak identification strategies.[2] Many recent studies, based on credible DiD or regression discontinuity designs, nevertheless find conflicting results. Several studies have documented the positive effects of decentralization on service delivery, economic growth or well-being (Dahis and Szerman, 2021; Elacqua et al., 2021; Fleche, 2021; Narasimhan and Weaver, 2024), while several other studies have found negative effects of decentralized governance (Cassidy and Velayudhan, 2024; Cohen, 2024; Malesky et al., 2014).[3] Many of these studies focus on a package of policy measures incorporating elements of political, administrative and fiscal decentralization, or focus on a single type of decentralization without considering the role of other dimensions. We identify the effects of administrative decentralization after controlling for political decentralization and investigate how administrative decentralization effects are shaped by the presence or absence of fiscal decentralization. There are few analyses of such interaction effects along these different policy dimensions.[4]

Second, our context allows us to compare the effects of partial versus full administrative decentralization. We are unaware of any other study that is able to do such an empirical comparison within the same country. Previous studies have typically focused on providing evidence towards specific mechanisms such as the informational advantage of local governments or interactions between different levels of governance (Dal Bó et al., 2021; Molina-Garzón et al., 2022), examined heterogeneous effects of decentralization in different types of areas (Galiani et al., 2008) or provided descriptive case studies highlighting the importance of local governments

[2]In their review of 34 empirical studies of full decentralization, Channa and Faguet (2016) classify only ten of these as having "very strongly credible" or "strongly credible" identification strategies.

[3]See Gadenne and Singhal (2014) for a review of fiscal decentralization in developing countries and Mookherjee (2015) for a review of political decentralization.

[4]See Enikolopov and Zhuravskaya (2007) for a cross-country empirical analysis and Falleti (2005) for an analysis of the sequencing of different dimensions of decentralization.

having authority over local service providers (Ahmad et al., 2006).

Third, our results contribute to the theoretical understanding of when and how decentralization can work well. A large theoretical literature has highlighted both positive and negative consequences of decentralization.[5] Devolving administrative authority to local governments can improve public service delivery because of better information availability, better knowledge of citizens' preferences or better monitoring capacity at the local level (World Bank, 2004; Bardhan and Mookherjee, 2006a). However, service delivery could worsen if state capacity is weaker at the local level, if local officials are more likely to be corrupt, if decentralization results in loss of economies of scale, or if local elites can more easily capture public resources (Oates, 1972; Smith, 1985; Besley and Coate, 2003; Bardhan and Mookherjee, 2005, 2006b).[6] An important caveat to these models is that decentralization reforms often do not involve a complete transfer of authority from higher to lower levels of government; rather, they create overlapping authority structures (Rodden, 2004). The presence of such "multiple principals" (in our case, state and local governments) can lead to free-riding in monitoring effort, resulting in greater moral hazard or adverse selection among the agents (Martimort, 1996; Dixit, 1997; Gailmard, 2009).[7] Our results highlight that state capacity at the local level depends crucially on the gov-

[5]The sequential nature of decentralization reforms, i.e., the order in which administrative, fiscal and political decentralization are enacted, can also affect outcomes (Falleti, 2005, 2010). Applying Falleti (2005)'s theoretical model to India, where political decentralization preceded administrative decentralization, suggests that Indian administrative decentralization failed to improve outcomes because it involved limited fiscal decentralization and did not necessarily strengthen the state capacity of local governments.

[6]Prior empirical studies have documented that better monitoring of public service providers results in improved service delivery (Björkman and Svensson, 2012; Duflo et al., 2012; Muralidharan et al., 2017, 2021).

[7]In a non-decentralization context, the presence of multiple principals has been associated with worse delivery of public services (Gulzar and Pasquale, 2017) but also with lower regulatory bottlenecks resulting in greater firm entry (Dutta et al., 2022).

ernance structure, namely whether local governments have been given authority over personnel and funding.

The rest of the paper is structured as follows: Section 2 outlines the Indian decentralization reforms, Sections 3 and 4 describe our data, and Section 5 delineates our empirical strategy. Sections 6 and 7 document our results and Section 8 concludes.

2 India's *Panchayati Raj* Decentralization Reforms

In April 1993, the 73rd and 74th amendments to the constitution of India, also known as the *Panchayati Raj* Acts, came into force.[8] Each state was required to set up a three-tier system of local government with village, intermediate and district level governance bodies, known as *panchayats* or *Panchayati Raj* institutions. While some *panchayats* did exist before the 1990s, Ghatak and Ghatak (2002) argue that most of these were generally ineffective since elections were not held regularly and they did not assume any active role in public service provision. A few states, such as Gujarat, Maharashtra and West Bengal, did have effective *panchayats* and regular elections prior to the 73rd and 74th Amendments. However, all states had to modify their existing legislations along several dimensions to be in compliance with the constitutional amendments.

The amendment contained several provisions for administrative, fiscal and political decentralization. Administrative decentralization involved states transferring responsibility over 29 functional areas to these *panchayats*, including services such as water provision, sanitation, education, public health and roads (see Appendix Table B.1). The law envisioned such administrative devolution would improve public service delivery by increasing local accountability or improving preference matching between people using the services and the local bodies providing the service.

[8]The 73rd Amendment applied to rural bodies and the 74th amendment applied to urban local bodies. In 1996, the Indian Parliament extended the provisions to Scheduled areas via the *Panchayats* Extension to Scheduled Areas Act (PESA). See Center for Policy Research (2014) for details.

To facilitate fiscal decentralization, the amendments called for State Finance Commissions to be periodically set up, which would provide recommendations on revenue-sharing and make grants to these local government institutions. The law envisioned that states would enact laws enabling *panchayats* to increase their revenues by raising their own sources of taxation.

The amendments included provisions for political decentralization: all members of these local bodies were to be directly elected by the people every five years, State Election Commissions were to be established to conduct such elections, and one-third of all *panchayat* seats (and a third of all council head positions) were mandated to be filled by women. It was envisioned that political decentralization would bring elected leaders closer to the people and increase democratic accountability. As our data will show, fiscal and administrative decentralization measures were implemented much more slowly than political centralization, which some observers attribute to the mandatory versus discretionary interpretations of different legislative provisions.[9]

3 Data on Decentralization Progress

3.1 Progress of administrative decentralization

Most states amended or passed new *Panchayati Raj* Acts immediately in 1993 and 1994. All of these new state legislations called for the devolution of education and public health services, among others, to village, intermediate and district *panchayats* in accordance with the constitutional amendment. However, our perusal of these laws reveal that they varied considerably in their specificity. For example, Gujarat clearly specified the powers and duties for each of the three *panchayat* tiers, and Maharashtra's legislation enabled *panchayats* to appoint and pay staff using their own funds. However, some other states had only vague language such as "Village

[9]In describing the legislation, Chaudhuri (2006) distinguishes the provisions with "the state shall" as mandatory versus those with "the state may" as discretionary.

panchayats *may* perform functions related to health."

There was generally slow progress in actually devolving responsibility over public service provision to *panchayats*, with state health and education departments retaining control in most states (Chaudhuri, 2006). Disappointed with the slow and uneven pace of administrative devolution, the central government in the 2000s began to ask states to move faster. The Ministry of *Panchayati Raj* became a separate ministry in May 2004 and took on a stronger advocacy role. The central Planning Commission published a report asking states to (a) conduct an "activity mapping" exercise for each devolved function that would unbundle the functions into smaller units of work and articulate the powers and duties vis-à-vis those smaller units to each *panchayat* tier, and (b) pass executive orders to operationalize these activity mapping exercises (Government of India, 2006). The report also highlighted that many states had not devolved the functionaries, i.e. made public employees accountable to local governments. Rather, public workers were still managed and monitored by their state-level departments.

What did activity mapping look like in practice? While there is some variation across states, we find that district *panchayats* typically coordinate participation and promotion of national and state health programs, pass information from lower levels of government to the state, and coordinate measures against epidemics and other infectious diseases. District and intermediate *panchayats* are authorized to undertake surveys and reports, procure medicines and medical equipment (e.g. X-ray machines), promote immunization and child welfare programs, and oversee construction of public health facilities such as dispensaries, primary health centers or subcenters. Village *panchayats* help with the execution of specific public health programs, identify land for primary health subcenter construction, manage cleaning and latrine construction, control stray dogs, remove animal carcasses, and support other such local functions.

With regard to education, the central government asked states to model their activity mapping exercise on Kerala. Village *panchayats* in Kerala manage govern-

ment pre-primary and primary schools including the maintenance of schools and monitoring of teachers. They also manage libraries and implement literacy programs. In other states such as Assam, village *panchayats* promote enrollment and attendance in primary schools and monitor primary school teachers, while intermediate *panchayats* manage the school buildings and district *panchayats* oversee surveys and other educational programs.

3.2 Measuring administrative devolution

We code effective administrative devolution as the date when activity mapping was operationalized i.e. the responsibilities for each *panchayat* tier was clearly delineated and brought into force via legislation or executive order. To find the dates of devolution for health and education functions over the period 1993 to 2015, we read several different government publications and reports,[10] as well as many state *Panchayati Raj* websites for specific government or executive orders. For some states, like Gujarat and Maharashtra, their *Panchayati Raj* legislations contain activity mapping provisions, so that the date of legislative enactment serves as the date of operationalization. Other states codified activity mapping and passed operationalizing orders several years after the passage of their *Panchayati Raj* legislation. Appendix Table B.3 provides details of which sources we used to code the date of *de facto* devolution for each state.[11]

[10]These include Government of India (2008); Mathew (2013); Center for Policy Research (2014); Government of India (2016a,b, 2017). Appendix Table B.2 provides bibliographic details

[11]Our sources exhibit some ambiguity about the date of devolution for some states. For Bihar, some sources list the date of health devolution as 2012, while others mention 2014. For Rajasthan, devolution occurred in 2003, but health functions were transferred back to the state level in 2004 before being devolved again in 2010. For Uttarakhand, activity mapping was completed by 2008, but sources were unclear on when an executive order was actually issued to operationalize it. We code Bihar, Rajasthan and Uttarakhand as having devolved in 2012, 2010 and 2008 respectively, and verify that our results are not sensitive to recoding these dates to 2014, 2003 and "not devolved" respectively.

Our data reveals considerable variation in the timing of *de facto* administrative devolution (Table 1). Only a handful of states effectively devolved both health and education before 2000, and devolution activities increased after the publication of the Planning Commission report in 2006. Despite this progress, seven states (out of 25) had not devolved health functions as of 2015 and six had not devolved education. All but one state devolved education at the same time as health; in fact, many states devolved drinking water, family welfare and women and child development at the same time as well. Our estimates of the impact of health (or education) functions devolution should thus be interpreted as a result of the administrative devolution of this larger policy bundle.

Why do dates of administrative decentralization vary across states? Many factors appear to play a role including a prior history of well-functioning local governments (e.g. Gujarat and Maharashtra), party ideology (e.g. West Bengal and Kerala devolved when Communist parties were in power), political factors such as intra-party competition (Bohlken, 2016), and nudges from the central government such as the 2006 Planning Commission report. In terms of our difference-in-difference analysis (DiD), factors such as a state's history or long-standing political institutions will be controlled for by the inclusion of state fixed effects. National factors such as central government actions are accounted for by the inclusion of year fixed effects. Our estimates may be biased if the timing of devolution happens to be correlated with pre-existing trends in our outcome variables or with other state-time-varying budgetary or policy changes that also affect our outcomes. We conduct several robustness tests to verify that this is not the case.

3.3 Partial versus full administrative devolution

We track whether administrative devolution was accompanied by local authority over public employees, namely "the extent to which the government employees are deployed to *panchayats* and have been made accountable to *panchayats'* political executives and

whether *panchayats* have their own employees, the powers and functions of *panchayats* in terms of selection, appointment, salary payment, transfer, removal, etc" (Alok, 2014). In the absence of devolution, the hiring, monitoring and supervision of public service employees (doctors, nurses, teachers and other public health and education workers) is completely controlled by state-level departments. No state has devolved full control of all employees to local governments, but many states have allowed for more monitoring and supervision of public sector workers by *panchayats* and some hiring of lower level health and education workers as *panchayat* employees. For instance, in Madhya Pradesh and Maharashtra, *panchayats* can hire their own lower-level workers. In Kerala and Karnataka, public sector workers come under the dual control of *panchayats* and their respective state health or education departments. *Panchayats* in Kerala cannot hire or fire doctors that are hired by separate state cadres and paid from state funds, but they can hire lower level workers such as ambulance drivers or janitors (John and Jacob, 2016). We therefore make a distinction between administrative devolution reforms that involved no authority over employees ("partial administrative devolution") and those that conferred some local authority over employees ("full administrative devolution").

Our data sources are less precise when it comes to the exact date of employee authority devolution. For states where such provisions were included in legislation, we have a precise date. For others, we rely on the employee devolution status as of 2007 and 2015 (Government of India, 2008, 2016a). We adopt an "earliest possible date" rule as follows: For states that had devolved employees as of 2007, we code them as having done it at the same time as the devolution of responsibility over health functions. For states recorded as having devolved responsibility over health (but not employees) by 2007, and having devolved employee authority by 2015, we assign them an employee devolution date of 2008 because of the flurry of activity by states following the publication of the Status of *Panchayati Raj* report. For states that devolved responsibility over health after 2007, and had devolved employees by 2015,

we code them as having devolved employees at the same time as health functions. By this measure, 13 of the 18 states that had devolved health functions had also devolved health employees by 2015. We code the devolution of education employees in a similar manner. We verify that our results are not sensitive to moving the date of employee authority devolution three years ahead of this original coding.

We note that our measures are consistent with other indicators of local government authority. For instance, we examine the number of employees per 1000 population in 2015, which includes both the local government's own employees such as the village *panchayat* secretary and employees transferred to local governments such as public health workers (Government of India, 2016b). "Full devolution" states reported 1.5 employees per 1000 people compared to 1.1 for "partial devolution" states. A different government report assessed the involvement of *panchayats* in six dimensions of health service provision, including location and construction of facilities, and hiring and supervision of health workers (Government of India, 2012). On average, *panchayats* were involved in 2.9 (out of 6) areas in full administrative devolution states; the corresponding figures for partial administrative devolution states and no administrative devolution states were 2.6 and 2.2 respectively. This suggests that our measures correlate with the actual functioning of local governments.[12]

[12]Prior indices of aggregate devolution (Government of India, 2014, 2016b) are unsuitable for our panel data analysis. These indices often combined administrative, fiscal and political decentralization into a single index as of a single year. Since they were constructed by different organizations and scholars for different years, the components of these indices also changed from year to year (Government of India, 2016b). Hence they do not capture the variation in a uniform measure of administrative decentralization over time. Our measure mirrors recent work in political science, such as creating regional authority indices that capture both spatial and temporal variation across countries over time (Hooghe et al., 2016).

3.4 Political and fiscal decentralization

We track the progress of political decentralization by coding the first year when the state conducted local council elections with the one-third gender quota, based on data from Iyer et al. (2012). Table 1 shows that political decentralization progressed much faster than administrative decentralization. By 2010, all states in our sample had implemented the gender quota as specified by the constitutional amendments.[13]

Panchayats are funded from four sources: central government grants based on the recommendations of the five-yearly Central Finance Commissions; funds from centrally sponsored schemes such as the National Rural Employment Guarantee program (NREGA); loans and grants from state governments based on the State Finance Commission recommendations; and their own sources of taxes and user fees on public services. Most local governments remain highly dependent on the state or central government for their revenues: as late as 2015, local governments generated only 8% of revenues from their own sources of taxation and fees (Government of India, 2016a), compared to 6% in the 1990s (Government of India, 2000). Most accounts suggest that *panchayats* have failed to expand their revenues because they change tax rates infrequently, they lack administrative capacity, they do not own productive assets and they are unable to charge user fees on state or central government properties (Government of India, 2016b).

Progress on fiscal decentralization has been slower than on administrative decentralization. Our data on fiscal or funds devolution is limited because there is no uniform and consistent database of annual local government finances, a fact noted and bemoaned by multiple Central Finance Commissions. This makes it difficult to

[13]The effects of this gender quota have been examined by many prior studies, some of which find that women's political representation changes policy outcomes towards those preferred by women (Chattopadhyay and Duflo, 2004; Iyer et al., 2012), while others find no effect or even a lower efficiency of pro-poor targeting (Bardhan et al., 2010; Rajaraman and Gupta, 2012; Afridi et al., 2017). Starting in 2006, many states have increased the gender quota to one-half of all local council positions (Iyer and Triyana, 2022).

measure the extent of fiscal decentralization using measures such as the fraction of local government revenues that are raised by them versus granted by upper levels of government. The 2015-16 Devolution Report includes the taxes collected by the different *panchayat* tiers in each state as of 2015 (Government of India, 2016b). We create a crude indicator of fiscal decentralization that equals one if *panchayats* at each tier (district, intermediate and village) report collecting their own taxes. By this measure, only five states had implemented fiscal decentralization; all these states also report their *panchayats* collecting user fees.

Since state and central government funding accounts for the bulk of local government revenues, we need to ensure that our results on administrative devolution are not driven by concurrent changes in such funding sources. We construct several measures of state government funding that may affect our outcomes: spending on health and education, a larger category of social spending (the sum of education, medical and public health, and water supply and sanitation), and transfers to *panchayats*, all measured in per capita terms. We also collect data on per capita funding from the central government to local bodies (based on Central Finance Commission reports).

4 Data on Human Development Outcomes

4.1 Public service delivery

Before describing the data, we briefly describe public service delivery in India as one impetus for the Indian decentralization reforms was to improve service delivery and human development outcomes (Chaudhuri, 2006). While government policies in the 1970s and 1980s largely equalized access to education and health facilities (Banerjee and Somanathan, 2007), the public health and education system continues to suffer from many inefficiencies. India was ranked 130 out of 189 countries in the U.N.'s Human Development Index in 2018.

Health services in India are provided by both a public health sector and a

large private sector. The public health system aims to provide universal access to healthcare, delivered free or at highly subsidized prices. State-run health facilities include district hospitals, community health centers, primary health centers and health subcenters. State government funding accounts for 80% of all government health spending, the rest being funded by the central government (Muralidharan, 2024). Important instances of centrally sponsored schemes include the creation of Anganwadi workers (AWW) under the Integrated Child Development Services program in 1975, and the expansion of Accredited Social Health Activists (ASHA) workers under the National Rural Health Mission of 2005. AWWs provide basic health services such as supplementary nutrition, health education, immunization and health check-ups. ASHA workers serve as the bridge between the local community and the health system e.g. bringing pregnant women to the Auxiliary Nurse Midwife (ANM) at the health subcenter for prenatal services. The implementation of centrally sponsored schemes, including the hiring and supervision of associated workers, rests largely with state governments, and the involvement of *panchayats* in implementing these schemes varies according to the administrative devolution status of the state. Field observations confirm that *panchayats* in full administrative devolution states are actively involved in public service provision. For instance, *panchayats* in Kerala appoint lower-level service providers, monitor schools and health centers, and sanction service providers (John and Jacob, 2016, p. 141); district *panchayats* in Karnataka maintain health centers and implement the National Anti-Malaria program, while intermediate *panchayats* supply medicines to primary health centers and sub-centers (John and Jacob, 2016, p. 132).

Despite decentralization and other attempts to improve service delivery, the public health system suffers from many inefficiencies. In 2015, 10% of ANM positions at primary health subcenters and 27% of doctor positions at primary health centers remained unfilled (Government of India, 2015). Even when hired, absenteeism of health workers is widespread: several studies have documented absence rates of 40%

or higher in Indian public health facilities (Banerjee et al., 2004; Chaudhury et al., 2006; Dhaliwal and Hanna, 2017). As a result, a majority of patients choose to visit private doctors despite their frequent lack of adequate qualifications (Das et al., 2016). Public health outcomes are poor: In 2023, India's infant mortality rate of 28 infant deaths per 1000 live births compared unfavorably with the figure of 7 in U.S. or 6 in China (data from World Bank). In 2010, infant mortality in India's best performing state (Kerala) was 11.2 deaths per 1000 live births (DHS data), more than five times higher than Japan's value of 2.3. This suggests that infant mortality rates have the potential for large reductions in India.

The picture is similar in education, where state spending accounts for 88% of total spending (Muralidharan, 2024). The central government has formulated several schemes to improve educational attainment, all of which are implemented by the states. Some of these include Operation Blackboard which provided additional teachers and training materials (Chin, 2005), the District Primary Education Program which targeted districts with low female literacy (Khanna, 2023) and the Sarva Shiksha Abhiyan which had a goal of universal education. Access to schools is widespread and elementary school enrollment rates are close to 100% nationwide. Nevertheless, there is a significant shortfall in learning levels. For instance, only 44% of grade 5 students were able to read a grade 2 text in 2018 ASER (2018). Private provision of education is widespread, with 45% of primary school students enrolled in private schools in 2020 (World Bank data).

4.2 Health outcomes

We obtained data on health outcomes from the nationally representative National Health and Family Survey (NFHS) of 2015-16, part of the widely used multi-country Demographic and Health Surveys, covering more than 568,000 households (International Institute for Population Sciences (IIPS) and ICF, 2017). The survey collects retrospective data on fertility and child survival from women aged 15-49, enabling us

to construct a detailed cohort-level dataset.

We focus on child mortality as our main health outcome, for two reasons. First, infant mortality is a widely used measure of human development in both within-country and cross-country settings. Second, this outcome has the potential to be greatly affected by the functioning of the Indian health system as *panchayats* can facilitate providing pregnant mothers with information about proper nutrition and potential complications, services such as prenatal checkups and referrals to other health facilities, and inputs such as prenatal vitamins and infant immunizations. Prior work, for example, in Uganda has shown that better monitoring of the public health facilities resulted in large declines in child mortality (Björkman and Svensson, 2012; Björkman-Nyqvist et al., 2017).

We compute child mortality at three early life stages: neonatal mortality is an indicator variable that equals one if a child died within the first month of birth, infant mortality indicates whether a child died within the first year of birth and under-5 mortality indicates whether a child died within the first five years of birth. Note that these variables are conditional on the child reaching the specified age e.g. under-5 mortality is not defined if the child was born less than five years prior to the survey.

Since these outcomes are conditional on a child being born, we also examine whether administrative devolution is correlated with changes in the decision to give birth, and with changes in the sex of the child. For instance, if health facilities dramatically improved as a result of devolution, more families may decide to conceive children and the resulting increase in demand for health services may in turn have a detrimental effect (Malhotra, 2019). Prior literature has also shown that greater in-utero stress, nutritional or otherwise, leads to more girl births (Waldron, 1983; Low, 2000; Gluckman and Hanson, 2005). To account for these possibilities, we study two additional outcomes, namely fertility (a dummy for whether a woman gave birth in a specific year) and a dummy for whether the child born was female.

Our estimation sample includes birth cohorts born between 1990 and 2016. We drop states and districts where the *Panchayati Raj* Act was not applicable.[14] In our final sample, we have 25 states that account for 95% of India's population, covering almost 1.1 million births over 26 birth cohorts (see Appendix Table A.1 for summary statistics).

The NFHS surveys also ask questions about prenatal care provision and immunization status of all births in the previous three or five years. To construct a partial panel of such variables over time, we pool together four waves of NFHS surveys.[15] We track the following prenatal care outcomes: whether a mother had three or more prenatal health visits over the course of her pregnancy, whether a tetanus shot was provided and whether iron supplements were provided. We also measure the immunization status of all children over the age of 12 months, who are required to have at least eight vaccinations in their first year of life (three polio shots, three shots of DPT and one each of BCG and measles vaccines). We construct indicators of whether the child had no vaccines, had at least one vaccine or was fully vaccinated. Finally, we obtained partial data on the number of health facilities (primary health centers and subcenters as well as community health centers) in 1985, 1990, 1997, 2002, 2007, 2012 and 2015 (Government of India, 2015).

4.3 Education outcomes

We use the 75^{th} round of the National Sample Survey (NSS) conducted between July 2017-June 2018 to construct measures of educational attainment. The NSS is a nationally representative survey of more than 500,000 individuals from 113,757 households across all Indian states. Our two main outcomes are primary school completion

[14]These are the states of Jammu and Kashmir, Meghalaya, Mizoram and Nagaland, and a few hill districts in the states of Assam, Manipur, Tripura and West Bengal.

[15]The NFHS 1992-93 has these data for births in 1988-1993, NFHS 1998-99 covers births from 1996-1999, the NFHS 2005-06 has data for births in 2001-2006 and the NFHS 2015-16 covers births in 2010-2016.

and middle school completion, since the devolution reform specified devolution of primary and middle schools (Appendix Table A.1). Typically, students are enrolled in primary education from ages 6 to 10, and in middle school (grades 6-8) from ages 11 to 13. To allow for potential delays in school enrolment and progression, we restrict our sample to individuals aged 14 and above for primary school completion, and to those aged 17 and above for middle school completion. These age restrictions imply that we are only able to examine school completion outcomes for cohorts exposed to administrative devolution in year 2008 or earlier i.e., we are unable to examine the full range of devolutions for education outcomes. We exclude very old cohorts from our analysis by restricting to individuals aged 35 and below at the time of the survey. Additionally, we examine state level panel data on the number of public schools over 1985-2016 and the number of teachers in public schools over 2001-2015, obtained from the website of the Ministry of Education.

5 Empirical Strategy

Our empirical strategy compares child mortality and education outcomes across birth cohorts that were exposed to administrative devolution to those that were not. Variation in such exposure comes from the timing of devolution across different states. Our difference-in-differences (DiD) regression specification takes the following form:

$$Y_{ist} = \alpha_s + \delta_t + \beta * AnyDev_{st} + X_{ist}\gamma + \epsilon_{ist} \tag{1}$$

where Y_{ist} is the health or education outcome of individual i born in state s and birth year t. Our main explanatory variable $AnyDev_{st}$ is an indicator that equals one if the individual born in state s and year t is exposed to administrative devolution. For health outcomes, this indicator equals one if the state has devolved health functions at least one year before the individual is born, i.e., $AnyDev_{st} = 1$ if state s devolves health functions in year $t-1$ or earlier. We prefer this lagged specification, since

devolution can affect child mortality outcomes via changes in effective prenatal care that take place over the course of pregnancy.

α_s and δ_t are fixed effects for state s and birth year t respectively, that control for time-invariant state characteristics and annual factors that affect all states such as national elections or the National Rural Health Mission introduced in 2005. X_{ist} controls for characteristics of the individual or household that could affect health or education outcomes. For health outcomes, these include dummies for rural versus urban residence, caste and religion of the household, mother's age at birth and its square, mother's birth year, education, age at marriage and height (an indicator of the mother's nutritional and health history). We also control for the gender and birth order of child i in X_{ist}, since prior research has shown that health outcomes differ by birth order and gender (Jayachandran and Pande, 2017).

As described before, many states undertook only a partial administrative devolution by devolving responsibility for health functions to local governments but not devolving employee authority. Theoretically, full devolution may be more effective in improving public services (e.g. via better monitoring of personnel) or could make things worse (e.g. if local authorities can be more easily bribed to overlook employee absenteeism). We examine the impact of partial versus full administrative devolution using the following specification:

$$Y_{ist} = \alpha_s + \delta_t + \beta_1 AnyDev_{st} + \beta_2 FullDev_{st} + X_{ist}\gamma + u_{ist} \tag{2}$$

where $AnyDev_{st}$ equals one if the state had conducted administrative devolution, while $FullDev_{st}$ equals one if the state had additionally devolved authority over employees. All other terms are the same as in equation (1). The coefficient β_1 therefore represents the impact of partial administrative devolution i.e. devolving responsibility over functions but not authority over employees, and β_2 reflects the additional impact of devolving authority over employees. The impact of full administrative devolution is therefore $\beta_1 + \beta_2$.

There are three main threats to identification in our setting. First, this DiD

approach assumes that states that devolved health functions would, in the absence of devolution, have had parallel child mortality trends to states that did not devolve health. Second, the timing of decentralization across states may be correlated with other economic or political factors that may independently affect our outcomes. Third, our estimator may be biased in the presence of heterogeneous treatment effects that vary across early versus late reformers. We examine these concerns in detail in section 6.2.

6 Administrative Devolution and Health Outcomes

6.1 The effect of full and partial administrative devolution on child mortality

Our estimates from equation (1) show that, after controlling for state and year fixed effects and individual covariates, administrative decentralization results in increases in neonatal, infant and under-5 mortality by 3.2, 6.8 and 11.3 percentage points respectively (Table 2, columns 1, 3, 5). The estimate for neonatal mortality is statistically significant at the 10% level of significance, while that for infant and under-5 mortality are significant at the 1% level; the corresponding p-values from a wild bootstrap procedure are 0.12, 0.06 and 0.02 respectively. These coefficient estimates are large in magnitude, corresponding to 8%, 12% and 17% of the mean for neonatal, infant and under-5 mortality. Another way to assess the magnitude is to estimate the number of infant deaths that corresponds to this. We use data on the total number of births nationwide (from the United Nations Population Division), and multiply it by the share of births in devolved and never devolved states to obtain the total number of births in those states. We then apply the coefficients from Table 2, column 3 to estimate that an additional 1,031,698 infant deaths can be attributed to administrative devolution over the period 1990-2015 (0.14% of total births over this period).

We investigate whether the type of devolution (partial versus full administra-

tive devolution) matters. In Appendix Figure A.1, we see that full administrative devolution and no-devolution states show substantial and similar declines in child mortality rates over this period, while partially devolved states show a much smaller decline. The estimated β_1 coefficients from specification (2) indicate that partial administrative devolution increases neonatal mortality by 0.72 percentage points, infant mortality by 1.34 percentage points and under-5 mortality by 1.58 percentage points (Table 2, columns 2, 4 and 6); these are all statistically significant at the 1% level. These effect sizes are comparable to the effect of socioeconomic covariates: for instance, partial devolution increases neonatal mortality by 0.04 standard deviations (Table 2, column 2), comparable to the 0.08 standard deviation increase when mothers have no education compared to those who have some education.

In contrast to the results for partial administrative devolution, we find that full administrative decentralization does not lead to any significant changes in health outcomes. The estimated β_2 coefficients are negative, statistically significant and similar in magnitude to the β_1 coefficients. Full administrative devolution therefore increases neonatal, infant and under-5 mortality by 0.12, 0.35 and 0.85 percentage points respectively ($\beta_1 + \beta_2$). These effects are much smaller than the effects of partial devolution, and the sum of the β_1 and β_2 coefficients is not statistically different from zero (see p-values in Table 2, columns 2, 4, 6). In other words, it is the partial devolution states that account for most of the mortality increases due to devolution, and that mortality outcomes in states with full administrative devolution are not statistically different from those with no administrative devolution of health functions. While the significant worsening of child mortality is not seen, it is disappointing to not see any improvements in health outcomes. Using our estimates of the total number of births in each state, combined with the coefficient estimates from Table 2, column 4, we find that administrative devolution resulted in 937,439 additional infant deaths in the period 1990-2015 (about 0.13% of total births over this period).

6.2 Robustness checks

We subject our results from specification (2) to a series of robustness checks, as detailed below.

Differential pre-trends: To check whether health outcomes were trending differently in states that devolved, we plot year-by-year β_1 and β_2 coefficients for five years before devolution and six years after devolution in an "event-study" graph (Figure 1). The vertical line represents the timing of devolution. We find, reassuringly, that none of these coefficients is statistically significant in years prior to devolution, while most of the post-reform coefficients are statistically different from zero. These significant effects can be discerned very quickly after the devolution date, and are stable for several years after devolution i.e. our results on partial administrative devolution are not simply due to temporary transition issues.

State- and time-varying omitted variables: Since prior research has shown a strong role of women leaders in improving health outcomes,[16] we show that our results remain similar to the baseline results of Table 2 when we control for the timing of gender quota implementation (Table 3, columns 1, 3 and 5). Our results also remain very similar in magnitude and statistical significance when we control for annual state per capita spending on medical and public health services (Table 3, columns 2, 4 and 6), or broader social spending which includes education, public health, water and sanitation, per capita state transfers to local bodies and per capita central government funding to *panchayats* (Appendix Table A.2). These results highlight that administrative devolution was not correlated with changes in state budgetary priorities. Additionally, we continue to find no health improvements due to administrative devolution (and a worsening due to partial devolution) when we control for state per capita GDP or state-specific time trends (Appendix Table A.3), though we recognize that such controls may be overly conservative and that state per capita GDP may be endogeneously shaped by health outcomes.

[16] Bhalotra and Clots-Figueras (2014); Brollo and Troiano (2016); Bhalotra et al. (2023).

Changing the estimation sample: To ensure that we are comparing similar areas, we restrict our sample to districts that were on the borders of states, or on the border between a devolved state and a never-devolved state. Our results remain similar to those in Table 2 i.e. no significant improvements as a result of full administrative devolution and significant mortality increases due to partial administrative devolution (see Appendix Table A.4). Since families may migrate in response to better or worse quality of public services (Urquiola, 2005), we rerun specification (2) after dropping families that report moving to their current area of residence after the child was conceived, or were recorded as visitors at the time of the survey.[17] Our β_1 and β_2 coefficients retain their size and significance for all three child mortality outcomes (Appendix Table A.5, columns 1, 3 and 5). To rule out the concern that different types of households may choose to give birth before and after devolution, we re-run our regressions with mother fixed effects, which effectively controls for any time invariant unobservable differences across mothers that could be correlated with a child's health outcomes. While the estimated coefficients on partial administrative devolution are slightly smaller in magnitude for infant and under-5 mortality, they remain statistically significant (Appendix Table A.5, columns 2, 4 and 6). We also find no significant effects of full administrative devolution, namely $\beta_1 + \beta_2$ is not significantly different from zero.[18] Our results are also not driven by any one state-specific policy, since our β_1 and β_2 coefficients lie within a relatively narrow band when we rerun our main regressions dropping one state at a time (Appendix Figure A.3).

Recoding specific devolution dates: We examine sensitivity to recoding

[17] Most migration in India is within-state, so that "mover" households would still have been subject to the state's devolution reforms. The data do not allow us to distinguish between within-state and cross-state migrants, so that this restriction is likely to be more conservative than needed.

[18] Identification in this sample arises from women who had births in both pre-devolution and post-devolution periods. Since they may be different from the nationwide representative sample, we show this as a robustness check.

of devolution dates that we were unsure of (see section 3.2), namely recoding Bihar's devolution date to 2014 rather than 2012, recoding Rajasthan to 2003 instead of 2010, recoding Uttarakhand as "not devolved," and changing the date of employee authority devolution to three years ahead for the states where the documents did not clearly specify a date (see section 3.3). While our estimated coefficients are somewhat smaller in magnitude when we recode Rajasthan or the employee authority devolution dates (consistent with greater measurement error in our explanatory variables), our substantive conclusions are unchanged: the effect of full administrative devolution ($\beta_1 + \beta_2$) is statistically indistinguishable from zero while partial administrative devolution results in a significant worsening of child mortality outcomes (Appendix Table A.6).

Heterogeneous treatment effects: The DiD estimator is a weighted average of several different comparisons of "treated" units with "not-yet-treated" units and with "already treated" units. If states that devolve early have a different treatment effect than those that devolve later, then some of these comparisons (average treatment effects or ATTs) may be entering with negative weights and thereby leading to biased and misleading DiD coefficients. As recommended by de Chaisemartin and D'Haultfoeuille (2020), we first present our DiD estimates (based on equation 1), separately comparing partial administrative devolution states to never devolved states, and comparing full administrative devolution states to never devolved states (Table 4, panel A). The results are consistent with those of Table 2: full devolution has no significant effect across all three measures of child mortality (columns 2, 4, 6) while partial devolution leads to significantly worse child mortality (columns 1, 3, 5). Importantly, there are no ATTs with negative weights in columns 1, 3 and 5, while ATTs with negative weights account for less than 4% of the total weights in columns 2, 4 and 6. This means that heterogeneous treatment effects are not a major concern in our data.

Not surprisingly, our alternative DiD estimators which adjust for potentially

heterogeneous treatment effects, are similar to our baseline results. Based on de Chaisemartin and D'Haultfoeuille (2020), we compare outcomes from period (*t-1*) to period t (date of devolution) between groups that switch from untreated to treated with groups that are untreated at both dates (the "instantaneous" effect). A modified version of this compares the outcomes from period (*t-1*) to period (*t+6*), the sixth dynamic effect. Reassuringly, we find consistent results across the standard DiD estimates in panel A of Table 4 and the alternative estimates in panel B. In both cases, full administrative devolution has no significant effect on neonatal, infant and under-5 mortality. Partial administrative devolution increases neonatal, infant and under 5 mortality, though the coefficient magnitudes are smaller in panel B and the "instantaneous" effect for neonatal mortality is no longer statistically significant.

We also construct a second alternative DiD estimator using only the "never-treated" units as the control group (Callaway and Sant'Anna, 2021; Sun and Abraham, 2021). These alternative estimators in panel C of Table 4 are similar in sign and significance to the original DiD estimates in panel A.[19] The year-by-year graphs based on this strategy confirm the main results that full administrative devolution did not improve child mortality in India while partial administrative devolution significantly worsened it (Appendix Figure A.4).

6.3 Do other dimensions of decentralization matter?

As discussed earlier, political decentralization was implemented in all states prior to administrative decentralization. We have already verified that the effects of administrative decentralization are not confounded by the effects of this earlier measure (see section 6.2). Since we do not have states that conduct administrative but not political decentralization, we cannot evaluate whether and how the two measures complement each other in shaping development outcomes.

[19]For ease of computation, we pool the data to the state-birth year level and run regressions on average child mortality at the state-birth level.

We can examine such complementarities in the context of fiscal decentralization. We show results separately for states that had some funds decentralization (proxied by whether *panchayats* at all tiers report collecting any taxes in 2015) and states that had no funds decentralization. Among states with some funds decentralization, neither partial nor full administrative devolution is associated with any significant change in child mortality rates (Appendix Table A.7, columns 1, 3 and 5). However, for states that had no funds decentralization, we see a significant rise in child mortality rates under partial devolution and no change under full devolution (columns 2, 4 and 6). These results suggest that decentralization without strengthening the capacity of local institutions (either fiscally or by providing supervisory authority) can be detrimental to human development.

7 The Role of Public Service Delivery

We consider the mechanisms that might underlie the observed worsening of child mortality outcomes under partial decentralization. We first verify that fertility trends do not respond strongly to such measures. We then show three pieces of evidence that suggest worsened delivery of public services as the main driver, rather than any changes in private behavior or other state policies.

7.1 Fertility responses

Since child mortality outcomes are conditional on the birth of a child, we first verify that the deterioration of child mortality outcomes is not driven by increased fertility in response to administrative devolution (which may increase the burden on public health facilities), or by a changing gender mix of children (since male children are typically more fragile at very young ages). We find that partial administrative devolution has no effect on fertility, while full administrative devolution results in a marginally significant decline (Appendix Table A.8, columns 1 and 2). While this

may be indicative of better provision of family planning services under full devolution, the effect size is very small (only 0.45% of the mean). There is no significant effect of partial or full administrative devolution on the probability of the child being a girl (columns 3 and 4).

7.2 Differential effects by wealth and child gender

We provide evidence consistent with the thesis that partial administrative devolution results in a deterioration of the public health system, by examining heterogeneity of treatment effects based on household resources. If devolution changes the functioning of the public health system, we expect it to have larger effects on poorer households who are more dependent on the public health system, while richer ones have the option to pay for private health care if public services deteriorate. We test this by running separate regressions for households in each of the five wealth quintiles.The NFHS survey provides a wealth index for each household, based on a principal components analysis of several variables including household ownership of assets such as televisions and bicycles, materials used for housing construction, and types of water access and sanitation facilities. We find that both the β_1 and the β_2 coefficients are larger in magnitude for poorer households than for the richer ones (Figure 2).

A second dimension of heterogeneity is based on gender. Many previous studies have documented the high degree of son preference in India and consequently, the fact that girl children are often more neglected than boys (see, among others, Jayachandran and Kuziemko (2011)). We examine whether child mortality of girls suffers more than that of boys, following administrative decentralization. All but one of the estimated β_1 and β_2 coefficients are larger in magnitude for girls compared to boys, though they are not statistically different from those of boys (Appendix Table A.9). This is consistent with girls' mortality rates being more responsive to public health service quality, as families may be more willing to spend on private health care for boys to compensate for shortfalls in public provision.

7.3 Measures of health service provision

We examine data on the growth of health facilities as a potential channel to explain these shortfalls in service delivery (Government of India, 2015). Using five-yearly data from 1985 to 2015, we find that partial administrative devolution states have somewhat fewer rural health facilities, though the difference is not statistically significant (Table 5, column 1). As before, the estimated β_2 is positive, indicating that the difference is smaller for full administrative devolution states.

More importantly, we show that devolution of health functions results in worse service delivery, as measured by prenatal care provision and indicators of child immunization. Following devolution, pregnant mothers in partial devolution states are significantly less likely to be provided tetanus shots and their children are more likely to be unvaccinated (β_1 coefficients in Table 5, columns 3 and 5).[20] Children in full devolution states are more likely to be only partially (rather than fully) vaccinated ($\beta_1 + \beta_2$ coefficient significant at 10% level for column 6). Note that these regressions are based on an incomplete sample of birth cohorts due to the data constraints described in section 4.2.

7.4 Administrative devolution and education outcomes

We analyze primary school completion and secondary school completion as our main education outcomes, using specifications similar to (1) and (2). For primary school completion, $AnyDev_{st}$ equals one if state s has devolved education before the individual enters primary school, i.e., in years $(t + 5)$ or earlier. For middle school completion, DEV_{st} equals one if state s has devolved education functions in year $(t + 11)$ or earlier. As described in section 4.3, our analysis only captures the effects of administrative devolutions in or prior to 2008, so we expect less precise estimates than for health outcomes. We control for gender, marital status, rural versus urban

[20] Increasing prenatal tetanus vaccination is associated with lower incidence of neonatal mortality in India (Visaria, 1988).

residence, indicators for caste and religion categories, and household income. Standard errors are clustered at the state level, and we also report p-values using a wild bootstrap procedure.

Similar to child mortality, our regression results show no improvements in education outcomes after administrative devolution. Primary school completion is 2.8 percentage points lower (though statistically insignificant) after devolution in partial devolution states, and 3.9 percentage points lower (marginally significant) following full devolution (Table 6, column 1). Middle school completion rates do not significantly change following either partial or full devolution (column 2). We examine whether devolution affects education via the provision of physical resources such as public schools and teachers. We find that partial devolution states have 23% fewer public schools and 7% fewer teachers after devolution, and full devolution states have 11% fewer schools, but neither estimate is statistically significant (columns 3 and 4). While both primary and middle school completion rates have increased over time in India, Appendix Figure A.2 shows it is in fact the no-devolution states where these outcomes have increased fastest, with partial-devolution states showing the slowest increases.

8 Conclusions

We conduct the first analysis of the administrative devolution provisions of India's *Panchayati Raj* constitutional amendments, using cross-state variation in devolution timing for identification. In contrast to prior studies on decentralization reforms, we examine the actual processes involved in administrative devolution, and find that these distinctions matter. Disappointingly, even full administrative devolution of health provision responsibility and employee authority results in no net change in child mortality rates, suggesting that the potential benefits of such devolution (better information, preference matching or employee monitoring) are counteracted by the

potential downsides (such as less capable local administrators). Our results for education also do not show any improvement following devolution. Most concerning is our result that partial administrative devolution of health provision responsibilities, without devolution of either employee authority or funds, results in a statistically significant increase in child mortality rates. These mortality costs are disproportionately borne by poorer households, who are more dependent on the public health system. An important policy implication is that decentralization policies need to be implemented with care, and that separating responsibility from authority can be detrimental for human development.

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Table 1: Timing of Administrative and Political Devolution Across States

	Administrative Decentralization		Political Decentralization
	# of states devolved health	# of states devolved education	# of states held local elections with gender quota
Before 1993	0	0	4
1993	1	1	1
1994-1997	3	3	14
1998-2002	0	0	2
2003-2006	4	4	3
2007-2012	9	10	1
2013-2015	1	1	0
Not devolved as of 2015	7	6	0

Notes: See Appendix Table B.2 for data sources and Appendix Table B.3 for details of coding. The 73rd amendment is not applicable to the states of Jammu & Kashmir, Meghalaya, Mizoram and Nagaland.

Table 2: Impact of Partial and Full Devolution on Child Mortality

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
Any Devolution (β_1)	0.0032*	0.0072***	0.0068**	0.0134***	0.0113***	0.0158***
	(0.0018)	(0.0019)	(0.0032)	(0.0029)	(0.0039)	(0.0035)
	[0.118]	[0.0051]	[0.0621]	[0.0095]	[0.0152]	[0.0096]
Full Devolution (β_2)		-0.0060*		-0.0099**		-0.0073
		(0.0030)		(0.0041)		(0.0054)
		[0.1010]		[0.0544]		[0.330]
$\beta_1 + \beta_2 = 0$ (p-value)		0.583		0.370		0.100
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap		0.626		0.427		0.157
Mean of dep var	0.039		0.055		0.068	
Observations	1,097,697	1,097,697	1,054,264	1,054,264	869,522	869,522

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regressions control for state and birth year fixed effects, an indicator for a girl birth, birth order fixed effects, indicators for Muslim, SC, ST, OBC, and rural, mother's education category, mother's age at child birth and its square, mother's year-of-birth fixed effects, and categorical variables for mother's height and age at marriage.

Table 3: Impact of Devolution on Child Mortality, Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Control for timing of political decentralization	Control for per-capita state health spending	Control for timing of political decentralization	Control for per-capita state health spending	Control for timing of political decentralization	Control for per-capita state health spending
Any Devolution (β_1)	0.0072***	0.0070***	0.0133***	0.0122***	0.0157***	0.0149***
	(0.0019)	(0.0019)	(0.0028)	(0.0028)	(0.0034)	(0.0036)
	[0.0052]	[0.0034]	0.00888	0.0133	[0.0096]	0.0158
Full Devolution (β_2)	-0.0060**	-0.0056*	-0.0102**	-0.0086**	-0.0072	-0.0060
	(0.0029)	(0.0029)	(0.0039)	(0.0042)	(0.0052)	(0.0055)
	[0.0908]	[0.130]	[0.0475]	[0.104]	[0.319]	[0.416]
$\beta_1 + \beta_2 = 0$ (p-value)	0.598	0.527	0.392	0.320	0.0960	0.0672
$\beta_1 + \beta_2 = 0$ (p-value), wild boots	0.644	0.575	0.453	0.384	0.147	0.118
Observations	1,097,697	1,072,713	1,054,264	1,029,280	869,522	844,538

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regressions control for state and birth year fixed effects, an indicator for a girl birth, birth order fixed effects, indicators for Muslim, SC, ST, OBC, and rural, mother's education category, mother's age at child birth and its square, mother's year-of-birth fixed effects, and categorical variables for mother's height and age at marriage.

Table 4: Impact of Devolution on Child Mortality, Alternative DiD Estimators

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Partial Devolution and Never Devolved	Full Devolution and Never Devolved	Partial Devolution and Never Devolved	Full Devolution and Never Devolved	Partial Devolution and Never Devolved	Full Devolution and Never Devolved
	Panel A: DiD Estimator, Split Sample					
Any Devolution (β)	0.0062***	0.0004	0.0119***	0.0023	0.0132***	0.0065
	(0.0018)	(0.0018)	(0.0035)	(0.0031)	(0.0034)	(0.0039)
Birthyear and State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	511135	933429	490975	896165	405326	738467
	Panel B: de Chaisemartin and D'Haultfoeuille (2020) Estimator					
Any Devolution (β)	0.0047	-0.0028	0.0073***	-0.0021	0.0056*	-0.0018
Instantaneous treatment effect	(0.0031)	(0.0019)	(0.0026)	(0.0023)	(0.0035)	(0.0032)
Any Devolution (β)	0.0049**	-0.0034	0.0090***	-0.0020	0.0070***	0.0009
Average Dynamic Treatment Effect (6)	(0.0020)	(0.0017)	(0.0020)	(0.0022)	(0.0023)	(0.0034)
	Panel C: State-Birthyear, Callaway and Sant'Anna (2021)					
Any Devolution (β)	0.0070***	-0.0022	0.0103***	-0.0006	0.0115***	0.0037
	(0.0026)	(0.0018)	(0.0025)	(0.0028)	(0.0041)	(0.0032)

Notes: Standard errors in parantheses, clustered at state level (panels A and C) or bootstrapped with state level clustering (panel B) . *** p<0.01, ** p<0.05, * p<0.1. Each cell represents the b coefficient from equation (1). Columns (1), (3) and (5) compare states with partial administrative devolution to those with no devolution; columns (2), (4) and (6) compare states with full administrative devolution to those with no devolution. All regressions control for state and birth year fixed effects.

Table 5: Impact of Devolution on Health Care Provision

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Indicators of prenatal care			Childrens' immunization		
	Log (# health facilities)	Three or more prenatal visits	Tetanus injection provided	Iron supplements provided	No vaccinations	Partially vaccinated	Fully vaccinated
Any Devolution (β_1)	-0.1220	0.0190	-0.130*	-0.0325	0.0567*	0.0212	-0.0779
	(0.0857)	(0.0603)	(0.0674)	(0.0509)	(0.0333)	(0.0484)	(0.0776)
	0.150	0.826	0.113	0.577	0.154	0.688	0.373
Full Devolution (β_2)	0.0727	-0.00269	0.102	0.0282	-0.0534	-0.0600	0.113
	(0.0590)	(0.0704)	(0.0775)	(0.0549)	(0.0369)	(0.0473)	(0.0780)
	0.211	0.974	0.262	0.656	0.203	0.263	0.206
$\beta_1 + \beta_2 = 0$ (p-value)	0.564	0.621	0.457	0.869	0.823	0.0808	0.230
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.566	0.653	0.565	0.881	0.827	0.0775	0.219
Mean of dep var	8.13	0.575	0.847	0.712	0.139	0.344	0.517
Observations	168	252,119	252,240	253,134	252,662	252,662	252,662

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Health facilities data obtained at state level for years 1985, 1990, 1997, 2002, 2007, 2012 and 2015 from Government of India (2015); data for states that were split are adjusted in the pre-split years based on census population shares, to obtain a panel of 24 states over time. Column (1) includes controls for state and year fixed effects. Columns (2)-(7) include controls for state and birth-year fixed effects, indicator for girl child, birth order fixed effects, indicators for Muslim, SC, ST, OBC, and rural, mother's education categories, mother's age at child birth, and mother's year of birth fixed effects.

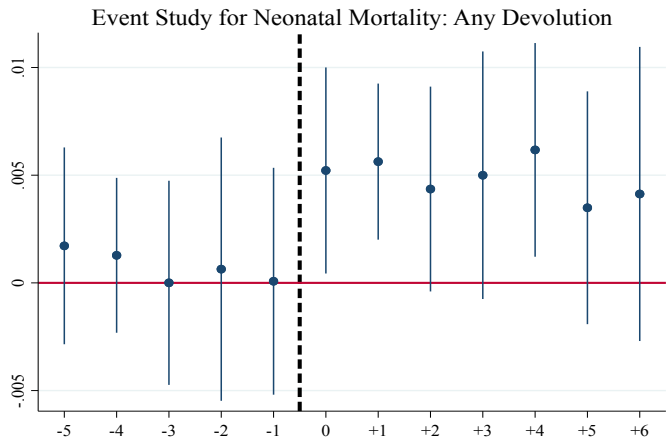
Table 6: Impact of Partial and Full Devolution on Education Outcomes

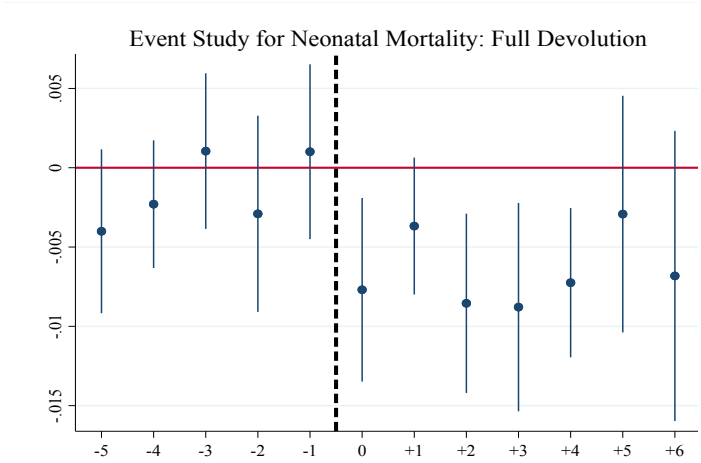
	(1)	(2)	(3)	(4)
	Primary school completion	Middle school completion	Log (# public schools)	Log (# public school teachers)
Any Devolution (β_1)	-0.0281	-0.0002	-0.2269	-0.0699
	(0.0187)	(0.0207)	(0.1373)	(0.0675)
	[0.405]	[0.992]	[0.130]	[0.302]
Full Devolution (β_2)	-0.0109	0.0038	0.1145	0.0996
	(0.0279)	(0.0243)	(0.1176)	(0.0613)
	[0.726]	[0.889]	[0.360]	[0.108]
$\beta_1 + \beta_2 = 0$ (p-value)	0.075	0.756	0.274	0.681
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.126	0.754	0.272	0.665
Mean of dep var	0.901	0.901	9.70	11.83
Observations	177,516	177,516	786	285

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Columns (1) and (2) use indvidual level data from the National Sample Survey and control for state and birth-year fixed effects, log of household monthly income, indicators for gender, rural residence, marital status, Muslim, Christian, Sikh and other religions, SC, ST and OBC. An individual is exposed to devolution if they are born at least 5 years prior to decentralization (for primary school) and at least 11 years prior to decentralization (for middle school). Sample is restricted to individuals aged 14 to 35 (for primary school completion) and those aged 17 to 35 (for middle school completion). Data in column (3) is at state level for 1985-2016 and in column (4) for 2001-2011 and 2015, obtained from the Ministry of Education. Columns (3) and (4) control for state and year fixed effects.

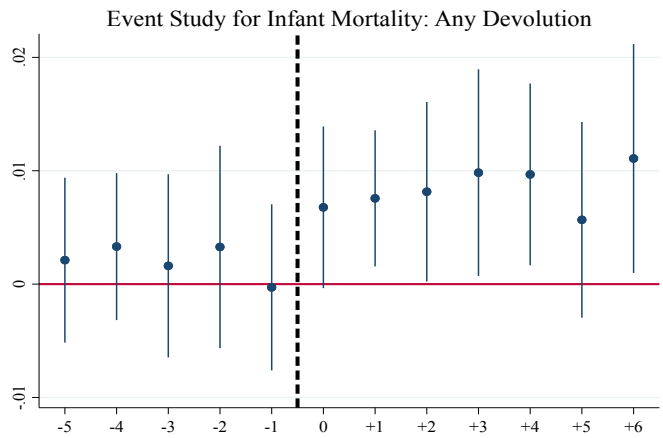
Figure 1: Year-by-year Effects of Administrative Decentralization on Child Mortality

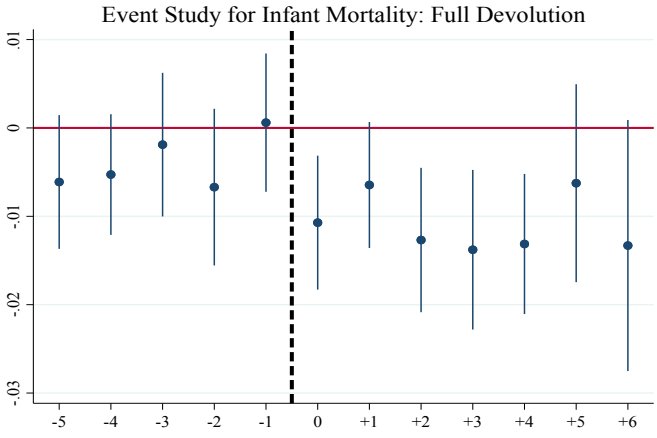
Panel A: Neonatal Mortality



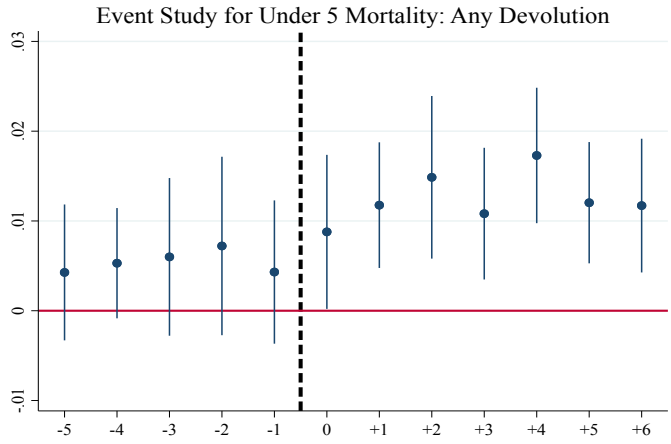


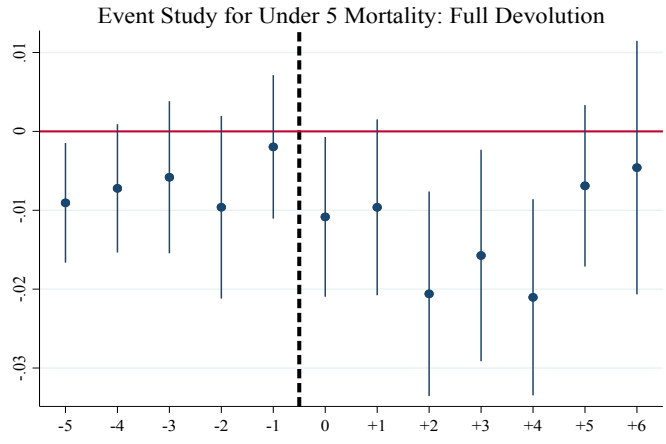
Panel B: Infant Mortality





Panel C: Under-5 Child Mortality

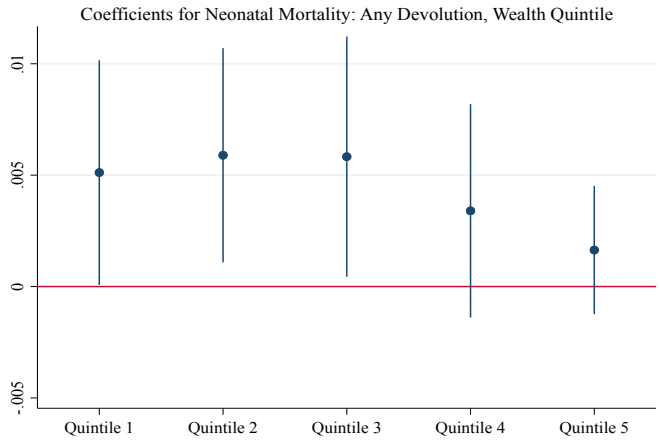


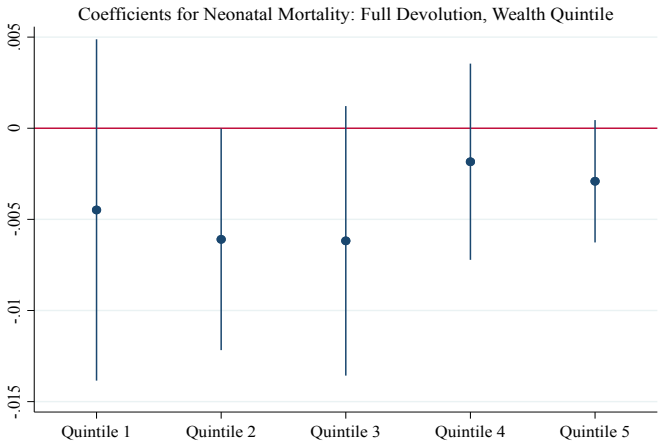


Figures on the left show the estimates β_1 for each year before and after the functions devolution, representing the impact of partial administrative devolution. Figures on the right show corresponding estimates β_2 for each year before and after devolution, representing the additional impact of devolving employee authority. Dashed vertical lines indicate the timing of the reform.

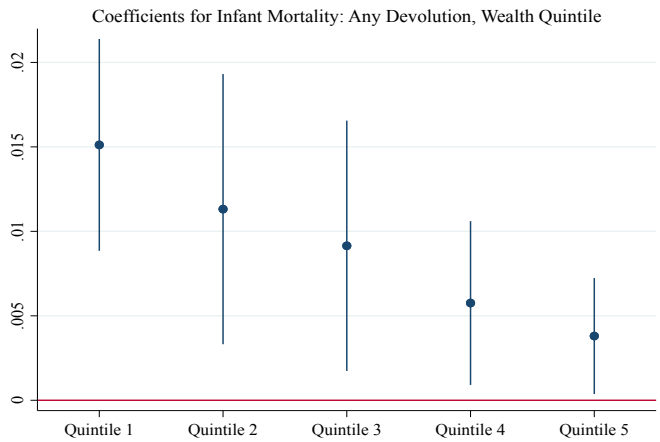
Figure 2: Heterogeneous Effects of Administrative Decentralization by Wealth on Child Mortality

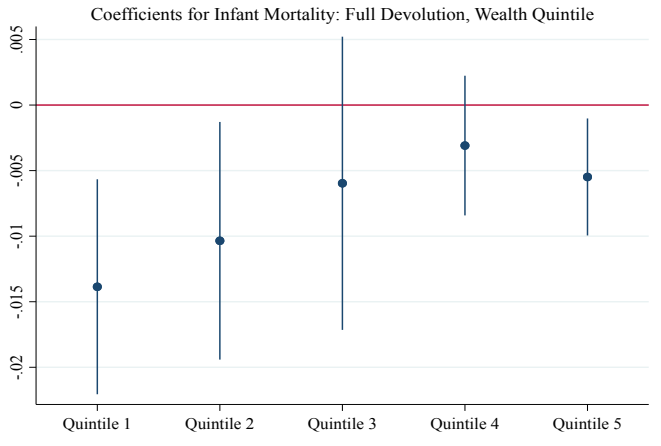
Panel A: Neonatal Mortality



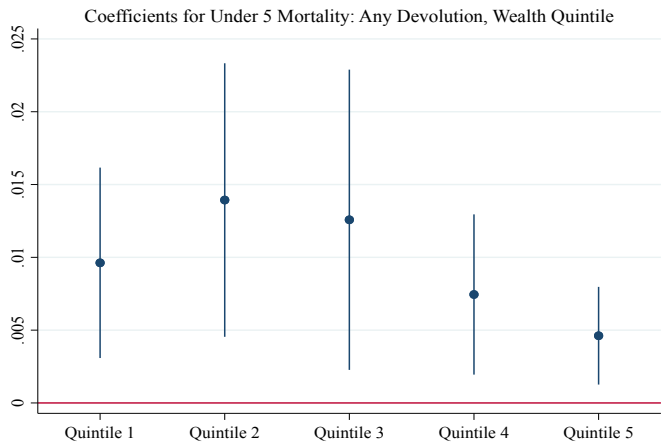


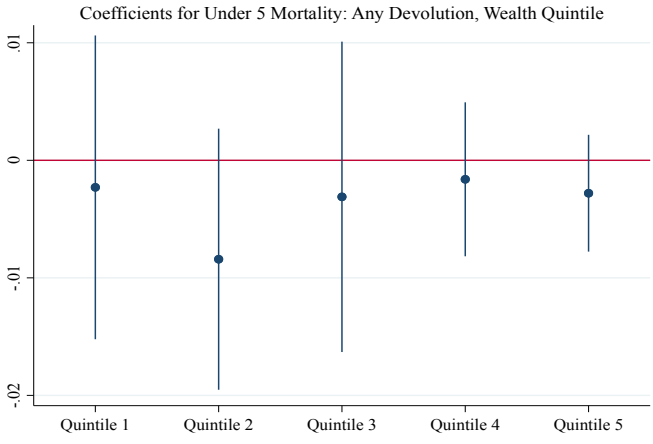
Panel B: Infant Mortality





Panel C: Under-5 Child Mortality





Figures on the left show the estimates β_1 for each wealth quintile, representing the impact of partial administrative devolution. Figures on the right show corresponding estimates β_2 for each wealth quintile, representing the additional impact of devolving employee authority. Dashed vertical lines indicate the timing of the reform.

The Importance of Being Local? Administrative Decentralization and Human Development

Latika Chaudhary
Naval Postgraduate School
lhartman@nps.edu

Lakshmi Iyer
University of Notre Dame
liyer@nd.edu

Appendix Tables and Figures

Table A.1: Summary Statistics, National Family Health Survey 2015-16

Variables	Obs	Mean	SD	Min	Max
Child mortality and birth outcomes					
Neo Mortality (child death in first month)	1,097,697	0.039	0.194	0	1
Infant Mortality (child death in first year)	1,054,264	0.055	0.228	0	1
Under 5 Mortality (child death in first five years)	869,522	0.068	0.251	0	1
Fertility (whether woman had any birth in that year)	10,017,968	0.109	0.311	0	1
Dummy for girl birth	1,102,907	0.475	0.499	0	1
Birth Order					
First birth	1,102,907	0.348	0.476	0	1
Second birth	1,102,907	0.294	0.456	0	1
Third birth	1,102,907	0.175	0.380	0	1
Fourth birth	1,102,907	0.093	0.290	0	1
Fifth or higher birth	1,102,907	0.089	0.285	0	1
Mother characteristics					
Muslim	1,102,907	0.14	0.34	0	1
Schedued Castes (SC)	1,102,907	0.20	0.40	0	1
Scheduled Tribes (ST)	1,102,907	0.14	0.35	0	1
Other Backward Castes (OBC)	1,102,907	0.43	0.49	0	1
Rural	1,102,907	0.76	0.43	0	1
Mother's age at birth of child	1,102,907	23.97	4.84	13	49
Education categories					
No education	1,102,907	0.47	0.50	0	1
Primary education	1,102,907	0.15	0.36	0	1
Secondary education	1,102,907	0.32	0.47	0	1
More than secondary	1,102,907	0.05	0.22	0	1
Mother height categories					
Less than 148 cm	1,102,907	0.24	0.43	0	1
Between 148 and 151 cm	1,102,907	0.25	0.43	0	1
Between 151 and 155	1,102,907	0.25	0.43	0	1
More than 155 cm	1,102,907	0.25	0.43	0	1
Missing	1,102,907	0.01	0.11	0	1
Mother's age at marriage categories					
Less than 15	1,102,907	0.15	0.36	0	1
15<=age married<18	1,102,907	0.33	0.47	0	1
18<=age married < 21	1,102,907	0.29	0.45	0	1
Age married >=21	1,102,907	0.23	0.42	0	1
Missing	1,102,907	0.05	0.21	0	1

Table A.2: Impact of Devolution on Child Mortality, Controlling for State and Central Government Spending

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Neonatal Mortality			Infant Mortality			Under 5 Mortality		
	Control for per-capita state social spending	Control for per-capita state transfers to panchayats	Control for per-capita federal grants	Control for per-capita state social spending	Control for per-capita state transfers to panchayats	Control for per-capita federal grants	Control for per-capita state social spending	Control for per-capita state transfers to panchayats	Control for per-capita federal grants
Any Devolution (β_1)	0.0065***	0.0068***	0.0074***	0.0116***	0.0120***	0.0138***	0.0151***	0.0137***	0.0164***
	(0.0018)	(0.0021)	(0.0018)	(0.0027)	(0.0032)	(0.0028)	(0.0034)	(0.0037)	(0.0036)
	[0.0087]	[0.0179]	[0.00346]	[0.0251]	[0.0170]	[0.0074]	[0.0171]	[0.0171]	[0.0093]
Full Devolution (β_2)	-0.0054*	-0.0047	-0.0062**	-0.0085*	-0.0074	-0.0103**	-0.0066	-0.0045	-0.0075
	(0.0029)	(0.0031)	(0.0029)	(0.0042)	(0.0044)	(0.0040)	(0.0054)	(0.0052)	(0.0053)
	[0.132]	[0.232]	[0.0880]	[0.107]	[0.188]	[0.0463]	[0.380]	[0.501]	[0.312]
$\beta_1 + \beta_2 = 0$ (p-value)	0.603	0.370	0.568	0.385	0.228	0.346	0.0788	0.0713	0.0875
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.630	0.448	0.609	0.452	0.309	0.403	0.140	0.115	0.146
Mother and Child Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year and State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,072,713	1,058,929	1,097,697	1,029,280	1,015,496	1,054,264	844,538	830,754	869,522

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Child controls include indicator for girls and birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage.

Table A.3: Impact of Devolution on Child Mortality, Controlling for State GDP and State Specific Trends

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Control for per-capita state GDP	Control for state specific time trends	Control for per-capita state GDP	Control for state specific time trends	Control for per-capita state GDP	Control for state specific time trends
Any Devolution (β_1)	0.0043***	0.0031*	0.0079***	0.0029	0.0072*	0.0016
	(0.0015)	(0.0017)	(0.0026)	(0.0020)	(0.0035)	(0.0023)
	[0.0652]	[0.181]	[0.0599]	[0.296]	[0.301]	[0.563]
Full Devolution (β_2)	-0.0042	-0.0031	-0.0071*	-0.0037	-0.0048	-0.0031
	(0.0026)	(0.0021)	(0.0039)	(0.0023)	(0.0049)	(0.0027)
	[0.174]	[0.175]	[0.160]	[0.161]	[0.429]	[0.319]
$\beta_1 + \beta_2 = 0$ (p-value)	0.977	0.991	0.788	0.537	0.507	0.446
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.979	0.992	0.814	0.527	0.555	0.466
Mother and Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Birth year and State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,084,229	1,097,697	1,045,600	1,054,264	860,858	869,522

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Child controls include indicator for girls and birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage.

Table A.4: Impact of Devolution on Child Mortality, State Border Districts Sample

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Border 1	Border 2	Border 1	Border 2	Border 1	Border 2
Any Devolution (β_1)	0.0075***	0.0049*	0.0131***	0.0138***	0.0152***	0.0154***
	(0.0018)	(0.0026)	(0.0025)	(0.0037)	(0.0026)	(0.0024)
	[0.0065]	[0.187]	[0.0067]	[0.192]	[0.0054]	[0.127]
Full Devolution (β_2)	-0.0054*	-0.0063	-0.0088**	-0.0151***	-0.0049	-0.0130**
	(0.0028)	(0.0043)	(0.0036)	(0.0046)	(0.0042)	(0.0047)
	[0.114]	[0.263]	[0.0617]	[0.0857]	[0.347]	[0.138]
$\beta_1 + \beta_2 = 0$ (p-value)	0.362	0.696	0.237	0.744	0.0235	0.645
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.410	0.787	0.291	0.780	0.0459	0.666
Mean of dep var	0.039		0.055		0.067	
Mother and Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Birth year and State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	624,516	350,053	599,588	335,740	495,117	276,413

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, *p<0.1. Child controls include indicator for girls and birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage. “Border 1” sample restricted to districts that are on the border with another state. “Border 2” sample restricted to districted that are on the border of a state that conducted devolution (partial or full) and a never-devolved state.

Table A.5: Devolution and Child Mortality, Robustness to Choice of Sample

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Drop Visitors and Movers	Mother Fixed Effects	Drop Visitors and Movers	Mother Fixed Effects	Drop Visitors and Movers	Mother Fixed Effects
Any Devolution (β_1)	0.0060***	0.0075**	0.0124***	0.0092**	0.0150***	0.0100**
	(0.0014)	(0.0033)	(0.0022)	(0.0042)	(0.0026)	(0.0041)
	[0.0057]	[0.0280]	[0.0083]	[0.0420]	[0.0059]	[0.0454]
Full Devolution (β_2)	-0.0053*	-0.0071*	-0.0100***	-0.0093*	-0.0075	-0.0095
	(0.0026)	(0.0039)	(0.0036)	(0.0050)	(0.0051)	(0.0069)
	[0.0780]	[0.0400]	[0.0338]	[0.0447]	[0.287]	[0.164]
$\beta_1 + \beta_2 = 0$ (p-value)	0.747	0.864	0.491	0.979	0.134	0.925
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.776	0.832	0.551	0.974	0.191	0.913
Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mother Controls	Yes	No	Yes	No	Yes	No
Birth year and State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	849,731	1,097,697	813,371	1,054,264	661,536	869,522

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Child controls include indicator for girls and birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage.

Table A.6: Robustness of Results to Recoding Devolution Timing for Specific States

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Neonatal Mortality				Infant Mortality				Under 5 Mortality			
	Recode Bihar	Recode Rajasthan	Recode Uttarakhand	Recode employee authority	Recode Bihar	Recode Rajasthan	Recode Uttarakhand	Recode employee authority	Recode Bihar	Recode Rajasthan	Recode Uttarakhand	Recode employee authority
Any Devolution (β_1)	0.0072***	0.0050**	0.0071***	0.0057***	0.0135***	0.0092**	0.0132***	0.0105***	0.0158***	0.0092*	0.0157***	0.0130***
	(0.0019)	(0.0021)	(0.0019)	(0.0016)	(0.0028)	(0.0038)	(0.0028)	(0.0028)	(0.0035)	(0.0052)	(0.0035)	(0.0032)
	[0.0051]	[0.0316]	[0.0056]	[0.0038]	[0.0095]	[0.0327]	[0.00986]	[0.0050]	[0.0097]	[0.117]	[0.0101]	[0.0039]
Full Devolution (β_2)	-0.0058*	-0.0035	-0.0062*	-0.0048	-0.0093**	-0.0054	-0.0101**	-0.0075	-0.0073	-0.0006	-0.0073	-0.0045
	(0.0032)	(0.0029)	(0.0031)	(0.0031)	(0.0043)	(0.0044)	(0.0043)	(0.0045)	(0.0054)	(0.0065)	(0.0056)	(0.0062)
	[0.136]	[0.286]	[0.104]	[0.206]	[0.0910]	[0.284]	[0.0648]	[0.194]	[0.329]	[0.939]	[0.356]	[0.715]
$\beta_1 + \beta_2 = 0$ (p-value)	0.580	0.550	0.706	0.743	0.326	0.349	0.439	0.506	0.100	0.100	0.116	0.215
$\beta_1 + \beta_2 = 0$ (p-value),	0.628	0.601	0.729	0.770	0.386	0.408	0.500	0.571	0.157	0.156	0.178	0.280
Observations	1,097,697	1,097,697	1,097,697	1,097,697	1,054,264	1,054,264	1,054,264	1,054,264	869,522	869,522	869,522	869,522

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. All regressions control for birth year and state fixed effects, an indicator for girl child, birth order fixed effects, indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage. "Recode Bihar" changes Bihar's devolution date from 2012 to 2014; "recode Rajasthan" changes Rajasthan's devolution date from 2010 to 2003; "recode Uttarakhand" changes Uttarakhand's status to "not devolved" and "recode employee authority" moves the date of employee devolution three years ahead of the coded date.

Table A.7: Does the Impact of Administrative Devolution Vary with Fiscal Devolution?

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Funds - Yes	Funds - No	Funds - Yes	Funds - No	Funds - Yes	Funds - No
Any Devolution (β_1)	0.0029	0.0087***	0.0042	0.0160***	0.0019	0.0205***
	(0.0028)	(0.0028)	(0.0035)	(0.0039)	(0.0038)	(0.0040)
	[0.424]	[0.030]	[0.358]	[0.053]	[0.723]	[0.046]
Full Devolution (β_2)	-0.0082	-0.0068	-0.0092	-0.0121**	-0.0016	-0.0124*
	(0.0046)	(0.0040)	(0.0050)	(0.0055)	(0.0054)	(0.0070)
	[0.295]	[0.216]	[0.213]	[0.127]	[0.804]	[0.291]
$\beta_1 + \beta_2 = 0$ (p-value)	0.167	0.491	0.155	0.385	0.913	0.206
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstra	0.253	0.539	0.247	0.469	0.859	0.330
Mother and Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Birth year and State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	178,663	919,034	171,777	882,487	141,999	727,523

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Child controls include indicator for girls and birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage.

Table A.8: Impact of Devolution on Fertility and Girl Births

	(1)	(2)	(3)	(4)
	Mother's Fertility		Girl Birth	
Any Devolution (β_1)	-0.0003	0.0001	-0.0014	0.0025
	(0.0002)	(0.0002)	(0.0030)	(0.0051)
	[0.160]	[0.849]	[0.674]	[0.652]
Full Devolution (β_2)		-0.0005*		-0.0058
		(0.0003)		(0.0051)
		[0.0971]		[0.340]
$\beta_1 + \beta_2 = 0$ (p-value)		0.0470		0.293
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap		0.0619		0.345
Mean of Dep.	0.11		0.475	
Mother Controls	Yes	Yes	Yes	Yes
Child Controls	No	Yes	Yes	Yes
Birth year and State FE	Yes	Yes	Yes	Yes
Observations	10,017,968	10,017,968	1,102,907	1,102,907

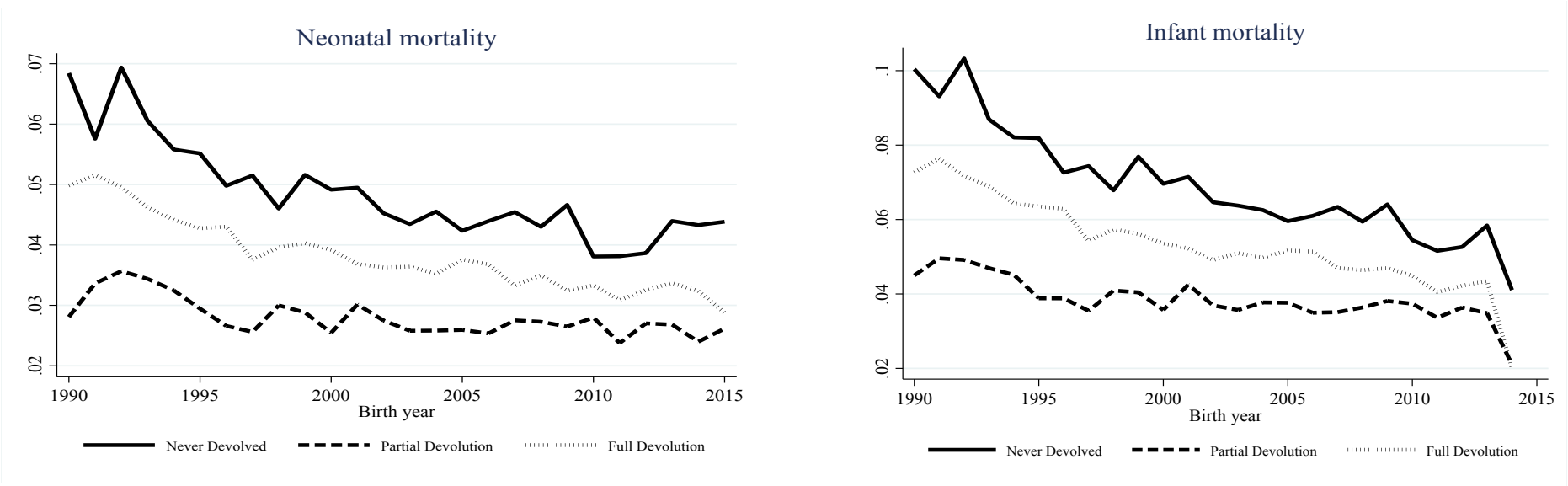
Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Child controls are birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage. Fertility regressions also control for time since the last birth.

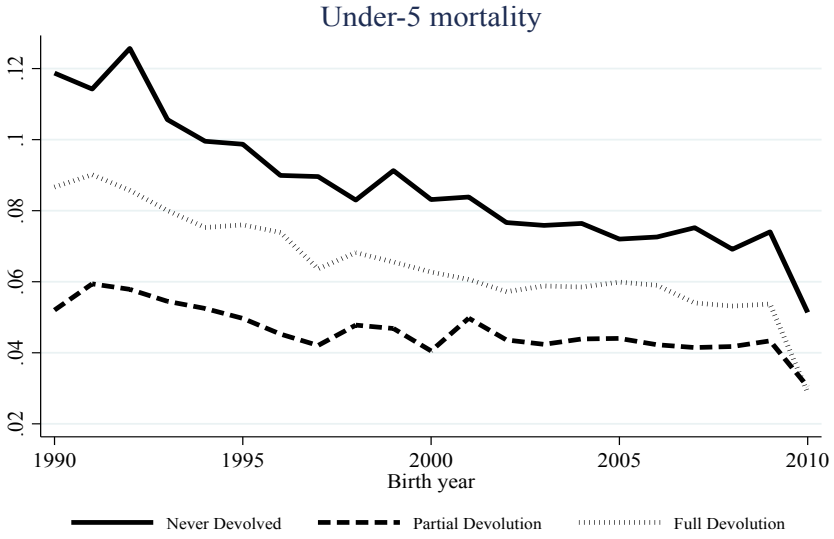
Table A.9: Does Administrative Devolution Affect Health Outcomes of Boys and Girls Differently?

	(1)	(2)	(3)	(4)	(5)	(6)
	Neonatal Mortality		Infant Mortality		Under 5 Mortality	
	Girls	Boys	Girls	Boys	Girls	Boys
Any Devolution (β_1)	0.0067***	0.0076**	0.0139***	0.0127***	0.0172***	0.0144***
	(0.0015)	(0.0028)	(0.0031)	(0.0031)	(0.0037)	(0.0038)
	[0.011]	[0.021]	[0.0139]	[0.0094]	[0.0111]	[0.0127]
Full Devolution (β_2)	-0.0058**	-0.0059	-0.0105**	-0.0092*	-0.0072	-0.0071
	(0.0022)	(0.0039)	(0.0038)	(0.0046)	(0.0055)	(0.0058)
	[0.045]	[0.203]	[0.039]	[0.111]	[0.352]	[0.336]
$\beta_1 + \beta_2 = 0$ (p-value)	0.697	0.536	0.399	0.382	0.088	0.149
$\beta_1 + \beta_2 = 0$ (p-value), wild bootstrap	0.728	0.581	0.472	0.442	0.143	0.194
Mother and Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Birth year and State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	521,395	576,302	500,769	553,495	412,189	457,333

Notes: Robust standard errors clustered at the state-level in parentheses. p-value from wild bootstrap in brackets. *** p<0.01, ** p<0.05, * p<0.1. Child controls include indicator for girls and birth order fixed effects. Mother controls include indicators for Muslim, SC, ST, OBC, and rural, indicators for mother's education, mother's age at child birth and its square, mother's year of birth fixed effects, categorical variables for mother's height and age at marriage.

Figure A.1: Trends in Child Mortality Outcomes





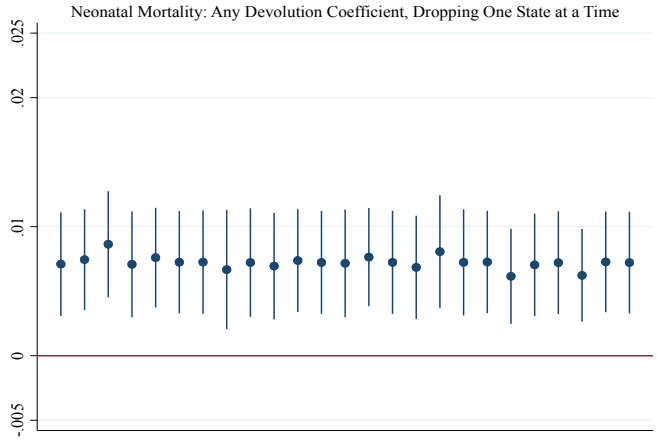
Notes: Authors' computations based on data from NFHS 2015-16. See Appendix Table B.3 for classification of states into never devolved, partial devolution and full devolution categories.

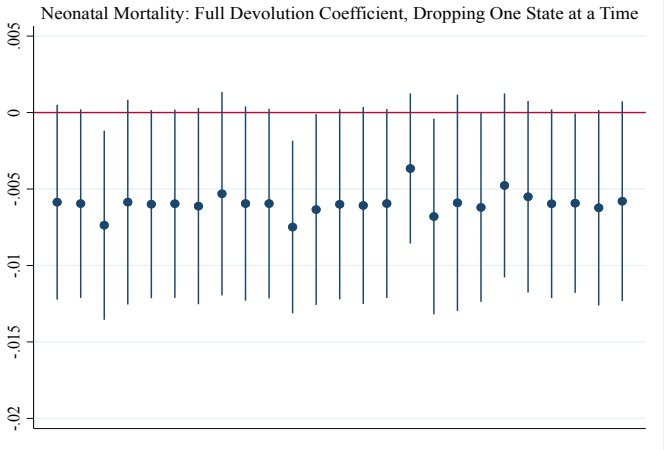
Figure A.2: Trends in School Completion Outcomes

Notes: Authors' computations based on data from NSS 75th round. See Appendix Table B.3 for classification of states into never devolved, partial devolution and full devolution categories.

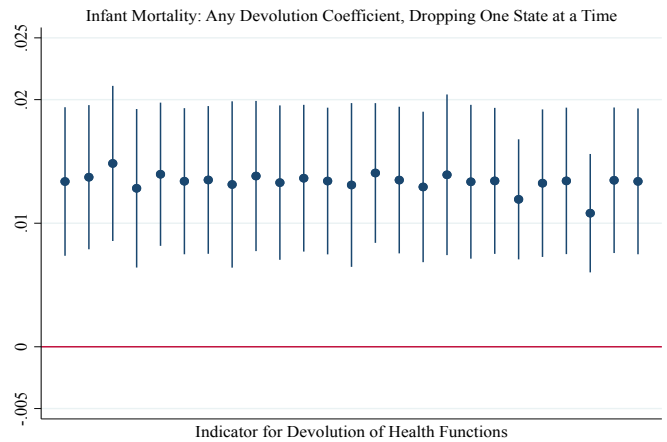
Figure A.3: Coefficients on Administrative Decentralization, Dropping One State at a Time

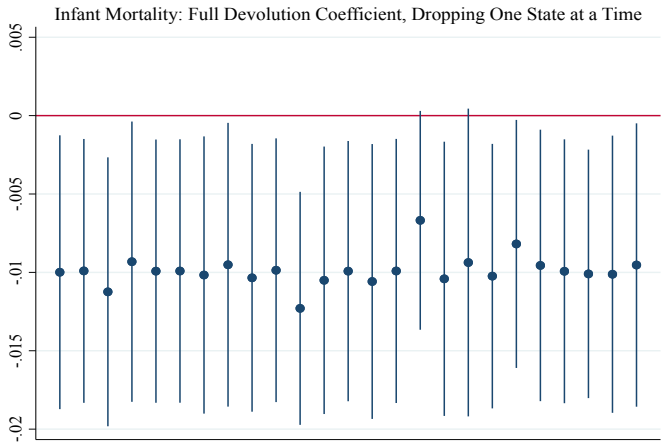
Panel A: Neonatal Mortality



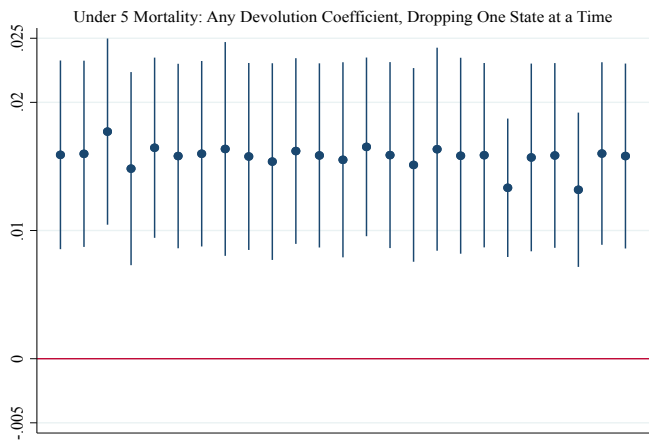


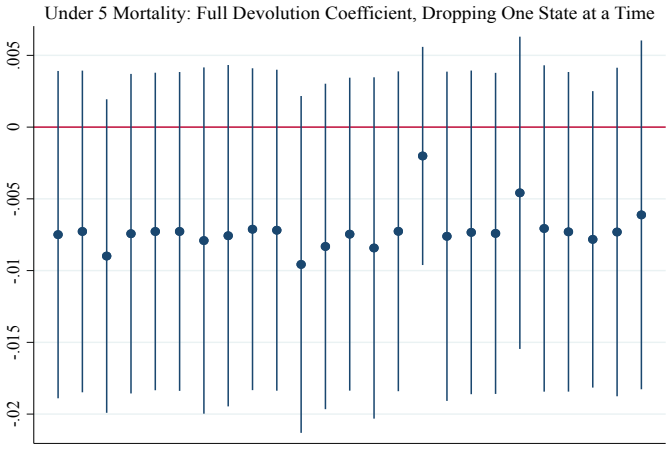
Panel B: Infant Mortality





Panel C: Under-5 Child Mortality

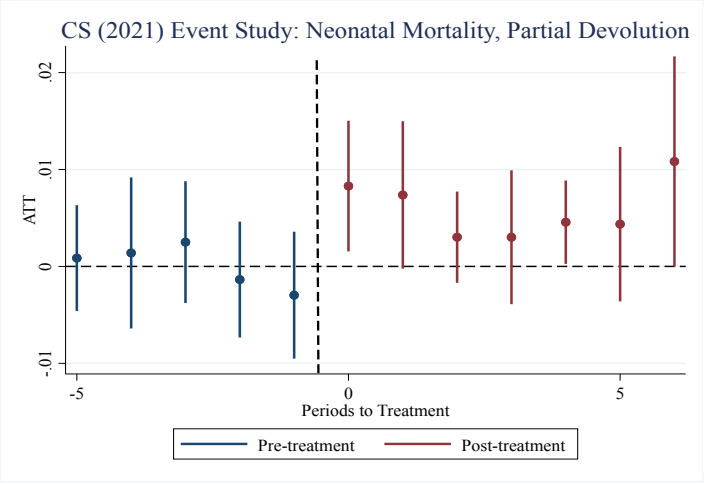


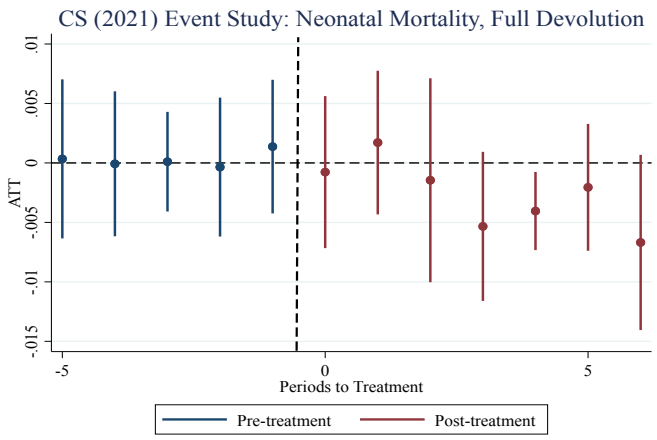


Figures on the left show the coefficients β_1, dropping one state at a time; these represent the impact of partial administrative devolution. Figures on the right show the coefficients β_2, dropping one state at a time; these represent the additional impact of devolving employee authority.

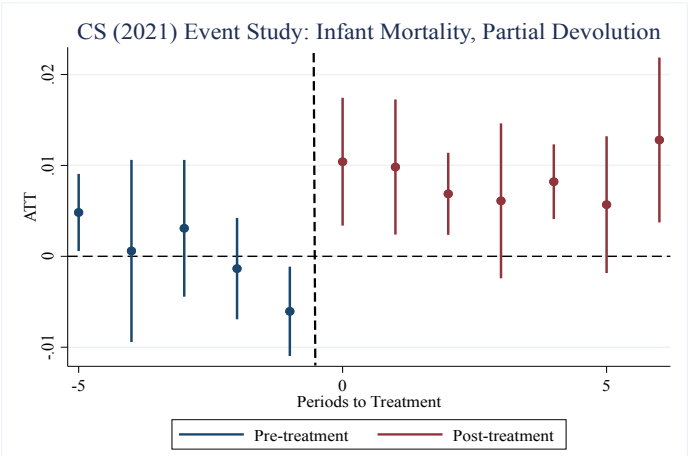
Figure A.4: Event Study Estimates based on Callaway and Sant'Anna (2021)

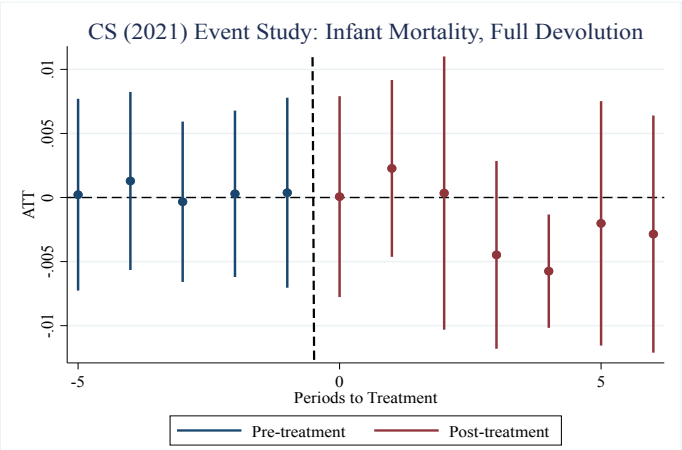
Panel A: Neonatal Mortality



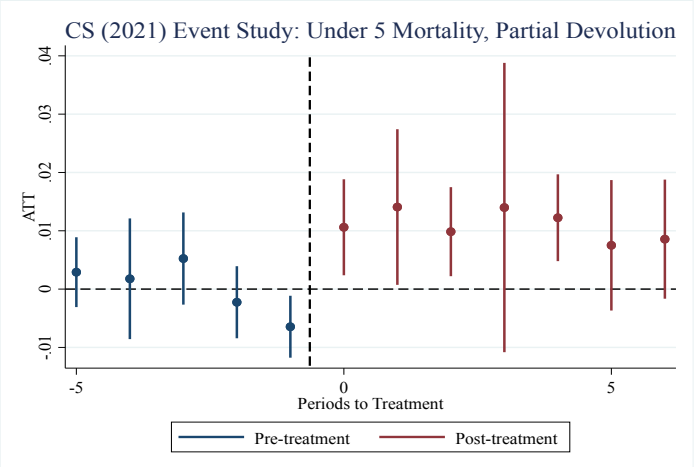


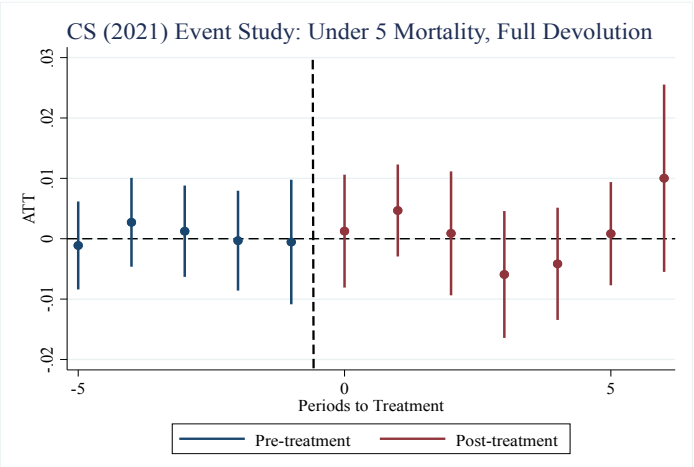
Panel B: Infant Mortality





Panel C: Under-5 Child Mortality





Figures on the left show the DiD coefficients for each year before and after devolution, comparing partial devolution states to never devolved states. Figures on the right show the DiD coefficients for each year before and after devolution, comparing full devolution states to never devolved states. Dashed vertical lines indicate the timing of the reform.

Appendix Table B.1: Devolution Areas Listed in the 11th Schedule of the Constitution of India

1. Agriculture including agricultural expansion
2. Land improvement & implementation of land reforms
3. Animal Husbandry, Dairying and poultry
4. Fisheries Industry
5. Minor irrigation, water management and watershed development
6. Social forestry and farm forestry
7. Small scale industries involving food processing
8. Minor forest produce
9. Safe water for drinking
10. Khadi, village and cottage industries
11. Rural housing
12. Fuel and fodder
13. Rural electrification, including distribution of electricity
14. Road, culverts, bridges, ferries, waterways and other means of communication
15. Education including primary and secondary schools
16. Non-conventional sources of energy
17. Technical training and vocational education
18. Adult and non-formal education
19. Public distribution system
20. Maintenance of community assets
21. Welfare of the weaker sections especially SC/ST
22. Social welfare, including welfare of the handicapped and mentally retarded
23. Family welfare
24. Women and child development
25. Markets and Fairs
26. Health and sanitation including hospitals, primary health centres and dispensaries
27. Cultural activities
28. Libraries
29. Poverty Alleviation Programmes

Notes: Obtained from https://www.jagranjosh.com/general-knowledge/list-of-subjects-covered-in-the-11th-schedule-of-the-indian-constitution-1510219894-1; accessed August 2021.

Appendix Table B.2: Data Sources

(1) State legislations: *Panchayati Raj* Acts of each state obtained from state government websites.

(2) Executive orders: Department of *Panchayati Raj* websites of various states.

(3) Government of India. *The State of Panchayats, 2007-08: An Independent Assessment.* Ministry of Panchayati Raj and Institute of Rural Management, New Delhi and Anand, 2008. **[SoPR 2007-08]**

(4) Centre for Policy Research. *Rural Local Body, Core Functions and Finances: A study commissioned for the Fourteenth Finance Commission.* New Delhi, 2014. **[RLB 2014]**

(5) Mathew, George, ed. *Status of Panchayati Raj in the States and Union Territories of India* . Institute of Social Sciences and Concept Publishing Company, New Delhi, 2013. **[SoPR 2013]**

(6) Government of India. *Annual Report 2015-16.* Ministry of Panchayati Raj, New Delhi, 2016a. **[AR 2015-16]**

(7) Government of India. *Devolution Report 2015-16: Where Local Democracy and Devolution in India is Heading Towards?* Ministry of Panchayati Raj and Tata Institute of Social Sciences, New Delhi and Mumbai, 2016b. **[DR 2015-16]**

(8) Government of India. *Annual Report 2016-17.* Ministry of Panchayati Raj, New Delhi, 2017. **[AR 2016-17]**

(9) Dates of political decentralization: L. Iyer, A. Mani, P. Mishra, and P. Topalova. The Power of Political Voice: Women's Political Representation and Crime in India. *American Economic Journal: Applied Economics* , 4(4):165-193, 2012.

Note: Source abbreviation in square brackets denotes how these sources are referred in Appendix Table B.3.

Appendix Table B.3: Coding Dates of Administrative Devolution for Each State

State	*Devolution status*	*Year of administrative devolution*	*Year of employee authority devolution*	*Sources for devolution coding (see Appendix Table B.2 for bibliographical details of sources)*
Andhra Pradesh	Full devolution	2007	2008	SoPR 2007-08; Government order No. 324 issued on Sep 27, 2007.
Arunchal Pradesh	Not devolved			Parliamentary question (Lok Sabha) of Feb 9, 2017, stating that government orders "have been issued, but not yet implemented."
Assam	Partial devolution	2007		SoPR 2007-08; Notification No. PDA. 336/2001/Pt - III/32 of June 2007; AR 2016-17.
Bihar	Full devolution	2012	2012	SoPR 2007-08; RLB 2014; SoPR 2013; Fourth State Finance Commission Report for Bihar (2010); Fifth State Finance Commission Report for Bihar (2015-2020).
Chhattisgarh	Not devolved			DR 2015-16.
Goa	Not devolved			DR 2015-16.
Gujarat	Full devolution	1994	1994	SoPR 2007-08; Gujarat Panchayati Raj Act, April 15, 1994.
Haryana	Partial devolution	2006		SoPR 2007-08; AR 2016-17.
Himachal Pradesh	Partial devolution	2009		SoPR 2007-08; Government order No. PCH-HA(3)9/2006-18580-22180 of Oct 19, 2009; AR 2016-17, p.85.
Jharkhand	Not devolved			AR 2015-16; SoPR 2013; DR 2015-16.
Karnataka	Full devolution	2003	2003	SoPR 2007-08.
Kerala	Full devolution	1996	1996	SoPR 2007-08.
Madhya Pradesh	Full devolution	2014	2014	SoPR 2007-08; RLB 2014; AR 2016-17.
Maharashtra	Full devolution	1993	1993	SoPR 2007-08: State was compliant with constitutional amendment because of prior legislations Bombay Village Panchayats Act (1958) and the Maharashtra Zilla Parishads and Panchayati Samitis Act (1961).
Manipur	Not devolved			DR 2015-16.
Orissa	Full devolution	2005	2005	SoPR 2007-08.

Appendix Table B3 (continued): Coding Dates of Administrative Devolution for Each State

State	*Devolution status*	*Year of administrative devolution*	*Year of employee authority devolution*	*Sources for devolution coding (see Appendix Table B.2 for bibliographical details of sources)*
Punjab	Partial devolution	2007		SoPR 2007-08; SoPR 2013; AR 2016-17.
Rajasthan	Full devolution	2010	2010	SoPR 2013; AR 2016-17.
Sikkim	Full devolution	2008	2008	Notification No. 3 /RMDD/P of Apr 29, 2008; SoPR 2007-08.
Tamil Nadu	Partial devolution	1997		SoPR 2007-08; AR 2016-17.
Telengana (AP)	Full devolution	2007	2008	SoPR 2007-08; Government order No. 324 issued on Sep 27, 2007.
Tripura	Not devolved			AR 2015-16; *Audit Report of Local Boards and Panchayati Raj Institutions,* 2012.
Uttar Pradesh	Not devolved			DR 2015-16. Government of Uttar Pradesh, *Annual Technical Inspection Report on Panchayati Raj Institutions* , 2016.
Uttarakhand	Full devolution	2008	2008	SoPR 2007-08; SoPR 2013; RLB 2014; AR 2015-16.
West Bengal	Full devolution	2005	2005	SoPR 2007-08; Government order No. 6102/PN/O/V/4P-1/05 dated Nov 7, 2005.

Note: Year of administrative devolution coded as the year when activity mapping was operationalised, i.e., the responsibilities for each tier of local government was clearly delineated and brought into force via legislation or executive order. All states other than Tripura devolved education and health at the same time; Tripura devolved education in 2007.