Impact of Decentralization of Governance on Health Seeking Behaviour of Tribal Communities

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Abstract

The paper examines the impact of a unique decentralization initiative in India that aimed at providing autonomy to the indigenous communities (Scheduled Tribes or STs) over local policy making on maternal health care seeking and utilization of health services. The policy introduced political reservations for the community along with a stated aim of recognition of their traditional ways of managing local resources. Using three rounds of a large-scale reproductive health survey and employing a difference-in-difference (DID) strategy, our findings indicate that the initiative led to increased utilization of antenatal care (ANC) services, particularly from governmental facilities, among ST women. However, we do not find any impact on delivery care utilization. We present estimation results from the Gardner's two-step DID methodology to show robustness of our results to treatment effect heterogeneity under staggered introduction of the treatment. We provide suggestive evidence that the improved uptake and utilization of health services is driven by improvement in the trust placed by the indigenous communities in the health care system when political representatives belong to their community.

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1 Introduction

Decentralized governance has long been recognised as a policy solution to achieve increased accountability, improved representation of needs of people and accelerated poverty reduction. By institutionalising local levels of government which are closer to the general public, decentralization can lead to better provisioning and equitable utilization of public services (Faguet, 2014; Oates, 1999; Maro, 1990), as well as lower corruption and bribes improving the cost-effectiveness of policy interventions (Bardhan and Mookherjee, 2005; Bardhan and Mookherjee, 2006). A large body of work has quantified the impact of decentralization on a range of outcomes including infrastructural provisioning, expenditure composition of governments, service delivery, economic growth, inequality and poverty, and quality of governance (for a review, see Martinez-Vazquez et al., 2017). However, there is limited research on the effects of decentralization on health care service utilization, particularly in the context of India. This paper aims to address this gap by examining the impact of a decentralization reform introduced for an indigenous community in India on maternal health care-seeking and utilization.

The indigenous community that we focus on in the paper is the *adivasi* group, constitutionally termed as Scheduled Tribes (STs). The community has historically faced marginalised owing to their geographical isolation, lack of recognition of their rights over local resources and political under-representation. Given that this community has lagged in almost all socio-economic indicators, the government has routinely introduced policy measures targeted towards this group. One of the major policy initiatives that the government introduced for STs was the introduction of Panchayats Extension to Scheduled Areas Act (PESA) in the year 1996 (PESA). PESA institutionalised local governments in *schedule five* districts - constitutionally created tribal majority districts - by granting them autonomy to manage local resources. PESA also included political reservations for STs, mandating that all chairperson positions in the three tiers of local government councils, as well as at least half of the seats, be reserved for STs. Additionally, the Gram Sabha (village assembly) was given the authority to approve plans, programs, and projects for social and economic development before implementation by the local village council, thereby ensuring community participation in local decision-making. Although PESA was enacted in 1996, its implementation in Schedule Five areas varied over time, depending on the timing of the first Panchayat (village council) elections. We leverage the staggered implementation of PESA to assess its impact on health care utilization among ST women.

There are multiple reasons why we expect PESA enactment to have an impact on maternal healthcare services of ST women. First, PESA empowered tribal communities by granting them political representation and control over the planning and implementation of local public goods and projects. This increased involvement in local decision-making can enhance the quality of public service delivery and, consequently, improve the uptake of these services. Second, having representatives who are socio-economically closer to the local population can build trust and confidence in government-provided health care services. These representatives can also promote good health seeking behaviour encouraging them to make use of these health care services. Third, by giving political representation to STs, health policies and interventions can be tailored in a way that they better represent the needs of the local communities (Walt and Gilson, 1994). However, the impact of PESA on health care utilisation may vary depending on the extent to which the reform is implemented. There have been reports suggesting that PESA's implementation has often been unsatisfactory and has sometimes been undermined by local elites (Dandekar and Choudhury, 2010). Therefore, it is crucial to empirically evaluate PESA's effect on maternal health-seeking behavior.

We obtain data on maternal health seeking and utilization indicators from the first three rounds of the District Level Household and Facility Survey (DLHS) conducted in the years 1998-99, 2002-04 and 2007-08. DLHS is a large household health survey that contains detailed information on all the pregnancies that women had during last five years. We use the staggered variation in implementation of PESA across states in a DID framework and compare maternal health seeking and utilization behaviour of ST women in the schedule five districts with the non-schedule five districts before and after PESA came into effect. In this paper, instead of focusing on health infrastructure provisioning, we focus on health seeking and utilization behaviour as it is likely to capture the trust and confidence that individuals display in the system along with their beliefs and preferences for certain types of care, and their utilization patterns (such as frequency, duration, and intensity of healthcare service use). Thus, healthcare utilisation captures much more than health infrastructure provisioning (Bhalotra and Clots-Figueras, 2014) as it considers how people interact with and access that infrastructure.

Our empirical analysis indicates that the implementation of PESA significantly enhances the utilisation of maternal health care services among ST women in Schedule Five districts compared to those in non-Schedule Five districts. Specifically, PESA increases the likelihood of ST women attending antenatal check-ups by approximately 14% relative to their counterparts in non-Schedule Five districts. Additionally, ST women in Schedule Five districts are more likely to adopt recommended ANC practices, such as receiving the tetanus vaccine and taking iron and folic acid supplements. We also observe a roughly 28% increase in the use of government facilities for ANC check-ups. However, PESA does not appear to impact the rates of institutional deliveries among ST women. This limited uptake of institutional deliveries is likely due to long-standing traditional norms favoring home births among ST communities (Contractor et al., 2018; Begum et al., 2017). Importantly, we find that the improved health-seeking and utilization behaviors resulting from PESA contribute to better health outcomes: ST women in Schedule Five areas are about 20% less likely to report complications during pregnancy compared to those in non-Schedule Five areas. Nonetheless, we do not find strong evidence that PESA has reduced child mortality.

Our results remain robust when including state-year fixed effects to account for other policy changes that could potentially confound our findings. We also conduct an event study analysis to rule out pre-existing differential trends in maternal healthseeking behavior between Schedule Five and non-Schedule Five areas. Furthermore, we provide evidence that the anticipation of PESA implementation does not bias our estimates. A crucial robustness check involves assessing if our DID estimates are robust to treatment effects heterogeneity. A recent literature has pointed that when the effect of the treatment is not expected to be homogeneous across groups or time, particularly under staggered introduction of the treatment, the DID estimates are unlikely to identify the Average Treatment Effects (ATE). See De Chaisemartin and d'Haultfoeuille (2023) for a review of this issue. We use the two-stage DID estimator proposed by (Gardner, 2022) to show robustness of our results to allowing for heterogeneous treatment effects.

We also explore the mechanisms driving the increased utilisation of maternal health care services and find suggestive evidence that changes in perceptions about the quality and cost of ANC services provided by the government, coupled with a shift in traditional views following the appointment of local tribal community representatives, play a key role. We also rule out improvements in health infrastructure post-PESA as the primary mechanism driving our results.

The rest of the paper is organised as follows: Section 2 provides a review of literature, section 3 provides a background on PESA, state of tribal health in India, and how PESA can impact tribal health. Section 4 outlines the data and the empirical methodology. The results are discussed in Section 5. Section 6 examines the mechanisms at work and Section 7 concludes.

2 Literature Review

Our paper is related to a large body of work that has evaluated the impact of institutionalising local levels of government on a slew of outcome variables including economic growth (Canavire-Bacarreza et al., 2020; Qiao et al., 2008; Gemmell et al., 2013; Qiao et al., 2008; Xie et al., 1999; Zhang and Zou, 1998), poverty and economic inequality (Shankar and Shah, 2003; Neyapti, 2006; Sepulveda and Martinez-Vazquez, 2011; Sacchi and Salotti, 2014), and education and other public resource provisioning (Foster and Rosenzweig, 2001; Faguet, 2004; Faguet and Sanchez, 2014; Falch and Fischer, 2012). The evidence provided by this literature is mixed at best where the lack of a positive impact of decentralization has been attributed to a capture of the local governments by the elites (Bardhan and Mookherjee, 2000).

Our work more directly contributes to a small body of work that has looked at the impact of decentralization on health care provision and spending. Goncalves (2014) examines how a specific form of decentralization - participatory budget management - affects health spending and outcomes in Brazil. The study finds that municipalities adopting this system experience higher spending on health and sanitation and consequently lower infant and child mortality rates. On the other hand, Rocha et al. (2016) report that greater fiscal autonomy in Brazil does not necessarily lead to reduced infant mortality rates. However, municipalities with higher efficiency are better able to improve health outcomes and lower infant mortality compared to less efficient ones. Faguet and Sanchez (2014) find that decentralization enhances access to public health services, as evidenced by increased health insurance coverage for the poor in Colombia. del Granado et al. (2018) use a panel data set of 42 countries and find that expenditure decentralization positively influences the share of health expenditure in government budgets.

Since PESA included guidelines for political reservation for the STs, our paper is also linked to the literature that studies the impact of mandated political reservation for marginalised groups in India. While, one set of studies have found that political reservation for STs, SCs and, women provides these disadvantaged communities influence over policy making and leads to an increase in allocation of public resources that benefit these groups (Pande, 2003; Besley et al., 2012; Chattopadhyay and Duflo, 2004; Bardhan et al., 2010; Aneja and Ritadhi, 2022). In contrast, a different strand of literature finds no positive impact of political reservation. This is attributed to the design and nature of the reservation system where the reserved category makes up the minority of voters in the reserved constituencies and also to the dynamic incentives produced by the rotation of quotas (Jensenius, 2015; Dunning and Nilekani, 2013).

There are also studies that examine the impact of political representation of women on health care provisioning and health outcomes. Bhalotra and Clots-Figueras (2014) find that political representation of women in state legislatures leads to a reduction in neonatal mortality and increases the utilization of reproductive and post natal care. Similarly, Kumar and Prakash (2012) examine the impact of gender quotas in local levels of government in India and find a positive impact of these quotas on institutional deliveries and survival rates of children. Rustagi and Akter (2022) explores the impact of political representation of women on the health outcomes of children for a set of 162 countries. The study finds that reserved seat quotas improves child health outcomes more than candidate quotas, with much larger effects in South Asia and Sub-Saharan Africa.

Further, our works adds to the burgeoning body of work that examines the impact of PESA on different outcomes. Nandwani (2019) evaluates the impact of PESA on the likelihood of an armed insurgency as this government policy was implemented in conflict affected areas of the country. The study finds that due to incomplete implementation and capture of PESA by ST elites, the initiative increased the participation of STs in armed conflict. Gulzar et al. (2020) finds that PESA led to the improved implementation and performance of two large public development programs. Agarwal et al. (2023) evaluates the impact of PESA on forest conservation and finds that it generated limited positive impact.

While there is extensive work on the impact of decentralization on provision of health care, to the best of our knowledge there is limited work on the impact on utilisation of health care services. We add to the above strands of literature by looking at the impact of PESA on health seeking behaviour and utilisation of maternal health care.

3 Background

As per the population census of 2011, ST constitutes around 8.6% of the total population of India and a majority of them reside around forest areas and are involved in traditional employment such as shifting cultivation and collection of minor forest produce. STs have historically been the most marginalised social communities in the country and over the years they have exhibited the worst performance in terms of poverty reduction, education attainment, and healthcare access and utilization (Soman et al., 2023; Pradhan et al., 2022; Maity, 2017; Ministry of Tribal Affairs). Displacement of forest land where they have traditionally resided, non-recognition of their claims over local resources and traditional ways of managing their societies are some of the reasons for their continued deprivation.

With this backdrop, the government of India introduced PESA in schedule five areas in 1996 - a unique decentralization initiative aimed at empowering local communities to manage public goods and allocate local resources. Schedule five areas have had a history of neglected governance from colonial times. The colonial government considered the indigenous STs primitive due to their traditional ways of living around forest areas and excluded areas that had dominant tribal populations from colonial administration and categorised them into excluded and partially excluded areas. Following independence, the Indian Constitution retained this classification, designating them as Schedule Five and Schedule Six areas. This categorization acknowledges their distinct geography, rich natural resources, and the unique ways STs manage local resources, necessitating special administrative attention.

Despite the introduction of various welfare programs, including Tribal Sub Plans (TSP), aimed at supporting STs in Schedule Five areas, these initiatives largely failed to achieve meaningful socio-economic development (Wahi and Bhatia, 2018).

The introduction of PESA in 1996, however, marked a significant policy shift by recognizing the distinct culture of STs and their traditional resource management practices. It is important to note that PESA differs from the the Panchayati Raj Institution (PRI) - the three tier of local self government ¹ established through a constitutional amendment in 1992 for areas other than schedule five and six areas. PESA was specifically designed to empower tribal communities by granting them local autonomy and self-governance. The Act was implemented across 108 Schedule Five districts in nine states: Andhra Pradesh, Jharkhand, Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Gujarat, Maharashtra, Odisha, and Rajasthan. While some districts fully implemented PESA, covering all areas, others saw only partial

¹The three tiered government structure consists of village, block, and district councils

implementation as illustrated in Figure A.1. Geographically, Schedule Five areas encompass approximately 11.3% of India's total land area.

Under PESA, every village must establish a Gram Sabha, a local governance body defined as the assembly of individuals whose names appear on the electoral rolls for the Panchayat at the village level. The Gram Sabha is tasked with protecting and preserving the cultural identity, traditions, and community resources of STs. The Act grants the Gram Sabha significant executive responsibilities, including (a) identifying individuals eligible for poverty alleviation programs and (b) approving initiatives, projects, and plans aimed at social and economic development. Additionally, PESA empowers the Gram Sabha to prevent the alienation of forest lands, make decisions regarding land acquisition, grant mining licenses, resettle individuals displaced by land acquisition, manage minor water bodies and forest resources, and oversee local plans, including Tribal Sub Plans.

Crucially, PESA ensures political representation for STs by mandating reservations for this community. The Act stipulates that all chair positions at the three levels of local government must be reserved for ST members, with at least 50% of all seats on these councils also reserved for individuals from ST communities.

3.1 Health Status of STs

Recent estimates indicate that approximately 110 million tribal people in India experience poor socio-economic and health outcomes (Bang, 2022). This community faces significant challenges, including malnutrition, chronic diseases, and both communicable and non-communicable illnesses. While the general life expectancy at birth in India is around 67 years, for tribal populations, it is notably lower at 63.9 years. Maternal and child health statistics are particularly concerning: about 65% of tribal women aged 14 to 49 suffer from anemia, and institutional deliveries are the lowest among tribal women compared to other caste groups (Ministry of Health and Family Welfare, 2018). The infant mortality rate among Scheduled Tribes (STs) is the highest in the country, at 74 per thousand live births, compared to 62 for other

social groups (Census, 2011). Immunization coverage for children in ST communities is also lower than that of other caste groups (Maity, 2017). Furthermore, STs have demonstrated inadequate utilization of antenatal and postnatal care, as well as modern contraceptive methods (Maity, 2017).

Several factors contribute to these poor health outcomes among tribal populations. Low income levels, inadequate educational attainment, and limited access to clean water and sanitation significantly affect their health status. Additionally, neglected governance and insufficient public services in areas predominantly inhabited by STs further exacerbate their deprivation. The healthcare that is available often suffers from issues of quality and accessibility (Negi and Azeez, 2021). The historical underrepresentation of STs in policy making and their political marginalisation also play a critical role in perpetuating these challenges (Bang, 2018; Maity, 2017; Ambagudia, 2019).

PESA has the potential to improve the health-seeking and utilization behaviour of the STs through two main pathways.

1. Increase in Provision of Public Services - Decentralized local governments have been shown to improve the delivery of public services (Faguet, 2004; Faguet and Sanchez, 2014; del Granado et al., 2018). By institutionalizing local governance with ST representation, PESA is expected to better align public services with the needs of tribal communities, as local representatives are more aware of the issues that their community faces.

2. Improvement in Trust in Government - By incorporating STs into local policymaking, PESA can address the historical neglect these communities have faced, thereby fostering greater trust in government institutions. When community members see leaders from their own backgrounds, it can enhance their confidence in governmental services, leading to increased utilization. Also, local policy makers who are part of the ST community understand the customs and norms surrounding healthcare usage, enabling them to effectively communicate the benefits of seeking care and shift community perspectives toward healthcare utilization.

4 Data and Methodology

4.1 Data

The data on maternal health care utilisation is obtained from the District Level Household and Facility Survey (DLHS) - a household level health survey conducted by the Indian Institute of Population Studies (IIPS) in collaboration with the Ministry of Health and Family Welfare (MoHFW), Government of India. The DLHS is a repeated cross-sectional dataset that is representative at the district level, the smallest identifiable geographical unit in the data. We use the first three rounds of the DLHS dataset- DLHS 1 conducted in the year 1998-99, DLHS 2 conducted in the year 2002-04 and DLHS 3 conducted in the year 2007-08. The fourth round of the DLHS is not included in our analysis because it excluded nine low-performing states - Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Odisha, Rajasthan, and Assam - and it does not provide district identifiers.

For each survey round, information is collected on all the pregnancies that ever married women aged 15 to 49 had until the last survey round. The information provided includes continuation or termination of the pregnancy, survival or death of the born child, and in the event of a live birth, details regarding the child's gender, birth order, and month and year of birth. Comprehensive information is collected on each woman's utilization of antenatal care, postnatal care, and delivery services. Using these retrospective birth records focusing on the last child born, we obtain information on pregnancies and child births during the period 1995-2008 for a representative sample of women.

The DLHS dataset also provides other social and demographic information on the surveyed women including information on caste and religion of the respondent, type of house owned, age, and educational attainment.

We obtain information on schedule five areas and the timeline of PESA implementation from the Ministry of Tribal Affairs' website.

4.2 Variables of Interest

As previously mentioned, we examine multiple indicators of maternal health-seeking behaviors and the utilization of health services. One key indicator is the uptake of antenatal care (ANC) services among pregnant women. ANC is essential for ensuring safe pregnancies and significantly reduces maternal and perinatal morbidity and mortality. Regular ANC check-ups enable the screening and education of mothers regarding potential pregnancy complications, such as malpresentation, reduced fetal movement, and vaginal bleeding, which can be life-threatening for both mother and child. It is recommended that expectant mothers receive their first ANC check-up during the first trimester and complete at least four ANC visits (Al-Zubayer et al., 2024; Gebresilassie et al., 2019; WHO, 2016). The WHO (2016) outlines various ANC guidelines to maintain a "positive pregnancy experience," including nutritional interventions like iron and folic acid (IFA) supplementation and preventive measures such as tetanus toxoid (TT) vaccination. IFA supplements are crucial for preventing iron deficiency and anemia in pregnant women (Peña-Rosas and Viteri, 2009), while the TT vaccine helps protect against maternal and neonatal tetanus (Thwaites et al., 2015; WHO, 2007; Chen et al., 1983).

We also focus on breastfeeding practices, as the WHO recommends exclusive breastfeeding for the first six months post-birth to promote optimal growth and development in infants. This practice helps protect against infections, as breast milk contains vital antibodies. Although breastfeeding reflects a personal commitment from mothers rather than direct healthcare provisioning, it is expected to be influenced by improved information campaigns that encourage women to enhance their personal contributions to their infants' health.

Additionally, we consider the type of delivery care women choose, as skilled attendance at birth and institutional deliveries are critical for ensuring safe childbirth and reducing the risk of complications that can lead to maternal or neonatal illness or death (Kesterton et al., 2010).

4.3 Summary Statistics

Table A.1 reports the difference in the average health seeking and utilization behaviour of ST women in non-schedule districts (non-SAs) and schedule five districts (SAs) in the pre-PESA period.

Our findings indicate that the uptake of antenatal care (ANC) is low across both SAs and non-SAs, with no statistically significant differences between the two groups. Similarly, there are no significant differences in the timing of the first ANC visit, the number of ANC visits, or the uptake of the tetanus toxoid (TT) vaccine prior to the implementation of PESA. However, while 38% of the ST women in non-SAs report facing pregnancy complications², the corresponding figure for SAs is much higher at 44% and this difference is statistically significant. Conversely, a larger proportion of ST women in non-SAs (45%) sought treatment for pregnancy complications compared to those in SAs (39%).

There is a notable difference in the choice of care for pregnancy complications between the two regions. In SAs, government facilities are preferred, whereas a larger proportion of ST women in non-SAs reported seeking care at private facilities. Regarding assistance during childbirth, nurses and doctors are not the preferred choices for ST women in either region. Instead, midwives (dais) are favored, with a significantly higher percentage of births assisted by midwives reported in SAs (62%) compared to non-SAs (50%).

Moreover, the majority of births occur outside hospitals in both areas, but ST women in SAs report a higher percentage of non-institutional births (81%) than those in non-SAs (72%). In terms of post-delivery complications, a significantly lower proportion of women in SAs sought treatment (37%) compared to those in non-SAs (42%). The uptake of private facilities for treating post delivery complications is higher in non-SAs as compared to SAs.

 $^{^{2}}$ Here pregnancy complications include issues such as swelling of hands and feet, paleness, convulsions, excessive bleeding, malpresentation of the fetus and, weak or no movement of the fetus.

4.4 Empirical Methodology

While PESA was introduced in 1996, its actual implementation in states varied over time based on the first Panchayat (local government) elections post which PESA came into effect. While Himachal Pradesh, Madhya Pradesh and Rajasthan were the first implementing states in 1999, Jharkhand implemented it last in the year 2009. Table A.2 reports the year in which PESA came into effect in states - that is the year after the local government elections. This staggered implementation of PESA allows us to estimate the impact of PESA in a difference-in-difference (DID) framework wherein we compare the maternal healthcare utilisation of ST women in SA post and pre PESA implementation with ST women in non-schedule five districts. We exclude women from other social groups from our analysis as we expect their health utilisation behaviour to have very different trends from ST women.

Note that since the smallest identifiable unit in DLHS data is district, we consider an entire district as PESA implemented even if limited number of villages in the district were covered under PESA.

We estimate the following regression equation to estimate the impact of PESA on maternal health care utilisation:

$$y_{mhdst} = \beta_0 + \beta_1 Post_{st} + \beta_2 Post_{st} * SA_d + \beta_3 X'_{mhdst} + \gamma_d + \delta_t + e_{mhdst}$$
(1)

Here, y_{mhdst} is the outcome variable for mother *m* residing in household *h* in district *d* and state *s* at time *t*. Post_{st} is a dichotomous variable which takes the value one for years following PESA implementation in state *s*. SA_d takes the value one for a Schedule Five district and 0 otherwise. X_{mhdst} is a vector of control variables at the mother and household level such as age of the mother, level of education, birth order, religion, caste, and type of house. Our specification includes district fixed effects which account for unobserved heterogeneity in maternal outcomes at the district level and δ_t represents the year of birth fixed effects. The coefficient of interest is β_2 which identifies the impact of implementation of PESA on maternal

outcomes in schedule five areas in comparison to non-Schedule five areas. We cluster the standard errors at the district level.

5 Results

5.1 Estimation Results

5.1.1 Health Seeking and Utilization Behaviour

The regression results obtained by estimating equation (1) are reported in Tables 1 to 5. Table 1 which reports the impact on the uptake of ANC shows that implementation of PESA has a positive impact on the likelihood of ST women going for and receiving ANC during their pregnancy vis-a-vis ST women residing in non-SAs (Column 1 panel A). Specifically, ST women in SAs are seven percentage points more likely to receive ANC after the implementation of PESA, which amounts to a 14% increase as compared to the average.

We also evaluate the effect of PESA on the timing of the first ANC visit. The findings, reported in Columns 2 and 3, reveal that while PESA does not significantly impact ANC uptake within the first three to five months, there is a notable five percentage point increase in the likelihood of women seeking antenatal care within the first six months of pregnancy in SAs compared to non-SAs. Additionally, our results show a positive effect of PESA on the total number of ANC visits made by pregnant women. Column 5 demonstrates that ST women in SAs are approximately five percentage points (a 43% increase compared to the average) more likely to attend three ANC visits than their counterparts in non-SAs.

Panel B of Table 1 shows that PESA not only increased the likelihood of ST women seeking ANC, but also improved adherence to recommended ANC practices - such as taking the tetanus vaccine and iron and folic acid supplements. Post-PESA, ST women in SAs were around seven percentage points more likely to get tetanus vaccine in comparison to ST women in non-SAs (column (1)). Given that pregnant women should receive at least two shots of tetanus vaccine during the course of her pregnancy (WHO, 2007), our finding of 11 percentage points increase in the likelihood of women getting two doses of the tetanus vaccination post PESA implementation is encouraging (column 2). Additionally, we observe an increase in the likelihood of pregnant women in SA taking IFA supplementation by about seven percentage points. Compared to ST women in non-SAs, ST women in SAs were around six percentage points more likely to consume around 90 to 120 tablets of IFA during their pregnancies (column (4)).

PESA also resulted in increased usage of government health care facilities and decreased reliance on private health care providers for ANC by pregnant women as reported in Table 2. We find a 28% increase in the likelihood of ST women going to governmental facilities for ANC in the SAs post PESA implementation. This shift likely reflects a growing confidence among ST women in utilising governmentprovided healthcare services. Given that public healthcare is heavily subsidised in India, this change also signifies a reduction in out-of-pocket expenses for ST women seeking ANC. We find no significant differential impact of PESA on the uptake of non-institutional ANC (column (3)).

Table 3 presents the estimation results for the impact of PESA on the breastfeeding behavior of mothers. Although breastfeeding is a personal choice, this analysis aims to assess whether PESA enhanced awareness among women regarding their contributions to their children's health, potentially through informational campaigns. Column 1 reveals that PESA had a positive and statistically significant impact, with an increase of approximately 11 percentage points in the likelihood of ST women practicing exclusive breastfeeding for at least four months. Additionally, we observe some weak positive effects of PESA on the duration of exclusive breastfeeding for at least five and six months.

Table 4 examines the impact of PESA on choice of practitioner and facility for delivery. We find that PESA implementation has a weak negative differential impact on ST women in SAs having deliveries conducted by doctors/nurses (column 1)). Our results also suggest that PESA implementation does not seem to influence the choice of facility chosen for delivery. The lack of any impact may be due to traditional

norms of STs surrounding deliveries where pregnancy and childbirth are viewed as natural processes which do not require any external intervention (Contractor et al., 2018).

Table 5 reports the results for the impact of PESA on the likelihood of women seeking treatment for post delivery complications. While the implementation of PESA has no significant differential impact on ST women in SAs seeking treatment for these (column 1), amongst those ST women who do seek these treatments, there is increased usage of government facilities by around 12 percentage points. This represents an increase of 79% as compared to the average³.

5.1.2 Health Outcomes

While utilisation of health care services is important to analyse in its own right, we also expect some of the improvements in health seeking and utilization behaviour among ST women post-PESA implementation to translate into improved health outcomes. Table 6 presents the results for two health outcomes - pregnancy complications and child mortality. When compared to their counterparts in the non-SAs, we find that the adoption of PESA results in a noteworthy nine percentage point decrease (which is 20% reduction as compared to average) in pregnancy complications faced by ST women in SAs. ANC has been shown to reduce maternal morbidity and mortality (Carroli et al., 2001), however our analysis focuses on maternal morbidity (pregnancy complications) and not on maternal mortality as the DLHS dataset lacks information on the latter. Given that many of the positive effects of PESA are concentrated around ANC utilisation, the reduction in pregnancy complications is an encouraging finding, as ANC includes screening for various complications that mothers may face, as well as fetal abnormalities and preventive strategies.

In contrast, we find no significant impact of PESA on child mortality (Column 2).

 $^{^{3}}$ Exploratory research by Contractor et al. (2018) found that while the utilization of health services for deliveries is not a dominant practice among these tribal communities, there is an understanding about the importance of the health system in case of pregnancy complications and high risk births.

We also consider an additional outcome variable in Column 3: the likelihood of a child dying within one month post-PESA. This accounts for the fact that death at a higher age may reflect other factors (such as nutrition) and not just maternal health care during pregnancy and delivery. Again, our results indicate that PESA does not reduce the likelihood of a child dying within the first month of birth in SAs compared to non-SAs. However, in a robustness check, we find that PESA did lower this likelihood (p-value = 0.062).

It is important to note that post-PESA, ST women in SAs are no more likely to have institutional deliveries or deliveries assisted by trained professionals (Table 5) post-PESA. This can partially contribute to our findings of no impact on child mortality as institutional deliveries involve the provision of expert care and emergency intervention in case of any complications with the delivery. Without increase in the uptake of institutional care, infant mortality is unlikely to be lowered.

5.2 Parallel Trends

The key identification assumption of a DID estimation is that of parallel trends in the outcome in the treatment and control group prior to the intervention. To check for the parallel trends assumption, we add a series of lags and leads to our specification and estimate the following event study regression equation -

$$y_{mhdst} = \beta_0 + \sum_{j=1}^7 \beta_j (Leadj)_{st} * SA_d + \sum_{k=1}^7 \beta_k (Lagk)_{st} * SA_d + \beta_3 X'_{mhdst} + \gamma_d + \delta_t + e_{mhdst}$$
(2)

Here, the terms $Leadj_{st}$ and $Lagk_{st}$ represent the leads and the lags signifying that

a given state s was j periods away or k periods past the implementation of PESA at time t. We expect the interaction terms to be insignificant leading up to the intervention and significant in the years following the intervention. Tables A.3 to A.9, which report the results, show that for most of the outcome variables, the coefficients of the interaction terms prior to PESA implementation are not significant.

However, we observe weakly significant positive difference between SAs and non-SAs six years before the reform for tetanus vaccination. But, there is a sign reversal in the following year and whatever is driving this difference is unlikely to be driving the results post-PESA. We also see some pre-trends in case of women reporting taking IFA supplementation (column 3), however, there does not seem to be any differential pre-trend for the outcome of women taking between 90 and 120 tablets of IFA. The tables also suggest that the positive impact of PESA sets in after a few years - this is a reasonable finding suggesting that change in public perception around quality of government services and thus utilisation of these services takes time.

Table A.6 shows that there is a negative differential trend in breastfeeding behaviour of mothers in the periods leading up to the introduction of PESA. We also observe that post-PESA, there is no differential trend in breastfeeding behaviour of ST mothers. From column (1) of Table A.9, we find that ST women in SAs were significantly more likely to face pregnancy complications seven or more years before the reform. However, the direction of this estimate is reversed in the post treatment period and after six years following PESA, we find that ST women in SAs were significantly less likely to face pregnancy complications in comparison to their counterparts in non-SAs.

Figures A.2 to A.11 graphically report the test for the parallel trends assumption for those outcomes for which PESA has been shown to have a significant impact. These figures show that the parallel trends assumption holds in case of all these variables, except for the case of women consuming around 90 to 120 IFA tablets during pregnancy (Figure A.8).

5.3 Robustness

5.3.1 Gardner's Two Stage Difference in Difference

A recent literature has highlighted that the DID methodology may provide misleading estimates of the Average Treatment Effects (ATE) specifically when the introduction of the treatment is staggered and there is heterogeneity in treatment effects across groups and over time ⁴. In such cases, it may be difficult to give a causal interpretation to the estimated coefficients even under the assumption of random assignment to treatment (Liu et al., 2024; Baker et al., 2022 Callaway and Sant'Anna, 2021; Goodman-Bacon, 2021; De Chaisemartin and d'Haultfoeuille, 2020). While this casts doubts over our estimates presented earlier in the paper, fortunately, this literature has proposed estimators that are robust to treatment effect heterogeneity in case of staggered introduction of the treatment. We use the two-stage estimator proposed by (Gardner, 2022) to check whether our DID presented in the paper are robust to the issues highlighted by the recent work. This method estimates the treatment effect in two stages wherein the group and period effects are identified in the first stage using the sample of untreated observations. The average treatment effect is then obtained in the second stage by comparing treated and untreated outcomes, after removing these group and time effects estimated in the first stage.

Results obtained using Gardener's two stage DID are presented in Table A.10 to A.16. Encouragingly, the results obtained are consistent with those obtained using the traditional DID model. Infact, the magnitude of the impact is larger in case of most of the outcome variables. Only in the case of the breastfeeding outcomes, we find that the two-stage DID coefficients are not statistically significantly different from zero. We also estimate the event study equation using the two-stage DID estimator and the Garner (2022) results (available on request) also suggest absence of any pre-trends.

⁴This issue arises because the DID estimation procedure makes use of all forms of variation by comparing- (i) treated units with untreated units, (ii) treated units with not yet treated units, and (iii) units that newly received the treatment with those already treated. The third form of comparison is forbidden leads to cases where the DID estimator produces an average of treatment effects across all groups and times, with some treatment effects having negative weights.

5.3.2 State-time fixed effects

To further validate the robustness of our results, we re-estimate equation (1) by including an interaction of state and year of birth fixed effects. This partials out all the time varying state level unobserved factors (including other state level policies targeted towards women's health care utilisation) that coincide with the timing of PESA implementation and can confound our estimates ⁵. The results, presented in Tables A.10 to A.16, suggest that while the coefficients that were significant earlier continue to remain significant, the magnitude of most of the coefficients fall with the addition of state-year fixed effects. This could be because these fixed effects also absorb some of the variation in the degree of implementation of PESA across states and years, apart from other policies. Nevertheless, these results bolster our confidence in the robustness of our findings.

5.3.3 Anticipation effects

An additional potential concern is that the impact of PESA on the maternal health seeking behaviour of ST women in SAs could be driven by altered fertility decisions of women. Women in SAs may postpone their decision to have a child due to the anticipation of better health care provisioning after the implementation of PESA in their district of residence. To show that such women are not completely driving our results, we re-estimate equation (1) using a dummy that takes a value one if the mother m gives birth in year t as the outcome variable. This allows us to test if fertility decisions of women were systematically different in SAs post-PESA.

The results, presented in Table A.17, presents no evidence that child births to ST women are bunched after PESA implementation. This suggests that the implementation of PESA did not cause women in SAs to alter the timing of their pregnancy in comparison to areas where PESA was not implemented.

⁵Public health in India is a state subject and provision of healthcare varies across states based on the schemes and initiatives brought out by the respective state governments.

6 Mechanisms

6.1 Development of Health Infrastructure

The improvement in maternal health care seeking of ST women post-PESA may be mediated through an improvement in health infrastructure in the SAs. Improved political representation for STs may have spurred investment in health facilities leading to improved utilisation. To check if this is the channel at work, we use the population Census of 1991, 2001, and 2011 made available by the SHRUG database (Asher et al., 2019) to check if post-PESA, villages in SAs were more likely to have health infrastructure in comparison to those in non-SAs. We estimate the following regression equation:

$$y_{vdt} = \beta_0 + \beta_1 Post_{st} + \beta_2 Post_{st} * SA_d + \gamma_v + \delta_t + e_{vdt}$$

$$\tag{3}$$

Here, y_{vdt} takes the value 1 if a health facility is present in village v situated in district d in census year t. The other variables are the same as before. However, now we have village fixed effects to capture time invariable factors at the village level (γ_v) and census year fixed effects (δ_t) .

Table 7 shows that post-PESA, villages in SAs were no more likely to have health facilities in comparison to villages in non-SAs. This result holds across a range of health facilities including hospitals, dispensaries, primary health centers, primary health sub-centers, maternal and child welfare centers, and family welfare centers. Thus, it seems unlikely that the improved health seeking behaviour of women is driven by an improvement in the development of health infrastructure.

We also make use of the village level module of DLHS that provides information on presence of health facilities⁶ across villages to test this mechanism. However, this

⁶The type of health facilities covered by DLHS in the village level questionnaire are slightly different from those covered under Census. Along with information collected on the presence of hospitals and dispensaries, DLHS collected information on the presence of Integrated Child Development Service (ICDS) centers, community health centers, and AYUSH centers.

information is only collected for DLHS 2 and DLHS 3 and DLHS 1 does not have village level data on the presence of health facilities. Using two rounds of repeated cross-section data, we run the same test as we did with the Census data (with district fixed effects instead of village fixed effects owing to lack of any village level identifiers) and find that PESA implementation is not associated with improved provisioning of healthcare facilities. However, we find that post-PESA, villages in SAs have a lower likelihood of having community health centers and Integrated Child Development Service (ICDS) centers in comparison to villages in non-SAs. This further provides evidence that the improvement in maternal health outcomes post-PESA is unlikely to be driven by a development of health infrastructure.

6.2 Quality and Cost of Care

STs are a distinct community who have relied on traditional and customary knowledge to treat health ailments. Due to limited usage of modern medicinal practices, STs may have reservations relying on them for ANC. The entry of representatives from their own community into local policy-making could however change their perception about government health services which could be the channel driving our results. Since, the majority of PESA's beneficial effects are centered around the use of ANC services, we investigate if this channel is likely to account for the increase in ANC use post-PESA.

DLHS collects information on reasons stated by women for not utilizing ANC. We investigate these reasons to provide suggestive evidence of improved perception around government health services in SAs post-PESA. Table 8 shows that there is around an eight percentage point reduction in ST women in SAs stating ANC as not customary as a reason for not seeking ANC in comparison to their counterparts in non-SAS. While beliefs about what is customary are likely to be rigid, this change in tribal women's perceptions demonstrates that having political leaders from their own communities enhances the trust they demonstrate in opting for ANC. Additionally, post-PESA, there is an 18 percentage point reduction in ST women in SAs stating cost of ANC as a reason for not opting for ANC. Thus, a reduction in the cost of

ANC may also be a potential channel in reducing the barrier to accessing this service post-PESA.

Thus, we find some suggestive evidence that the improved utilization of ANC services is driven by a shift in the perception of ST women regarding their customary practices and a change in their perception about the cost of accessing ANC.

7 Conclusion

This paper focuses on PESA, which is a decentralization initiative that was implemented for the tribal dominant schedule five areas (SAs) acknowledging the stark distinctiveness of these areas and the dominance of tribal population. PESA gave STs more political representation and gave the local governments in these areas the control over plans and projects for social and economic development. It was implemented with the aim of promoting development of these regions, promoting the catching up of these regions with the other regions of the country and to give tribals greater control over their local land and resources. Theoretically, the benefits that PESA can generate can be manifold. In this paper, we empirically evaluate if PESA generated benefits for the tribal communities in terms of their health seeking and utilization behaviour.

We find that the uptake of ANC services notably increased post-PESA in the SAs in comparison to the non-SAs. Following the introduction of PESA, more ST women adopted good practices such as taking TT vaccination and IFA supplements during their pregnancies in the SAs. This uptake of ANC was effective in ensuring safe pregnancies as post-PESA, we find that lesser women suffered from pregnancy complications in the SAs vis-a-vis the non-SAs. However, we do not find any significant impact of PESA on ST women in SAs having institutional deliveries or having births assisted by skilled professionals. We attribute this to the traditional views and practices of tribal communities regarding deliveries, which remained unaltered post-PESA. We rule out the development of health infrastructure post-PESA in SAs as a driver of improved health care seeking and utilization behaviour. Rather, as far as ANC is concerned, we observe that fewer women reported cost as a reason for not seeking ANC care following this intervention. This demonstrates that having local representation can improve utilization of health services by lowering the financial barriers of accessing these health services. We find a reduction in the proportion of women who reported that ANC was not customary. This signals that having local representatives from the same community can play an important role in altering perception about the utilization of health care services. We also find some indication of improvement in the quality of care in SAs post-PESA. We discover that post-PESA, more ST women chose to receive ANC at government facilities and that opting for governmental ANC generated the maximum benefits as women who went for governmental ANC were the ones who reported a reduction in facing pregnancy complications.

The results of this study show that decentralization initiatives can be effective in improving healthcare access and utilization. Decentralization allows local governments to make decisions that cater to the needs of the local populace, un-dictated by others, and these decisions can improve the performance of local health systems (Bossert, 1998). Empowerment of local levels of government allows local governments to make decisions and allocate resources in a way that best suits the needs of the local populace. Along with this, having representation at the local level belonging to the same community can enhance the trust the community places in health care. Decentralization can be useful in addressing the issue of information asymmetry that has been a major issue in ensuring the efficiency and effectiveness of local health systems (Arrow, 1978).

Panel (A): Impact of PESA on Seeking Antenatal Care							
	(1)	(2)	(3)	(4)	(5)		
	Received ANC	Received	ANC Within:	No.	of ANC Visits:		
		First 3 Months	First 6 Months	3 Visits	4 Visits		
Schedule Area×Post	0.065^{**}	0.008	0.053**	0.052***	-0.013		
	(0.027)	(0.019)	(0.026)	(0.016)	(0.010)		
Controls	Yes	Yes	Yes	Yes	Yes		
District Fixed Effects	Yes	Yes	Yes	Yes	Yes		
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes		
Observations	41,806	41,806	41,806	$37,\!623$	37,623		
R-squared	0.224	0.140	0.234	0.089	0.064		
Outcome Mean	0.499	0.206	0.434	0.141	0.056		
Panel (B): Impact of PE	SA on ANC Prac	tices					
		(1)	(2)	(3)	(4)		
		Tetanus '	Toxoid (TT):	Iron I	Folic Acid (IFA):		
		Taken	No. of Injections: 2	Taken	No. of Tabs: 90-120		
Schedule Area×Post		0.071^{***}	0.112**	0.068*	0.065^{***}		
		(0.027)	(0.052)	(0.039)	(0.021)		
Controls		Yes	Yes	Yes	Yes		
District Fixed Effects		Yes	Yes	Yes	Yes		
Year of Birth Fixed Effects		Yes	Yes	Yes	Yes		
Observations		41,806	38,042	16,442	34,836		
R-squared		0.141	0.132	0.185	0.251		
Outcome Mean		0.607	0.916	0.536	0.074		

Table 1: Impact of PESA on Seeking Antenatal Care

Received ANC is a dummy variable that takes the value 1 if a mother went for and received ANC during the course of her pregnancy. **Received ANC Within**-First 3 Months (6 Months) is a dummy variable that takes the value 1 if a woman went for her first ANC visit within the first 3 months (6 months) of her pregnancy. **No. of ANC Visits**- 3 (4) is a dummy variable that takes the value 1 if a woman went for 3 (4) ANC visits during her pregnancy. **Tetatnus Toxoid (TT)**- Taken is a dummy variable that takes the value 1 if a woman took the TT vaccine during the course of her pregnancy. No. of Injections: 2 is a dummy variable that takes the value 1 if a woman got 2 doses of the TT vaccine during her pregnancy. **Iron Folic Acid (IFA)**- Taken is a dummy variable that takes the value one if a woman consumed IFA (in the form of tablets or syrup) during her pregnancy. No. of Tabs: 90-120 is a dummy variable which takes the value 1 if a woman consumed 90 to 120 IFA tablets during her pregnancy. **Schedule Area** is a dummy variable that takes the value 1 if a district is schedule five. **Post** takes the value 1 for the years after the implementation of PESA in a given state. The interaction of *Schedule Area* and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

	(1)	(2)	(3)				
	Place for Seeking Antenatal Care						
	Governmental	Private	Non-institutional				
Schedule Area×Post	0.080^{***}	-0.035**	0.008				
	(0.024)	(0.014)	(0.011)				
Controls	Yes	Yes	Yes				
District Fixed Effects	Yes	Yes	Yes				
Year of Birth Fixed Effects	Yes	Yes	Yes				
Observations	41,720	41,720	41,720				
R-squared	0.169	0.183	0.061				
Outcome Mean	0.347	0.110	0.033				

Table 2: Impact of PESA on Place for Seeking Antenatal Care

Place for Seeking Antenatal Care- Governmental is a dummy variable that takes the value 1 if a woman went to a governmental facility for her ANC check up during her pregnancy. *Private* is a dummy variable which takes the value 1 if a woman went to a private facility for her ANC checkup during pregnancy. *Non-institutional* is a dummy variable which takes the value 1 if a woman had non-institutional ANC check ups during her pregnancy. *Schedule Area* is a dummy variable that takes the value 1 if a district is schedule five. *Post* takes the value 1 for the years after the implementation of PESA in a given state. The interaction of *Schedule Area* and *Post* captures the differential effect of the implementation of PESA on ST women in schedule five districts.

	(1)	(2)	(3)				
	Exclusive Breastfeeding:						
	At least 4 Months	At least 5 Months	At least 6 Months				
Schedule Area×Post	0.114^{**}	0.076^{*}	0.072^{*}				
	(0.046)	(0.046)	(0.041)				
Controls	Yes	Yes	Yes				
District Fixed Effects	Yes	Yes	Yes				
Year of Birth Fixed Effects	Yes	Yes	Yes				
Observations	$21,\!638$	$21,\!638$	$21,\!638$				
R-squared	0.172	0.157	0.125				
Outcome Mean	0.652	0.471	0.266				

Table 3: Impact of PESA on Breastfeeding Behaviour of Mothers

*, ** and *** represent significance at .10, .05 and .01 level respectively. Robust standard errors are reported in parentheses and are clustered at the district level.

Exclusive Breastfeeding-At least 4 Months is a dummy variable that takes the value 1 if a mother undertook exclusive breastfeeding for 4 to 6 months. At least 5 Months is a dummy variable which takes the value 1 if a mother undertook exclusive breastfeeding for 5 to 6 months. At least 6 Months is a dummy variable which takes the value 1 if a mother undertook exclusive breastfeeding for 6 months. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. **Post** takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

	(1)	(2)	(3)	(4)	(5)	(6)
	D	elivery Conducted by:		Plac	e of Deli	very:
	Nurso/Doctor	Dai	Untrained	Covernmental	Drivete	Non
	Nulse/Doctor	(trained and untrained)		Governmentar	1 IIvate	Institutional
Schedule Area×Post	-0.068*	0.016	0.052	-0.041	0.011	0.029
	(0.036)	(0.044)	(0.051)	(0.027)	(0.009)	(0.026)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,234	12,234	12,234	36,540	36,540	36,540
R-squared	0.070	0.191	0.220	0.176	0.077	0.198
Outcome Mean	0.069	0.596	0.335	0.202	0.034	0.763

Table 4: Impact of PESA on Choice of Delivery Care

Column(1)-Column(3) report results using DLHS-2 and DLHS-3. DLHS-1 does not give complete information on who conducted the delivery.

Delivery Conducted By-Nurse/Doctor is a dummy variable that takes the value 1 if the delivery is conducted by a trained doctor or nurse. Dai is a dummy variable that takes the value 1 if the delivery is conducted by a trained or untrained dai (midwife). Untrained is a dummy variable which takes the value 1 if the delivery is conducted by an untrained personnel. **Place of Delivery**-Governmental is a dummy variable which takes the value 1 if the place of delivery is a governmental facility. Private is a dummy variable that takes the value 1 if the place of delivery is a private facility. Non Institutional is a dummy variable which takes the value 1 if the value 1 if the delivery is non-institutional. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

	(1) Sought Treatment for Post Delivery Complications	(2) Place of Treating	(3) g Post Delivery Complications:
		Governmental	Private
Schedule Area×Post	0.021	0.118***	-0.074
	(0.030)	(0.033)	(0.056)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	14,973	5,451	5,451
R-squared	0.145	0.112	0.145
Outcome Mean	0.406	0.226	0.165

Table 5: Impact of PESA on Post Delivery Complications

*, ** and *** represent significance at .10, .05 and .01 level respectively. Robust standard errors are reported in parentheses and are clustered at the district level.

Column (2) and Column (3) report results using information from DLHS-2 and DLHS-3. DLHS-1 did not collect information on the place for treating post pregnancy complications and no information is therefore available on this for the initial years which correspond to the first round.

Sought Treatment for Post Delivery Complications is a dummy variable which takes the value 1 if a woman faced post delivery complications and sought treatment for it. Place for Treating Post Delivery Complications- Governmental is a dummy variable which takes the value 1 if a woman sought treatment for post delivery complications in a governmental facility. Private is a dummy variable which takes the value 1 if a woman sought treatment for post delivery complications in a governmental facility. Private is a dummy variable which takes the value 1 if a woman sought treatment for post delivery complications in a private facility. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

(1)	(2)	(2)				
Outcome Measure						
Pregnancy Complications	Child Died	Child Died (Within 1 Month)				
-0.086***	-0.002	-0.005				
(0.028)	(0.012)	(0.012)				
Yes	Yes	Yes				
Yes	Yes	Yes				
Yes	Yes	Yes				
37,102	$16,\!287$	16,287				
0.060	0.040	0.054				
0.405	0.050	0.038				
	(1) Pregnancy Complications -0.086*** (0.028) Yes Yes Yes 37,102 0.060 0.405	(1) (2) Outcome Me Pregnancy Complications Child Died -0.086*** -0.002 (0.028) (0.012) Yes Yes Yes Yes Yes Yes 37,102 16,287 0.060 0.040 0.405 0.050				

Table 6: Impact of PESA on Health Outcomes

*, ** and *** represent significance at .10, .05 and .01 level respectively. Robust standard errors are reported in parentheses and are clustered at the district level.

Information on the age of the child at death is reported clearly for DLHS-2 and DLHS-3. The variable on whether the child died (column (2) and column (3) is constructed using these two rounds of DLHS.

Pregnancy Complications is a dummy variable which takes the value 1 if a woman suffered from any of the following pregnancy complications-swelling of hands and feet, paleness, convulsions, excessive bleeding, malpresentation of the fetus and, weak or no movement of the fetus. **Child Died** takes the value 1 if a child died after birth. **Schedule Area** is a dummy variable that takes the value 1 if a district is schedule five. **Post** takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

	(1)	(2)	(3)	(4)	(5)	(6)
	$\mathbf{Hospital}$	Dispensary	PHC	PHSC	MCW	FWC
Schedule Area×Post	-0.001	0.005	0.000	0.024	-0.009	-0.004
	(0.003)	(0.007)	(0.007)	(0.022)	(0.009)	(0.006)
Village Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	$705,\!600$	$705,\!697$	$707,\!141$	$712,\!193$	$705,\!439$	$707,\!564$
R-squared	0.550	0.672	0.734	0.702	0.513	0.599
Outcome Mean	0.023	0.052	0.037	0.165	0.031	0.025

 Table 7: Impact of PESA on Development of Health Facility Across

 Villages (Census)

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Hospital is a dummy variable which takes the value 1 if there is a hospital located in the village. Dispensary is a dummy variable which takes the value 1 if there is a dispensary located in the village. PHC is a dummy variable which takes the value 1 if there is a Primary Health Center located in the village. PHSC is a dummy variable which takes the value 1 if there is a Primary Health Sub Centre located in the village. MCW is a dummy variable which takes the value 1 if there is a Maternal and Child Welfare Center located in the village. FWC is a dummy variable which takes the value 1 if there is a Family Welfare Center located in the village. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

Table 8: Impact of Decentralization on Reasons for Not Seeking Antenatal Care

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	\mathbf{Cost}	Quality	Necessary	Customary	Far	Family	Knowledge	Time
Schedule Area×Post	-0.180**	0.00177	0.0143	-0.0813*	0.0197	0.0231	0.0629	-0.00616
	(0.0694)	(0.0201)	(0.0742)	(0.0431)	(0.121)	(0.0379)	(0.0699)	(0.0379)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,064	5,064	5,062	5,064	5,064	5,054	5,054	5,064
R-squared	0.117	0.051	0.112	0.107	0.097	0.044	0.097	0.064

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level.

Cost is a dummy variable which takes the value 1 if a woman stated *cost too much* as a reason for not seeking ANC. **Quality** is a dummy variable which takes the value 1 if a woman stated *poor quality service* as reason for not seeking ANC. **Necessary** is a dummy variable which takes the value 1 if a woman stated ANC is *not necessary* as a reason for not seeking it. **Customary** is a dummy variable which takes the value 1 if a woman stated ANC is *not necessary* as a reason for not seeking it. **Far** is a dummy variable that takes the value 1 if a woman stated ANC being *too far* or there being *no transport* as a reason for not seeking it. **Family** is a dummy variable which takes the value 1 if a woman's *family did not allow* her to seek ANC services during her pregnancy. **Knowledge** is a dummy variable which takes the value 1 if a woman stated *no time to go* as a reason for not seeking ANC. **Schedule Area** is a dummy variable that takes the value 1 if a dummy variable that takes the value 1 if a dummy variable which takes the value 1 if a dummy variable which takes the value 1 if a dummy variable which takes the value 1 if a woman states *lack of knowledge* as a reason for not seeking ANC. **Time** is a dummy variable which takes the value 1 if a dummy variable that takes the value 1 if a district is schedule five. **Post** takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts.

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8 Appendix



Figure A.1: Schedule Five Districts and PESA Coverage The white in the map represents those areas with no PESA implementation. In our analysis, we only use data for the states which have schedule areas in them.

	(1)	(2)	(3)	(4)
	Non Schedule Area	Schedule Area	Difference	t-value
Went for ANC	0.46	0.45	0.01	1.91
First ANC Visit: Within First 3 Months	0.19	0.17	0.02^{***}	3.40
First ANC Visit: Within First 6 Months	0.39	0.38	0.01^{*}	2.05
No. of ANC Visits: 3	0.12	0.12	0.00	0.38
No. of ANC Visits: 4	0.05	0.05	-0.00	-1.05
Got TT Shot	0.62	0.61	0.01^{*}	2.05
No. of TT Shots: 2	0.95	0.91	0.03^{*}	2.46
Received IFA (tablets & bottles)	0.75	0.66	0.09^{***}	4.36
IFA Tablets Consumed: 90 to 120	0.01	0.03	-0.03***	-15.00
Place for Seeking ANC: Governmental	0.28	0.29	-0.01*	-2.57
Place for Seeking ANC: Private	0.15	0.11	0.04^{***}	10.13
Place for Seeking ANC: Non-Institutional	0.02	0.04	-0.02***	-10.60
Exclusive Breastfeeding: At least 4 Months	0.75	0.71	0.04^{***}	4.89
Exclusive Breastfeeding: 6 Months	0.31	0.31	0.01	0.94
Faced Pregnancy Complications	0.38	0.44	-0.06***	-8.84
Sought Treatment for Pregnancy Complications	0.45	0.39	0.05^{***}	6.00
Place for Treating Pregnancy Complications: Governmental	0.17	0.27	-0.10***	-3.46
Place for Treating Pregnancy Complications: Private	0.40	0.17	0.23^{***}	8.15
Sought Treatment for Post Delivery Complications	0.42	0.37	0.04^{***}	4.57
Place for Treating Post Delivery Complications: Governmental	0.18	0.15	0.02	0.81
Place for Treating Post Delivery Complications: Private	0.35	0.22	0.13^{***}	4.04
Delivery Conducted by: Doctor/Nurse	0.11	0.11	-0.01	-0.37
Delivery Conducted by: Dai	0.50	0.62	-0.12^{***}	-4.38
Delivery Conducted by: Untrained	0.39	0.26	0.12^{***}	4.98
Place of Delivery: Governmental	0.23	0.15	0.09^{***}	16.09
Place of Delivery: Private	0.05	0.04	0.01^{***}	3.74
Place of Delivery: Non-Institutional	0.72	0.81	-0.10***	-16.77

Table A.2: **PESA implementation across Schedule Five Areas**

Schedule Five State	Year of PESA Implementation
Himachal Pradesh	1999
Madhya Pradesh	1999
Rajasthan	1999
Andhra Pradesh	2000
Gujarat	2000
Orissa	2001
Chhattisgarh	2004
Maharashtra	2006
Jharkhand	2009

	(1)	(2) (3)		(4)	(5)
	Received ANC	Received A	NC Within:	No. of A	ANC Visits:
		First 3 Months	First 6 Months	3 Visits	4 Visits
Schedule Area×7 Yrs & More After	0.094^{**}	0.048	0.084^{**}	0.056^{**}	0.007
	(0.041)	(0.035)	(0.039)	(0.026)	(0.019)
Schedule Area×6 Yrs After	0.119^{***}	0.063^{*}	0.104^{**}	0.059^{**}	0.018
	(0.046)	(0.036)	(0.043)	(0.030)	(0.021)
Schedule Area×5 Yrs After	0.114^{**}	0.062	0.108^{**}	0.033	0.026
	(0.048)	(0.044)	(0.045)	(0.035)	(0.024)
Schedule Area×5 Yrs After	0.088^{*}	0.068*	0.068	0.040	0.009
	(0.051)	(0.037)	(0.044)	(0.035)	(0.024)
Schedule Area×4 Yrs After	0.055	-0.010	0.037	0.021	-0.016
	(0.045)	(0.040)	(0.044)	(0.042)	(0.022)
Schedule Area×3 Yrs After	0.052	-0.021	0.036	-0.008	0.001
	(0.035)	(0.036)	(0.032)	(0.035)	(0.026)
Schedule Area×2 Yrs After	0.036	0.011	0.003	0.013	-0.002
	(0.037)	(0.035)	(0.038)	(0.041)	(0.026)
Schedule Area×1 Yr After	0.035	0.043	0.018	-0.011	0.018
	(0.033)	(0.031)	(0.029)	(0.029)	(0.019)
Schedule Area×1 Yr Before	0.035	0.043	0.018	-0.011	0.018
	(0.033)	(0.031)	(0.029)	(0.029)	(0.019)
Schedule Area×2 Yrs Before	0.040	0.039	0.030	-0.029	0.033^{*}
	(0.031)	(0.031)	(0.028)	(0.029)	(0.019)
Schedule Area×3 Yrs Before	0.011	0.033	0.001	-0.026	0.024
	(0.032)	(0.030)	(0.030)	(0.030)	(0.020)
Schedule Area×4 Yrs Before	0.001	0.030	-0.019	-0.048	0.023
	(0.033)	(0.030)	(0.031)	(0.029)	(0.021)
Schedule Area×5 Yrs Before	-0.013	0.013	-0.027	-0.009	0.022
	(0.033)	(0.033)	(0.032)	(0.032)	(0.025)
Schedule Area×6 Yrs Before	0.050	-0.018	0.037	0.011	0.023
	(0.063)	(0.049)	(0.059)	(0.048)	(0.034)
Schedule Area×7 Yrs & More Before	-0.005	0.001	0.006	0.007	0.003
	(0.021)	(0.019)	(0.019)	(0.021)	(0.014)
Controls	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	41,806	41,806	41,806	41,806	41,806
R-squared	0.225	0.141	0.193	0.231	0.235

Table A.3: Parallel Trends: Impact of PESA on Seeking Antenatal Care

	(1)	(2)	(3)	(4)
	Tetan	us Toxoid (TT)	Iron 1	Folic Acid (IFA)
	Taken	No. of Injections: 2	Taken	No. of Tabs: 90-120
Schedule Area×7 Yrs & More After	0.117***	0.226^{***}	0.162^{***}	0.099***
	(0.042)	(0.082)	(0.056)	(0.034)
Schedule Area×6 Yrs After	0.122^{***}	0.247^{***}	0.156^{***}	0.091^{**}
	(0.046)	(0.091)	(0.055)	(0.039)
Schedule Area×5 Yrs After	0.125^{**}	0.154	0.172^{***}	0.094^{*}
	(0.051)	(0.100)	(0.057)	(0.050)
Schedule Area×4 Yrs After	0.060	-0.045	0.157^{**}	0.031
	(0.048)	(0.110)	(0.066)	(0.054)
Schedule Area×3 Yrs After	0.054	0.061	0.190^{***}	0.043
	(0.038)	(0.098)	(0.052)	(0.042)
Schedule Area $\times 2$ Yrs After	0.025	-0.002	0.117^{***}	0.008
	(0.032)	(0.080)	(0.043)	(0.035)
Schedule Area $\times 1$ Yr After	-0.006	0.007	0.105^{**}	0.014
	(0.033)	(0.082)	(0.041)	(0.039)
Schedule Area $\times 1$ Yr Before	-0.019	-0.021	0.126^{**}	0.017
	(0.030)	(0.067)	(0.062)	(0.023)
Schedule Area×2 Yrs Before	0.012	-0.026	0.026	0.006
	(0.027)	(0.064)	(0.059)	(0.024)
Schedule Area×3 Yrs Before	-0.004	-0.027	0.120	-0.006
	(0.028)	(0.068)	(0.073)	(0.026)
Schedule Area×4 Yrs Before	0.001	-0.070	0.212^{**}	-0.004
	(0.030)	(0.075)	(0.102)	(0.027)
Schedule Area×5 Yrs Before	-0.065*	-0.133*	-0.018	-0.013
	(0.035)	(0.076)	(0.077)	(0.028)
Schedule Area $\times 6$ Yrs Before	0.100^{*}	0.162	0.255	-0.041
	(0.060)	(0.142)	(0.162)	(0.035)
Schedule Area $\times 7$ Yrs & More Before	0.023	0.067	-	-0.006
	(0.020)	(0.048)		(0.013)
Controls	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes
Observations	$41,\!806$	38,042	$16,\!442$	$34,\!836$
R-squared	0.143	0.133	0.190	0.253

Table A.4: Impact of PESA on ANC Practices

	(1)	(2)	(3)
	Place for S	eeking A	ntenatal Care
	Governmental	Private	Non-institutional
Schedule Area×7 & More Yrs After	0.130***	0.002	-0.026
	(0.040)	(0.028)	(0.016)
Schedule Area $\times 6$ Yrs After	0.151^{***}	0.010	-0.022
	(0.044)	(0.026)	(0.021)
Schedule Area $\times 5$ Yrs After	0.118^{***}	0.023	0.014
	(0.042)	(0.026)	(0.023)
Schedule Area×4 Yrs After	0.070	0.003	0.009
	(0.054)	(0.027)	(0.028)
Schedule Area×3 Yrs After	0.007	0.020	0.036
	(0.045)	(0.026)	(0.025)
Schedule Area $\times 2$ Yrs After	0.038	-0.022	0.008
	(0.042)	(0.031)	(0.024)
Schedule Area $\times 1$ Yr After	0.061	-0.017	-0.007
	(0.044)	(0.037)	(0.025)
Schedule Area $\times 1$ Yr Before	0.040	0.016	0.001
	(0.036)	(0.030)	(0.021)
Schedule Area×2 Yrs Before	0.037	0.033	0.006
	(0.037)	(0.032)	(0.022)
Schedule Area×3 Yrs Before	0.001	0.049	-0.002
	(0.037)	(0.034)	(0.024)
Schedule Area×4 Yrs Before	0.004	0.049	-0.010
	(0.037)	(0.032)	(0.021)
Schedule Area×5 Yrs Before	0.014	0.018	-0.012
	(0.038)	(0.032)	(0.021)
Schedule Area×6 Yrs Before	0.046	0.039	-0.007
	(0.074)	(0.029)	(0.021)
Schedule Area×7 Yrs & More Before	-0.004	0.011	-0.020
	(0.024)	(0.021)	(0.015)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	41,720	41,720	41,720
R-squared	0.171	0.184	0.065

Table A.5: Parallel Trends: Impact of PESA on Place for Seeking Antenatal Care

	(1)	(2)	(3)
	Ex	clusive Breastfeedi	ing:
	At least 4 Months	At least 5 Months	At least 6 Months
Schedule Area $\times 7$ & More Yrs After	-0.012	-0.027	-0.033
	(0.079)	(0.072)	(0.057)
Schedule Area $\times 6$ Yrs After	0.001	-0.045	-0.035
	(0.079)	(0.071)	(0.056)
Schedule Area $\times 5$ Yrs After	0.004	-0.008	-0.030
	(0.086)	(0.073)	(0.056)
Schedule Area×4 Yrs After	0.114	0.015	-0.008
	(0.081)	(0.081)	(0.071)
Schedule Area $\times 3$ Yrs After	0.110	-0.031	-0.137**
	(0.082)	(0.089)	(0.069)
Schedule Area $\times 2$ Yrs After	0.079	-0.016	-0.043
	(0.059)	(0.056)	(0.051)
Schedule Area $\times 1$ Yr After	-0.060	-0.030	-0.028
	(0.074)	(0.071)	(0.055)
Schedule Area $\times 1$ Yr Before	-0.122**	-0.135**	-0.115**
	(0.058)	(0.061)	(0.048)
Schedule Area $\times 2$ Yrs Before	0.070	-0.101	-0.139***
	(0.056)	(0.061)	(0.049)
Schedule Area×3 Yrs Before	-0.068	-0.080	-0.121**
	(0.060)	(0.065)	(0.050)
Schedule Area×4 Yrs Before	-0.097	-0.093	-0.110**
	(0.060)	(0.064)	(0.051)
Schedule Area $\times 5$ Yrs Before	-0.079	-0.050	-0.041
	(0.067)	(0.078)	(0.063)
Schedule Area $\times 6$ Yrs Before	-0.044	0.013	-0.026
	(0.085)	(0.095)	(0.090)
Schedule Area $\times 7$ Yrs & More Before	-0.037	-0.012	-0.001
	(0.048)	(0.053)	(0.039)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	$21,\!638$	$21,\!638$	$21,\!638$
R-squared	0.175	0.161	0.129

Table A.6: Parallel Trends: Impact of PESA on Breastfeeding Behaviour of Mothers

	(1)	(2)	(3)	(4)	(5)	(6)
	D	elivery Conducted by:		Pla	ce of Deliv	ery:
	Nurse/Doctor	Dai	Untrained	Governmental	Private	Non
	Nulse/ Doctor	(trained and untrained)	Ontrained	Governmentar	Tilvate	Institutional
Schedule Area $\times 7$ & More Yrs After	-0.060	-0.018	0.078	-0.022	0.001	0.021
	(0.046)	(0.079)	(0.081)	(0.044)	(0.016)	(0.045)
Schedule Area×6 Yrs After	-0.074	0.006	0.069	0.034	-0.002	-0.033
	(0.045)	(0.076)	(0.079)	(0.037)	(0.015)	(0.037)
Schedule Area×5 Yrs After	-0.108**	-0.018	0.126	0.026	-0.003	-0.023
	(0.050)	(0.078)	(0.082)	(0.037)	(0.017)	(0.038)
Schedule Area×4 Yrs After	-0.033	0.007	0.026	0.046	0.006	-0.056
	(0.051)	(0.076)	(0.080)	(0.043)	(0.024)	(0.046)
Schedule Area×3 Yrs After	-0.064	0.084	-0.020	-0.014	-0.008	0.016
	(0.043)	(0.073)	(0.079)	(0.041)	(0.025)	(0.042)
Schedule Area×2 Yrs After	-0.024	0.000	0.024	-0.025	0.013	0.008
	(0.044)	(0.089)	(0.084)	(0.037)	(0.020)	(0.036)
Schedule Area×1 Yr After	-0.083**	0.027	0.056	0.070^{**}	0.007	-0.078**
	(0.041)	(0.059)	(0.064)	(0.027)	(0.015)	(0.030)
Schedule Area×1 Yr Before	-0.037	0.010	0.027	0.018	-0.027	0.011
	(0.059)	(0.093)	(0.065)	(0.027)	(0.017)	(0.028)
Schedule Area×2 Yrs Before	0.045	0.056	-0.101	0.050^{*}	-0.033*	-0.016
	(0.050)	(0.076)	(0.083)	(0.026)	(0.018)	(0.026)
Schedule Area×3 Yrs Before	0.055	-0.105	0.050	0.059^{**}	-0.031	-0.026
	(0.064)	(0.128)	(0.126)	(0.028)	(0.020)	(0.028)
Schedule Area×4 Yrs Before	0.046	-0.068	0.022	0.069^{**}	-0.042**	-0.027
	(0.052)	(0.119)	(0.106)	(0.031)	(0.020)	(0.031)
Schedule Area×5 Yrs Before	0.057	0.071	-0.128	0.082^{***}	-0.044**	-0.039
	(0.066)	(0.119)	(0.125)	(0.032)	(0.022)	(0.033)
Schedule Area×6 Yrs Before	-0.430**	0.513***	-0.083	0.062	-0.052	-0.017
	(0.175)	(0.132)	(0.156)	(0.061)	(0.039)	(0.070)
Schedule Area $\times 7$ Yrs & More Before	-	-	-	-0.002	0.024^{*}	-0.024
				(0.019)	(0.013)	(0.019)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,234	12,234	12,234	36,540	36,540	36,540
R-squared	0.074	0.193	0.223	0.180	0.080	0.201

Table A.7: Parallel Trends: Impact of PESA on Choice of Delivery Care

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level.

Years 1995 to 2007 in the interaction terms represent births in those years for the pre-intervention sample.

Column(1)-Column(3) report results using DLHS-2 and DLHS-3. DLHS-1 does not give complete information on who conducted the delivery.

	(1)	(2)	(3)
	Sought Treatment for Post Delivery Complications	Place of Treating F	ost Delivery Complications:
	· · ·	Governmental	Private
Schedule Area×7 & More Yrs After	0.102*	0.206***	-0.022
	(0.056)	(0.067)	(0.080)
Schedule Area×6 Yrs After	0.049	0.162^{**}	-0.037
	(0.061)	(0.065)	(0.080)
Schedule Area×5 Yrs After	0.056	0.183^{**}	-0.055
	(0.066)	(0.071)	(0.082)
Schedule Area×4 Yrs After	0.021	0.075	-0.011
	(0.076)	(0.083)	(0.082)
Schedule Area×3 Yrs After	0.089	0.153^{**}	0.041
	(0.064)	(0.064)	(0.082)
Schedule Area×2 Yrs After	-0.018	0.090	0.011
	(0.071)	(0.069)	(0.076)
Schedule Area×1 Yr After	0.090*	0.165^{***}	-0.020
	(0.053)	(0.053)	(0.085)
Schedule Area×1 Yr Before	0.068	0.076	-0.046
	(0.048)	(0.079)	(0.098)
Schedule Area×2 Yrs Before	0.087*	0.095	0.205*
	(0.046)	(0.089)	(0.115)
Schedule Area×3 Yrs Before	0.076	0.027	0.241*
	(0.046)	(0.085)	(0.128)
Schedule Area×4 Yrs Before	0.083	-0.056	0.182
	(0.051)	(0.107)	(0.135)
Schedule Area×5 Yrs Before	0.044	-0.160	0.160
	(0.059)	(0.172)	(0.237)
Schedule Area×6 Yrs Before	-0.004	0.062	-0.072
	(0.077)	(0.180)	(0.238)
Schedule Area×7 Yrs & More Before	-0.027	-	-
	(0.031)		
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	14,973	5,451	5,451
R-squared	0.146	0.116	0.150

Table A.8: Parallel Trends: Impact of PESA on Post Delivery
Complications

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Column (2) and Column (3) report results using information from DLHS-2 and DLHS-3. DLHS-1 did not collect information on the place for treating post pregnancy complications and no information is therefore available on this for the initial years which correspond to the first round.

	(1)	(2)	(2)
	0	Outcome Me	asure
	Pregnancy Complications	Child Died	Child Died (Within 1 Month)
Schedule Area×7 & More Yrs After	-0.106**	-0.034	-0.039
	(0.044)	(0.027)	(0.025)
Schedule Area×6 Yrs After	-0.109**	-0.025	-0.030
	(0.048)	(0.028)	(0.024)
Schedule Area×5 Yrs After	-0.059	-0.040	-0.024
	(0.053)	(0.029)	(0.025)
Schedule Area×4 Yrs After	0.010	-0.012	-0.017
	(0.051)	(0.030)	(0.028)
Schedule Area×3 Yrs After	-0.019	-0.041	-0.032
	(0.048)	(0.026)	(0.024)
Schedule Area×2 Yrs After	-0.050	-0.031	-0.031
	(0.043)	(0.020)	(0.019)
Schedule Area $\times 1$ Yr After	0.038	-0.014	-0.019
	(0.042)	(0.025)	(0.023)
Schedule Area $\times 1$ Yr Before	-0.044	-0.036	-0.032
	(0.030)	(0.029)	(0.027)
Schedule Area×2 Yrs Before	-0.043	-0.031	-0.027
	(0.030)	(0.027)	(0.025)
Schedule Area×3 Yrs Before	-0.015	-0.078**	-0.071*
	(0.030)	(0.039)	(0.039)
Schedule Area×4 Yrs Before	0.012	-0.050	-0.046
	(0.035)	(0.051)	(0.050)
Schedule Area×5 Yrs Before	-0.011	0.041	0.046
	(0.040)	(0.067)	(0.066)
Schedule Area×6 Yrs Before	0.088	-0.023	-0.018
	(0.065)	(0.037)	(0.035)
Schedule Area $\times 7$ Yrs & More Before	0.062^{**}	-	-
	(0.024)		
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	$37,\!102$	$16,\!287$	16,287
R-squared	0.061	0.042	0.056

Table A.9: Parallel Trends: Impact of PESA on Health Outcomes

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*, ** and *** represent significance at .10, .05 and .01 level respectively. Robust standard errors are reported in parentheses and are clustered at the district level.

Pregnancy complications (column (1)) include issues such as swelling of hands and feet, paleness, convulsions, excessive bleeding, malpresentation of the fetus and, weak or no movement of the fetus.

Information on the age of the child at death is reported clearly for DLHS-2 and DLHS-3. The variable on whether the child died (column (2) and column (3) is constructed using these two rounds of DLHS.



Figure A.2: Parallel Trends: Impact of PESA on Receiving ANC



Figure A.3: Parallel Trends: Impact of PESA on Receiving First ANC Within 6 Months



Figure A.4: Parallel Trends: Impact of PESA on Going for Atleast 3 ANC Visits



Figure A.5: Parallel Trends: Impact of PESA on Taking TT Vaccination



Figure A.6: Parallel Trends: Impact of PESA on Taking 2 TT Injections



Figure A.7: Parallel Trends: Impact of PESA on Taking IFA (tablets or bottles)



Figure A.8: Parallel Trends: Impact of PESA on Taking IFA Tables (90 to 120)



Figure A.9: Parallel Trends: Impact of PESA on Going to Governmental Facilities for ANC



Figure A.10: Parallel Trends: Impact of PESA on Going to Governmental Facilities for Post Delivery Complications



Figure A.11: Parallel Trends: Impact of PESA on Facing Pregnancy Complications

	(1)	(9)	(3)	(4)	(5)
	(1) D	- ⁽²⁾	(3)	(4)	(0)
	Received ANC	Received A	NC Within:	No. of A	NC Visits:
		First 3 Months	First 6 Months	3 Visits	4 Visits
Panel A: Gardener's Two Stage DiD					
Schedule Area×Post	0.127**	0.0264	0.120**	0.0778^{***}	0.0124
	(0.0506)	(0.0250)	(0.0517)	(0.0264)	(0.0144)
Controls	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	41,807	41,807	41,807	37,625	$37,\!625$
Panel B: DiD with State-Year of Birth Fixed Effects					
Schedule Area×Post	0.0525^{*}	-0.000513	0.0498*	0.0462^{***}	-0.0241**
	(0.0287)	(0.0196)	(0.0268)	(0.0165)	(0.0101)
Controls	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
State×Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	41,806	41,806	41,806	37,623	37,623
R-squared	0.230	0.142	0.196	0.094	0.069

Table A.10: Robustness: Impact of PESA on Seeking Antenatal Care

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

Table A.11: Robustness: Impact of PESA on ANC Practices

	(1) (2)		(3)		(4)
	Tetanus Toxoid (TT)			Iror	1 Folic Acid (IFA)
	Taken	No. of Injections: 2		Taken	Number of Tabs: 90-120
Panel A: Gardener's Two Stage DiD					
Schedule Area×Post	0.0962**	0.0988*		0.156^{***}	0.0962***
	(0.0390)	(0.0574)		(0.0395)	(0.0217)
Controls	Yes	Yes		Yes	Yes
District Fixed Effects	Yes	Yes		Yes	Yes
Year of Birth Fixed Effects	Yes	Yes		Yes	Yes
Observations	41,807	38,043		16,445	34,836
Panel B: DiD with State-Year of Birth Fixed Effects					
Schedule Area×Post	0.0596**	0.103**		0.0450	0.0455***
	(0.0275)	(0.0521)		(0.0335)	(0.0159)
Controls	Yes	Yes		Yes	Yes
District Fixed Effects	Yes	Yes		Yes	Yes
Year of Birth Fixed Effects	Yes	Yes		Yes	Yes
State×Year of Birth Fixed Effects	Yes	Yes		Yes	Yes
Observations	41,806	38,042		16,442	34,838
R-squared	0.147	0.137		0.196	0.266

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

Table A.12:	Robustness:	Impact	of PESA	on Place	for	Seeking	Antena	ital
			Care					

	(1)	(2)	(3)
	Place for	Seeking Ar	ntenatal Care
	Governmental	Private	Non-institutional
Panel A: Gardener's Two Stage DiD			
Schedule Area×Post	0.158^{***}	-0.0378**	0.00275
	(0.0527)	(0.0151)	(0.0127)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	41,721	41,721	41,721
Panel B:DiD with State-Year of Birth Fixed Effects			
Schedule Area×Post	0.0761^{***}	-0.0293**	-0.000889
	(0.0248)	(0.0127)	(0.0102)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
State×Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	41,720	41,720	41,720
R-squared	0.176	0.189	0.076

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

Table A.13: Robustness: Impact of PESA on Breastfeeding Behaviour of Mothers

	(1)	(2)	(3)
	Exe	clusive Breastfeedi	ng:
	At least 4 Months	At least 5 Months	At least 6 Months
Panel A: Gardener's Two Stage DiD			
Schedule Area×Post	0.0340	-0.0120	-0.000357
	(0.0540)	(0.0567)	(0.0474)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	$21,\!641$	$21,\!641$	$21,\!641$
Panel B: DiD with State-Year of Birth Fixed Effects			
Schedule Area×Post	0.138^{***}	0.0823^{*}	0.0489
	(0.0458)	(0.0481)	(0.0390)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
State×Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	$21,\!639$	21,639	$21,\!639$
R-squared	0.187	0.169	0.139

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

	(1)	(2)	(3)	(4)	(5)	(6)	
	L	Delivery Conducted by:		Place of Delivery:			
	Nurse/Doctor	Dai	Untrained	Governmental	Private	Non	
	Traibe/ Doctor	(trained and untrained)	onoranioa	Governmental	1 mate	Institutional	
Panel A: Gardener's Two Stage DiD							
Schedule Area×Post	0.0158	-0.0505	0.0348	-0.0808**	0.0106	0.0682^{**}	
	(0.0187)	(0.0541)	(0.0480)	(0.0343)	(0.00992)	(0.0324)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	12,244	12,244	12,244	36,541	36,541	36,541	
Panel B: DiD with State-Year of Birth Fixed Effects							
Schedule Area×Post	-0.0659**	0.0223	0.0436	0.00809	0.00439	-0.0122	
	(0.0330)	(0.0443)	(0.0486)	(0.0217)	(0.00688)	(0.0229)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	
Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	
State×Year of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	
Observations	12,233	12,233	12,233	36,539	36,539	36,539	
R-squared	0.077	0.196	0.225	0.188	0.088	0.209	

Table A.14: Robustness: Impact of PESA on Choice of Delivery Care

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level.

Column(1)-Column(3) report results using DLHS-2 and DLHS-3. DLHS-1 does not give complete information on who conducted the delivery.

Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

Table A.15: Robustness: Impact of PESA on Post Delivery Complications

	(1)	(2)	(3)
	Sought Treatment for Post Delivery Complications	Place of Treating Post Delivery Complications:	
		Governmental	Private
Panel A: Gardener's Two Stage DiD			
Schedule Area×Post	0.0393	0.0568*	-0.00180
	(0.0595)	(0.0300)	(0.0359)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	14,981	5,467	5,467
Panel B: DiD with State-Year of Birth Fixed Effects			
Schedule Area×Post	0.0285	0.122^{***}	-0.0826
	(0.0323)	(0.0328)	(0.0554)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
State×Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	14,975	5,451	5,451
R-squared	0.152	0.125	0.153

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level.

Column (2) and Column (3) report results using information from DLHS-2 and DLHS-3. DLHS-1 did not collect information on the place for treating post pregnancy complications and no information is therefore available on this for the initial years which correspond to the first round.

Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

	(1)	(2)	(3)
	Health Outcomes		
	Pregnancy Complications	Child Mortality	Child Mortality (within 1 month)
Panel A: Gardener's Two Stage DiD			
Schedule Area×Post	-0.105**	-0.013	-0.017*
	(0.043)	(0.010)	(0.009)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	37,103	16,290	16,290
Panel B: DiD with State-Year of Birth Fixed Effects			
Schedule Area×Post	-0.080***	-0.005	-0.008
	(0.030)	(0.013)	(0.013)
Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year of Birth Fixed Effects	Yes	Yes	Yes
State×Year of Birth Fixed Effects	Yes	Yes	Yes
Observations	37,101	16,287	16,287
R-squared	0.064	0.046	0.060

Table A.16: Robustness: Impact of PESA on Health Outcomes

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level. Pregnancy complications (column (1)) include issues such as swelling of hands and feet, paleness, convulsions, excessive bleeding, malpresentation of the fetus and, weak or no movement of the fetus.

Information on the age of the child at death is reported clearly for DLHS-2 and DLHS-3. The variable on whether the child died (column (2) and column (3) is constructed using these two rounds of DLHS.

Schedule Area is a dummy variable that takes the value 1 if a district is schedule five. Post takes the value 1 for the years after the implementation of PESA in a given state. The interaction of Schedule Area and Post captures the differential effect of the implementation of PESA on ST women in schedule five districts in comparison to ST women in non-schedule five districts.

Table A.17: Selection into Pregnancy Based on Implementation of PESA in Schedule Five Districts

	(1)	(2)	
	Child Born in Year 't'		
	Last Birth Reported for the Mother	All Births Reported for the Mother	
Schedule Area×PESA Implemented in Year 't-1'	-0.0174	-0.0274	
	(0.0180)	(0.0209)	
Controls	Yes	Yes	
District Fixed Effects	Yes	Yes	
Year of Birth Fixed Effects	Yes	Yes	
Observations	41,806	57,981	
R-squared	0.221	0.184	

*, ** and *** represent significance at .10, .05 and .01 level respectively.

Robust standard errors are reported in parentheses and are clustered at the district level.