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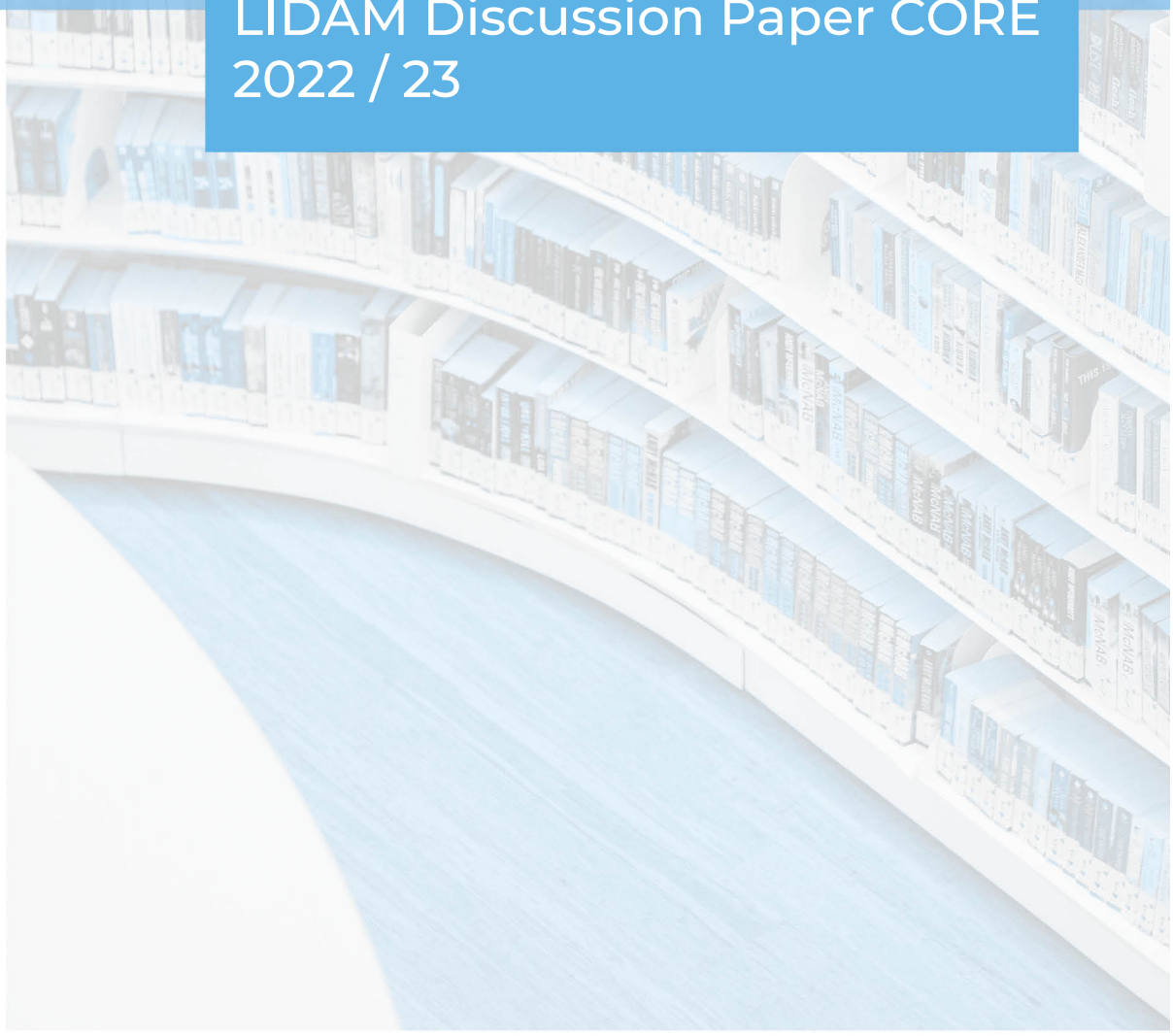

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Impact of Forced Sterilization on Female Labor Market Outcomes: Evidence from India

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Abstract

I investigate the impact of the 1975-76 forced sterilization campaign carried out by the Indira Gandhi government in India on women's long-run labor market outcomes. Using large data samples from India and accounting for endogeneity concerns, I find that exposure to the forced sterilization campaign at the district-level reduces long-term labor market participation by 4.5% and 1.5% in agricultural and sales occupations and increases unemployment by 4.7% and I elucidate mechanisms. The proposed mechanism of this is the disutility derived from having a working wife. This result is contrary to existing literature that indicates that women's access to contraception increases their labor market participation. My results suggest that giving access to contraception to women is not sufficient to improve their market outcomes.

JEL: 112, 118, J13, J21, 015, 017

CORE classification : Public, Health, Labor and Demographic Economics

Key words: India, Emergency, family planning, sterilization, labor market outcomes

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1 Introduction

The goal of early governmental family planning and contraceptive programs was to reduce the population growth rate, which was also a concern of the Indian government since independence in 1947. However, studies have also shown that contraceptive programs can have an impact on outcomes other than population growth, particularly on women's labor market outcomes (Goldin and Katz 2002; Miller 2010). These studies sampled women with access to college education and labor markets who were given the choice to adopt contraception while the long-term implications of the Indian family planning policy in 1975-77 on women's labor market programs are yet to be measured. Specifically, the context of contraceptive programs in India provides a setting contrary to that of those mentioned in the studies above. From the 1960s, India paved the way to start a state-sponsored family planning program with the singular aim of slowing the population growth rate. Average birth and fertility rates have since declined throughout the country at varying speeds in different states.

The primary form of contraception promoted by the government of India has been sterilization. In the program's early years, it was largely apolitical but target driven. Women were administered Intra-uterine Devices (IUDs) as contraceptives[1]. Clinics providing sterilization services were established in the 1960s and quotas for sterilizations were declared in 1966 (Connelly 2006). Family planning was politicized in 1971, and the high population growth rate was touted by the government as an incipient economic disaster. Under the then prime minister Indira Gandhi, the government took note of the successful vasectomy camps in the state of Kerala, Sanjay Gandhi directed increased governmental focus towards family planning (Jaffrelot and Anil 2021). The policies were enacted by the central government and executed by local authorities at the district level. High-intensity mobile camps with temporary healthcare workers set up field operations. Between 1971 and 1973, 5 million sterilizations were conducted in the country. Consequently, the fifth five-year plan (1974-78) instituted directives for state legislatures to implement compulsory sterilization at the district level.

In 1975, Indira Gandhi declared a state of emergency in the country, expanding the central government's powers. The government rolled out a compulsory sterilization program in the same year, and it had long-term implications on socio-economic spheres particularly those of women and children. Individuals were provided diverse incentives to undergo the procedure.

1. This need for contraception was pushed by foreign aid donors such as the United States government under Lyndon B. Johnson and the World Bank under Robert S. McNamara both of whom threatened to withhold food aid unless contraceptives and sterilization targets were met (Connelly (2008)).

The program urged for compulsory sterilization to be administered to all households with three or more kids but in effect was imposed on many households with two or more children. The implementation of the forced sterilization campaign in 1975-77 over a 21-month period was carried out at the district level by the district collector who received targets for numbers of sterilizations from the state Chief Minister who in turn was acting on orders of the central government. However, the manner of achieving these targets was left to state governments and under the purview of the centrally charged district collectors. Due to the localization of program implementation, different districts had varying degrees of sterilization intensities.

The Government sought to "*reshape its family planning program by making plans to send as many as 130,000 "multipurpose" health workers into villages to deal with child health, maternity care, malaria, and smallpox control as well as family planning*". Given that vasectomies are more easily administered, this policy primarily affected men, and nearly 8.3 million men were sterilized from 1975 to 1977. September 1976 recorded 1.7 million sterilizations which equaled the annual averages of the ten preceding years. The backlash to these policies led to the downfall of the Indira Gandhi government and subsequent governments emphasized *voluntary* female sterilization. India officially abolished national method-specific quotas in 1996. However, all decisions (and targets) regarding family-planning policy were decentralized though the basic architecture of the system remains largely intact (Qadeer 1998). Even though men were the primary targets of the 1975-77 campaign, the government also conducted large-scale hysterectomy camps both during the emergency and for several decades after. Of note is also the scale and undemocratic nature of the sterilization campaign. While countries like Mexico, and Peru[2] and China[3] have carried out forced sterilization, the 1975-77 campaign was unique both in its use of undemocratic methods in an otherwise democratic state and the number of achieved sterilizations over the 21-month period.

This paper exploits the dramatic change in the policy of 1975-77 to evaluate the effect of coercive sterilizations during this campaign (tubectomies and hysterectomies) aimed at reducing

2. Between 1980 and 2000, multiple governments and the one under Fujimori's two autocratic administrations forcibly sterilized more than 300,000 women and men in the name of multilateral agreements. Ballón Gutiérrez and Ortega-Breña (2022)

3. The Uyghur Tribunal Judgement and Dyer (2021) document tools of the Chinese governmental policy on Uyghurs include sterilization by removal of wombs, widespread forced insertion of effectively removable IUDs equating to mandatory sterilization and forced abortions. To note is also China's one-child policy (1979-2015) saw over 300 million Chinese women fitted with intrauterine devices modified to be irremovable without surgery, over 100 million sterilizations, and over 300 million abortions. Many of these procedures were coerced (Moore 2013).

population growth in India on women's long-term labor market outcomes. Specifically, it defines that forced sterilization exogenously ends women's fertility, and women's fertility in India is argued to contribute to her "value" and bargaining power within the household. The impact of "reproductive failures" on South Asian women's "value" within the household was studied by Cain (1986). Within the Indian context, birthing female children, lack of living sons, infertility, and exogenous ending of fertility are collectively considered a woman's "reproductive failure". Thus regardless of which partner is infertile, a woman's "value" as a spouse is and her intra-household bargaining power are severely eroded Agarwal (1997). This would then be a determinant of her labor market participation or lack thereof through her reduced bargaining power.

Several sources of data are used including data on women's contraceptive use from the Integrated Public Use Microdata Series (IPUMS) Demographic and Health Surveys (DHS), and the Indian district-level demographic characteristics from the 1981 District Census Handbooks which were digitized for this study. Using Difference-in-Differences, I find that exposure to forced sterilization by way of her age and district of residence, reduces her long-term labor market outcomes. This suggests that an exogenous threat to a woman's value within her household affects her workforce participation. A potential confounding factor could be women who were voluntarily sterilized due to the increased availability of contraceptive methods and sterilization drives, which is ameliorated in parts by using age cohorts and districts of residence. Although the forced sterilization campaign ended in 1977, successive governments advocated female sterilization albeit not forced. Large publicity campaigns together with strong monetary incentives were used to spur demand (Vicziany 1982; Harkavy and Roy 2007). These information campaigns and mass sterilization camps continued until 2014. The central government banned mass sterilization camps in 2014, after a six-hour-long mass sterilization camp, in which a surgeon operated on 83 women, critically hospitalizing 69 of them and causing the deaths of 10 others.

However, female sterilization remains the primary choice of contraception in India which goes back to the government media campaigns, counselling by healthcare providers or the persistence of previous policies. From the recent IPUMS Demographic and Health Survey's India module, more than one-third of all married older women are sterilized but only 1 % of men go through vasectomies. This coupled with a culture steeped in patriarchal norms, leaves women with little information or choice in the method of contraception adopted by the household. This unique policy setting generates two questions. How does a coercive sterilization campaign in the Indian setting affect women's long-term socio-economic outcomes? Specifically, how does it

affect women's labor market outcomes? And what are the mechanisms by which these outcomes are affected? I answer these questions by first highlighting the literature this paper contributes to as well as the gaps therein and then the empirical methods by which I answer these questions.

This paper contributes to three streams of literature; firstly, it adds to the literature that looks at determinants of female labor force participation. There is extensive literature on the determinants of female labor force participation such as household and individual characteristics, societal norms, cultural attitudes (Das, Desai, et al. 2003), level of education and urbanization (McCabe and Rosenzweig 1976) as well as the relationship between female labor force participation and economic development. Much of the literature has also focused on married women's decision to participate in the labor market. A consequence of which is that the relationship between fertility and female labor force participation has been long debated. Active promotion of female educational attainment is known to reduce the number of children born to women. Women place greater importance on working, with declining fertility levels, which in turn increases their likelihood of participation in the labor market and positively impacts economic development (Ejaz et al. 2007; Klasen and Lamanna 2009). As noted by Bardhan (1979), female labor force participation in rural West Bengal, in India is negatively affected by the number of dependents in the household. Additionally, the presence of children under 5 years also negatively affected women's labor force participation in India (Dasgupta and Goldar 2005). Essentially in South Asia, it is believed that cultural and social norms have a significant influence on women's decision to participate in the labor market and choice of work, and on their mobility. Some of the norms assessed are those operating at the levels of religion, caste and region. It has been widely studied that these norms discourage women to take up paid employment (Das, Desai, et al. 2003; Jaeger 2010; Göksel 2013). Religious conservatism constraining women's role in society, particularly in South Asia, through gender and familial relations and confining their activities to unpaid care work has been explained by Das (2006). Klasen and Pieters (2015) who sample women in urban India, have found that higher social status has a negative impact on women's labor force participation. There is also recent evidence from India that provide evidence that men in India have a disutility to having a working wife as it affects their perceived breadwinner status Bros, Gille, and Maniquet (2023). This study establishes a negative correlation between decision power and women's labor supply. Anukriti and Persson (2014) explored the impact of sterilization on women's bargaining power, they find that sterilization results in a rise in domestic violence from the husband and has uncertain consequences for women's autonomy. However, the role of these determinants in female labor force participation has never been studied in the context of an

external shock, such as forcibly ending women's fertility through sterilization. And how such a shock is also a determinant of her ability to access the labor market through reduced bargaining power within the household. This study contributes to this literature by showing that a coercive sterilization policy decreases female labor force participation in the long run. Specifically, when coupled with a culture steeped in patriarchal norms, leaves women with little information or choice in the method of contraception adopted by the household which could consequently affect other aspects of a woman's life including workforce participation. An additional mechanism by which forced sterilization could affect women's labor market participation is through their general health and well-being. Recent evidence from La Rupelle and Dumas (2020) indicate that female sterilizations lead to long-lasting unintended health consequences that could potentially impede women's labor market participation.

Secondly, combining the aforementioned contributions to determinants of labor market participation and an exogenous shock to fertility, this study contributes to the literature on how contraceptive policies are also determinants of female labor market participation. Studies on family planning statutes and access to contraceptives find that access to birth control pills and the legal environment that facilitated young, college educated, single women to procure "the pill" altered women's career plans and their age at first marriage (Goldin and Katz 2002; Miller 2010). Alternatively, access to fertility clinics and IVF have been found to reduce labor market outcomes of women, thus addressing the question of whether fertility negatively affects women's earnings on the extensive margin (Lundborg, Plug, and Rasmussen 2017). The role of discordance in spousal preference impacting fertility decisions thereby explaining sub-optimal adoption of contraceptives by women was estimated using an experiment with a family planning clinic in Zambia by Ashraf, Field, and Lee (2014). The study concluded that when women were afforded greater opportunity to hide contraceptive use (i.e. private treatment) without their husband's knowledge, they were more likely to visit a family planning nurse and more likely adopt concealable contraception. This links the effect of information on health behavior through a degree of intra-household concordance in preferences. However, the nature of tubal ligation and the methods through which it is sold as the ideal tool for family planning raises concerns particularly in the context of developing countries. The impact of forced sterilization programs on women's labor market outcomes was studied by Byker and Gutierrez (2021) in Peru. They find that the campaign of coercive sterilization had no impact on women's labor force participation. They also counterbalance positive effects of this campaign on child nutrition by suggestive evidence of negative impacts on the welfare of women affected by the sterilization campaign, in terms of

higher probability of experiencing domestic and intimate partner violence. Compared to other types of contraception, sterilization is also easier to execute without the woman's full understanding. There is no set of instructions that a woman should follow as compared to being on the pill or a concealable form of contraception. Once sterilized her participation in controlling her fertility is over, and in a rural Indian setting so does her added value to the family through bearing children. Unlike the policies or contraceptive settings described in the aforementioned literature, sterilization in India in 1975-77 was coercive and mandated by the government. So rather than contraception being an outcome of female empowerment, the campaign was unique in its characteristic of being exogenous to the household and forced on the recipient without their full consent. Thus the forced sterilization program affected women's bargaining power within the household by affecting the added value of her fertility.

Thirdly, the coercive nature of fertility decisions in India has also been briefly touched upon by Sen (1996), wherein he discusses that the clash of interests between male and female members of the family regarding family planning decisions, given their usual asymmetric roles in child care, and the outcomes of family decisions may therefore not be independent of who governs these decisions. However, very little has been done to explore how the decision-making power of women is reduced once her control over her fertility is ended through coercive sterilization. It could be argued that in the Indian context, this potentially diminishes her decision-making power leading her to be prevented from working outside the home.

Finally, this paper also adds to the literature looking at the determinants of female labor market participation in a developing country through the unique lens of an exogenous shock to fertility affecting their intra-household bargaining power. Mammen and Paxson (2000) indicate that women in developing countries generally receive fewer productive resources within the households and therefore have less bargaining power. Some authors have described a positive link between women's autonomy and labor market participation (Eswaran 2002; Anderson and Eswaran 2009; Majlesi 2016), however recent work by Hanmer and Klugman (2016) indicate that context specificity and multi-dimensionality affect the interpretation of results pertaining to women's agency and empowerment in developing countries. Deriving from the results of Mammen and Paxson (2000), one of the resources allocated to women in India within the household is their ability to bear children and if that is ended by the state it could reduce her bargaining power. Fertility as a woman's resource that adds to her bargaining power and consequently her ability to work outside the family home, particularly in India in the 1970s have not been explored extensively in the literature. This study is therefore interested in interpreting the im-

pact of this specific exogenous shock to a woman's bargaining power brought about by reduced fertility through the forced sterilization program.

The remainder of the paper is organized as follows. In Section 2.1 and 2.2, I describe the data and the identification strategies. Section 2.3 describes the empirical approach used to identify the impact of the sterilization program on women's long-term labor market outcomes. In Section 3.1, I present the results of relating to the pure sterilization effect on long-term female labor market participation, decomposed outcomes and robustness checks using placebo age cohorts. Section 3.2 displays a placebo test on ineligible age cohorts. In Section 3.3, I show the impact of increased exposure to the program through 2 or more children on different outcomes as well as whether the campaign had long-term effects on the number of children born to different households. Section 5 illustrates some robustness checks and mechanisms. In Section 6 I discuss heterogeneity tests. And in section 7, I give some concluding comments.

2 Data and Estimation

2.1 Data

In order to look at the impact of forced sterilization, this study requires data on sterilization at a small administrative unit level, data with such granularity was not collected by the Indian government and was often under-reported at the state level, therefore I rely on data collected by the IPUMS Demographic Health Survey's India edition. Thus, the primary data source used in this paper comes from the women's module of the National Family Health Surveys (NFHS-1, 2,) of India conducted in 1992-93 and 1998-99. Each round includes 88,000 (NFHS 1) and 82,000 (NFHS 2) ever-married women in the age group 16-49, from 25 states and the then National Capital Territory of Delhi using uniform questionnaires, sample design and field procedures. The survey collected data on fertility, family planning, mortality, and maternal and child health. Each survey also includes a complete retrospective birth history for the woman interviewed, containing information on the month and the year of birth, birth order, and mother's age at birth. The retrospective birth history of the respondent allowed me to extract the number of children who were born into the household before the sterilization campaign started. The NFHS collects information on contraceptives used, year of sterilization if sterilized and district of residence. I have combined the data with the 1991 Indian Census Handbook, which I digitized to get information on male and female literacy rates, sex ratio, and workforce participation rates

at the district level for the survey years 1981 and 1991. The dataset also gave me important information on the district-level population in 1981 and 1991.

The NFHS also provides data on the respondents' current occupation, both aggregated and disaggregated. Labor market outcomes have been aggregated into paid work away from home, unpaid work away from home, any work (combination of paid, unpaid and self-employed) and all paid work (which includes paid self-employed work as well as paid work away from home). The labor market outcomes have been further decomposed as well to include categories such as - not working, professional, managerial and technical, clerical, sales, agricultural services, household work and services and manual, skilled and unskilled labor. This decomposition of labor market outcomes helps illustrate which specific type of employment was affected by the sterilization campaign. A drawback of using the NFHS is that it did not administer the survey on men within the sampled household. This limits the scope of the analysis and I am unable to test the role of force sterilization on men's outcomes and other mechanisms that could add to the intra-household bargaining mechanism tested in this study.

2.2 Identification Strategy

In an ideal setting, I would be able to identify households subjected to forced sterilizations during the campaign period and those that had opted for voluntary sterilizations. However, I am unable to distinguish between the two. I limit this lack of data by differentiating households and women based on sterilization eligibility. The government targeted households with 2 or more children for its sterilization campaign. Thus, I am able to differentiate households into those with two or more children before the campaign and those with less than 2 children. This helps capture households who had greater exposure to the program on account of the size of their families i.e. the number of children effect.

Definition of District-level intensity: Given that the compulsory sterilization program was nationally mandated but implemented at the district level, the heterogeneous variation comes from the intensity with which the district collectors implemented the program. With the contraceptive use data from the NFHS, I was able to extract information on the number of women and men who report being sterilized. Using sterilization information (status and year) from the NFHS and the district of residence variables, I construct a measure of the fraction of women who were sterilized in a district in a year, assuming that migration between districts was low. The measure of forced sterilization is determined in the dataset by the fraction of people who reported being sterilized in a certain district between the years 1975 to 1977 as mentioned above

over the total number of sterilizations in the district over the sample period. This measure is then ranked and districts with rates of forced sterilization higher than the mean are classified as high-intensity sterilization districts [4].

Living in a high-intensity sterilization district increases the probability of being forcibly sterilized under the government mandated program. The fraction of women being sterilized varies from less than 1 % of the population in Imphal, Manipur to nearly 6.25 % of married women in Haileymandi, Haryana. Thus the intensity of the program varied significantly across districts. Table 1, summary statistics are divided into high and low-intensity districts based on this classification. Ergo, the treated group could be women who lived in forced (high-intensity) sterilization districts. Figure 1 illustrates the distribution of the district-level intensity of forced sterilization. Delhi and districts in the state of Maharashtra have the highest concentration of those reporting sterilized during the campaign. This is in line with the findings of Gwatkin (1979) who cites districts in these states to have high levels of forced sterilization during the campaign[5]. I have combined this data with a digitized version of the Indian District Census Handbook 1991 to get the fraction of people reporting sterilization from each district between 1975-77. It should also be noted that I do not use the fraction of women reporting to be sterilized as a measure of coercion given that it would be hard to disentangle voluntary and coerced sterilization from the estimates leading to potentially larger biased estimates, whereas, with the measure I construct, I would be estimating a lower-bound effect. Arguments could be made that district-level sterilization intensity could stem from more effort to sterilize directed towards locations where "people are having too many children" relative to the available opportunities. I test this using information on labor force participation rates from the 1971 census to get insignificant results. Details of this

4. Let d index a district and t index the year (index the year 1900 as year "0").

Let D denote the number of districts in the sample.

Let S_{dt} denote the number of sterilizations in district d in year t

The fraction of forced sterilizations for district d in the policy period relative to the sample period is then

$$DI_d := \frac{\sum_{t=75}^{77} s_{dt}}{\sum_{t=45}^{93} s_{dt}},$$

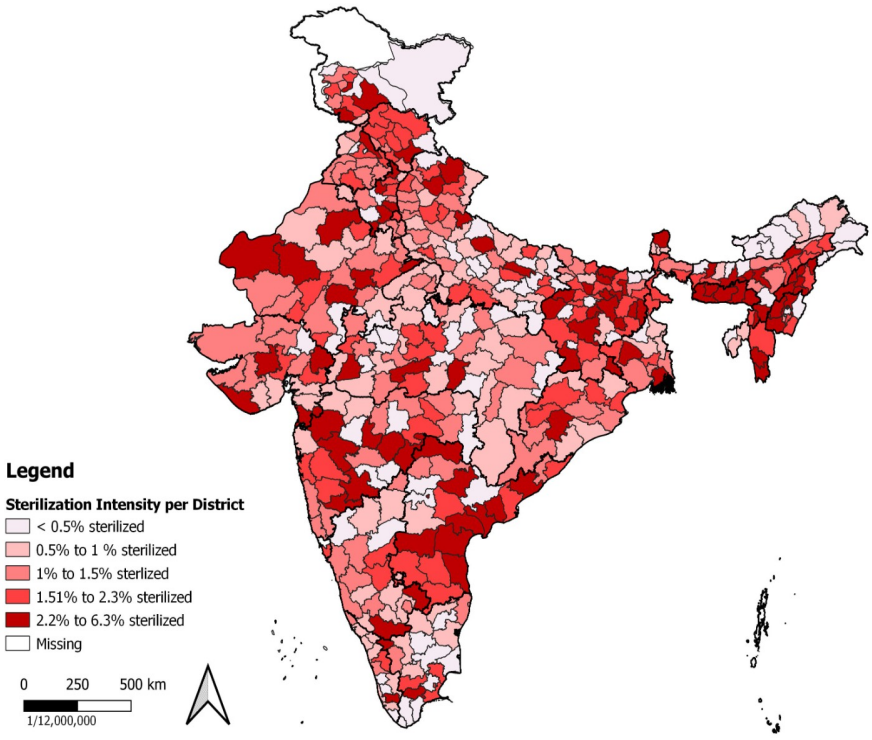
whose average is

$$DI := \frac{1}{D} \sum_{d=1}^{D} f_d.$$

The indicator for a "high-intensity district" is then $\mathbf{1}_{f_d > f}$.

5. Gwatkin (1979) writes that the*the most intense activity occurred in such states as, Maharashtra, Haryana, and Himachal Pradesh.* All of whom appear to have high-intensity sterilization districts as per my measure of coercion

Figure 1: District-level forced sterilization measure - DHS 1992-93



is available in section 3.4.

The government also targeted women who could have potentially reached their fertility targets thereby creating age cohorts as dimensions. I use sample selection to exploit variation of women belonging to ages 30 and above and compare to those who are least likely to be affected i.e. those between the ages of 16 to 20. Another cohort of interest is women who are most likely to be affected by this external decision regarding their fertility i.e. those between 20 to 30 years during the campaign (samples used in tables 6 & 7). Women in this cohort are most likely to be impacted due to the fact they are less likely to be voluntarily sterilized which could potentially be the confounding factor with women over 30. Women between 20 and 30 years are also most likely to change their fertility behavior through the total realized number of children in response to this campaign.

Table 1: *Descriptive Statistics*

	High Intensity Districts	**Low Intensity Districts**
Unit of observation: Percentage of women in 429 districts		
Socio-Demographics		
Average number of children (Measured in 1992-93)	2.90	3.02
Average age at first birth	19.31	19.13
Religion		
Hindu	82.21	77.26
Muslim	9.10	11.84
Christian	3.72	6.68
Others	4.96	4.22
Caste		
Scheduled Caste	13.19	14.62
Scheduled Tribe	10.89	12.38
Others	75.91	73.00
Place of Residence		
Urban	40.37	28.53
Rural	59.63	71.47
Observations	28,452	117,353
Human Capital		
Educational Attainment		
No Education	49.91	54.03
Primary School	16.94	17.23
Secondary School	23.72	22.41
Higher Education	9.23	6.19
Labor Market Outcomes		
Not working	66.23	64.56
Prof., tech., manag.	2.67	2.16
Clerical	1.05	0.74
Sales	1.80	1.55
Agriculture	17.58	22.38
Services. household	7.25	4.77
Manual	3.42	3.84
Observations	28,666	117,353
District Characteristics		
Sex Ratio	892.69	930.71
Female Workforce Part	14.6	23.99
Literacy Rate	58.854	37.72

Notes: National Family Health Survey, Round 2 (1992-1993), summary statistics for estimation samples.

The sample used to estimate labor market outcomes using eligible age cohorts consists of 22,288 ever-married women across 429 districts

2.3 Main Empirical Approach

The baseline specification will include time-invariant covariates that were collected during the two rounds of the surveys. These include age at the emergency period, religion, caste, place of

residence (urban or rural), and educational attainment as detailed in Table 2. Based on Table 2, the differences in sterilization across districts are evident for Hindu women with secondary school education. Women exposed to high-intensity sterilization also seek less paid work away from home in high-intensity districts as compared to their sterilized counterparts in low-intensity districts. The date of birth of the children, the total number of children by the time the policy was in force and the district of residence determine an individual's degree of exposure to the program. The survey also provides information on some current labor market outcomes such as respondent currently working, the current type of employment, respondent's occupation group (agriculture, skilled labor, etc.), type of land where the respondents works[6] etc. The goal of my causal analysis in this study is to estimate the treatment effects of forced sterilization on women's labor market outcomes. I will rely on the Difference-in-Difference (DiD) estimators to find these treatment effects. The baseline specification is:

$$Y_i = \beta_0 + \beta_1 DI_i + \beta_2 AgeCohort_i + \beta_3 DI_i * AgeCohort_i + \delta c_i + \epsilon_i \tag{1}$$

In equation (1), Y_i is the labor market outcome of the respondent, and the two dimensions of variations are district of residence (DI_i) which is equal to 1 if the respondent lives in a high-intensity sterilization district and zero otherwise, and age cohort ($AgeCohort_i$) which is defined in (1) to be equal to 1 if the respondent is over the age of 30 and equal to 0 if the respondent is between the ages of 16-20 during the campaign in 1975-1977. This implies that the treated includes only women who are easily targeted by the sterilization program (above 30 years) and the control too young to be targeted by the campaign. The rationale behind using 16-20 as a younger cohort is that those in the latter cohorts could possibly be affected by the campaign should they have had 2 or more children during or before the campaign period whereas 16-20 year old women are less likely to have completed/reached this fertility limit set by the government. Additionally, as per the NFHS dataset most women have their third child between 20 and 30 years of age thereby entering eligibility for the forced sterilization program. The overall sample consists of women over the age of 17 during the campaign. c_i are time-invariant controls for individual and household characteristics such as religion, caste, age of the respondent, educational attainment, and type of residence (urban or rural).

In equation 2, I explore the number of children dimension given that the government targeted households with 2 or more children ($Childdummy_i$).

6. All employment outcomes are current, i.e. collected during the surveys in 1992-93 and 1998-99

$$Y_i = \theta_0 + \theta_1 DI_i + \theta_2 Childdummy_i + \theta_3 D_i * Childdummy_i + \Delta c_i + \epsilon_i \quad (2)$$

The idea behind this specification is the study of the number of children or exposure to policy on account of family size on labor market outcomes. Are labor market outcomes driven by the number of children born to the household at the time of the policy period? Through this, I also answer the question of how an increased likelihood of sterilization affects your labor market outcomes. I test this using specification 2 in a two-stage sequence. First, I test the impact of exposure to the policy via the number of children during the campaign on the total realized number of children. This answers the question - did exposure alter fertility behavior and change childcare needs? Secondly, I test if having two or more children during the campaign affects labor market outcomes. The sample to test this on would then be women who are most likely to alter their fertility in response to a threat of sterilization i.e. those between 20 and 30 years of age during the campaign. Standard errors are clustered at the district level accounting for heterogeneity in policy implementation at this level (Abadie et al. 2017). I use the wild-bootstrapped re-sampling method to estimate the correct p-values(Cameron and Miller 2015) this ensures that I am not overstating the precision of my estimates by relying on default standard errors.

3 Results

3.1 Sterilization Effect

Difference-in-Difference estimates examining the long term impact on labor market outcomes of belonging to an older age cohort in a high-intensity district during 1975-77 are reported in Table 2. Here, labor market outcomes have been aggregated into paid work away from home, unpaid work away from home, any work and all paid work. The treatment group in this analysis includes women above 30 years of age in 1975 i.e. those who are more likely to be targeted by the sterilization program whereas the control group includes women who were too young to qualify for the program i.e. between the ages of 16 to 20. The specification includes time invariant individual control variables as mentioned in the previous section.

The coefficient in column (1) indicates that women who are over the age of 30 in a high-intensity district report lower levels of paid employment whether self-employed or otherwise when compared to those between the ages of 16-20 years. Belonging to the treatment group is

Table 2: Impact of forced sterilization on long term female labor market outcomes

VARIABLES	(1) Paid work	(2) Unpaid work	(3) Any work	(4) All paid	(5) Total Children
Dep Var. Mean	0.18	0.15	0.4	0.24	3.96
Age Cohorts	-0.015***	0.011**	-0.014**	-0.016***	1.09***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.027)
District Intensity (DI)	0.012**	-0.014***	0.0034	0.017***	0.017
	(0.006)	(0.005)	(0.007)	(0.006)	(0.029)
Age Cohorts * DI	-0.019*	-0.017	-0.043***	-0.026**	0.094
	(0.011)	(0.010)	(0.014)	(0.0128)	(0.059)
Constant	0.383***	0.232***	0.67***	0.47***	4.75***
	(0.007)	(0.007)	(0.01)	(0.009)	(0.040)
Observations	37,243	37,243	37,243	37,243	37,243
R-squared	0.021	0.050	0.046	0.022	0.170
Individual Controls	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

associated with a reduction in female participation in paid work variable of 2%, the magnitude is significant given that its mean is 0.18 and standard deviation is 0.38. I find similar results in columns (3) and (4) for variables any work and all paid work, that greater exposure to the program reduced female labor market participation by 4% and 2.6% given means 0.4 and 0.24 respectively. However, I do not find any effect on women's unpaid labor. To test if an increased likelihood of forced sterilization drove people to change their fertility behavior i.e. on the realized total number of children, I ran the specification in column (5). The statistically not significant coefficient of the interaction term shows that these treated women have reported no fertility effects.

In table 3, the labor market variables are further decomposed into different occupational groups. The DiD coefficient in column (1) indicates an increase in the fraction of women in the treated group reporting not working by 4.7% given a mean of 0.608. Estimates in columns (4), (5) and (6) identify a negative association between exposure to treatment and labor in sales, agriculture and services. Participation in these forms of employment reduced by 1.3% , 4.5%

Table 3: Impact of forced sterilization on long term female labor market outcomes - decomposed outcomes

VARIABLES	(1) Not Working	(2) Professional	(3) Clerical	(4) Sales	(5) Agricultural	(6) Service	(7) Manual
Dep Var. Mean	.608	0.03	0.012	0.21	0.223	0.072	0.033
Age Cohorts	0.0059	-0.002	-0.007***	0.009***	0.010*	0.028***	-0.045***
	(0.007)	(0.002)	(0.002)	(0.002)	(0.005)	(0.0036)	(0.002)
Dist. Intensity (DI)	0.024***	0.006**	0.004***	0.008***	-0.061***	0.025***	-0.007***
	(0.007)	(0.0024)	(0.002)	(0.002)	(0.006)	(0.004)	(0.003)
Age Cohorts * DI	0.047***	0.009*	0.0024	-0.013***	-0.045***	-0.0076	0.007
	(0.015)	(0.005)	(0.003)	(0.004)	(0.012)	(0.008)	(0.005)
Constant	0.60***	0.029***	0.013***	0.017***	0.23***	0.0605***	0.0445***
	(0.003)	(0.001)	(0.000)	(0.001)	(0.003)	(0.002)	(0.001)
Observations	37,358	37,358	37,358	37,358	37,358	37,358	37,358
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

and 0.7%. An interesting observation in this table is that there is a degree of substitution away from agricultural labor to not working by approximately 4.5%. Exposure to treatment does not seem to have any significant effect on women engaging in manual labor as seen in column (7). However, there is an increase in employment in column (2) under the professional, technical and managerial categories by 1%. A natural question arises as to why women in this category exhibit labor market participation rates that are contrary to the other categories when exposed to the forced sterilization program. This is consistent with the literature, in that women who are hitherto empowered through access to higher education when given access to contraception would improve their labor market outcomes (Goldin and Katz 2002). These women also have inherently higher bargaining power within the household as opposed to those in the other employment categories given that they were engaging in highly skilled labor in India from the 1970s to 1990s. Overall results indicate that being exposed to a forced sterilization campaign reduces women's labor market outcomes. Given that there is evidence from previous literature that points towards a disutility to having a working wife (Bros, Gille, and Maniquet 2023), it can be inferred that an external force on women's fertility negatively affects their bargaining power and thus their labor

market outcomes.

3.2 Placebo Tests

Table 4: Impact of forced sterilization on long term female labor market outcomes - Placebo Age cohorts 8-12 years

VARIABLES	(1) Paid Work	(2) Unpaid work	(3) Any work	(4) All paid
Dep. Var. Mean	0.16	0.13	0.36	0.41
Age Cohorts	0.025***	0.016***	0.047***	0.035***
	(0.003)	(0.003)	(0.004)	(0.004)
District Intensity (DI)	0.014***	-0.014***	-0.002	0.013**
	(0.005)	(0.004)	(0.006)	(0.005)
Age Cohorts * DI	-0.003	-0.002	0.002	0.006
	(0.007)	(0.007)	(0.009)	(0.008)
Constant	0.336***	0.205***	0.600***	0.409***
	(0.006)	(0.005)	(0.007)	(0.006)
Observations	60,017	60,017	60,017	60,017
R-squared	0.026	0.049	0.062	0.027
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women between the ages of 8 and 12 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

To mitigate concerns that the results are capturing effects other than the coercive sterilization campaign, in Table 4, I repeat the difference-in-difference analysis over an age category that was not affected by the sterilization campaign, women younger than 16 years at the time of the campaign as a placebo test. Thus the age cohort variable would equal 0 if the respondent was between 8 and 11 years and equal to 1 if the respondent was 11 to 16 years of age during the campaign (1975-77). The estimates from the difference-in-difference are very close to zero and not statistically significant. These estimates provide evidence that the key results are not driven by inappropriate identification assumptions such as the age of the women at the time of the survey being older or simply a financial need.

3.3 Number of Children Effect

Given that the government targeted households with a certain family size during the campaign, I use specification (2) to look at the impact of having two or more children on the total realized number of children. This would help understand if the policy differentially impacted the number of children ever to be born into different families i.e. overall fertility based on the number of children born at the time of the policy. The sample contains women who are most likely to have changed their fertility behavior in response to the sterilization campaign i.e. those between the ages of 20 and 30.

Table 5: Effect of two or more children during the campaign on the total realized number of children

	(1)	(2)
VARIABLES	Total Children Born	Total Children Born
Dep Var. Mean	4.46	4.46
Child dummy	1.86***	1.64***
	(0.02)	(0.02)
District Intensity (DI)	-0.11***	0.06*
	(0.03)	(0.03)
Child dummy * DI	0.07	-0.02
	(0.05)	(0.05)
Constant	3.55***	4.48***
	(0.02)	(0.04)
Observations	51,108	50,848
R-squared	0.17	0.23
Individual Controls	Yes	Yes
District Controls	No	Yes

Notes: Sample selected is women between the ages of 20 and 30 during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

As seen in Table 5, I find that for women between the ages of 20 and 30 with two or more children before 1975 and residing in a high-intensity district reduced the overall number of realized children but the coefficient is not statistically significant. This piece of evidence lends some support to the assumption that the decrease in labor market outcomes may be attributed to exposure to the program rather than a child-care need. A confounding factor here could be that subsequent family planning programs that were enacted across the country targeted women albeit on a voluntary basis disregarding eligibility criteria, thereby impacting the total number

of children being born.

Table 6: Impact of having two or more children during the sterilization campaign (1975-77)

VARIABLES	(1) Paid Work	(2) Paid Work	(3) Unpaid	(4) Unpaid	(5) Any Work	(6) Any Work	(7) All paid
Dep Var. Mean	0.18	0.18	0.151	0.15	0.39	0.39	0.24
Child dummy	-0.02***	-0.02***	0.02***	0.003	-0.0006	-0.02***	-0.02***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
District Intensity (DI)	0.02***	0.02***	-0.03***	-0.001	0.002	0.03***	0.03***
	(0.006)	(0.006)	(0.006)	(0.005)	(0.008)	(0.008)	(0.007)
Child dummy * DI	-0.019**	-0.019**	-0.008	-0.02***	-0.04***	-0.05***	-0.03***
	(0.009)	(0.008)	(0.008)	(0.008)	(0.01)	(0.01)	(0.01)
Constant	0.19***	0.36***	0.15***	0.25***	0.39***	0.67***	0.46***
	(0.003)	(0.007)	(0.003)	(0.006)	(0.003)	(0.009)	(0.008)
Observations	51,108	50,848	51,108	50,848	51,108	50,848	50,848
R-squared	0.001	0.017	0.002	0.049	0.001	0.042	0.019
Individual Controls	No	Yes	No	Yes	No	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample selected is women between the ages of 20 and 30 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

The second stage specifications for 2 run the same analysis but test the DiD coefficient on long-term labor market outcomes as illustrated in 6 and disaggregated outcomes in 7. Table 6 shows that paid work away from home was reduced by 1.9%, reduction in unpaid work by 0.2% and all paid work both away from home and at home was reduced by 3%. This also indicates a reduction in reported labor market participation for women who resided in high-intensity districts with two or more children. Column (1) of table 7 shows an increase in women reporting to not working by 5.76%. Similar to results from table 4, increased exposure to the campaign with 2 or more children reduces agricultural labor by 4.53%. However, as discussed earlier, first-stage results in table 5 are insignificant, so the results may not be driven by a financial need to provide for more children given that greater exposure did not reduce the total realized number of children. Combining the first and second-stage results addresses the obvious concern of whether the effects we see are being driven by a need for childcare. For example, the reduced access to labor market participation could be a result of increased child-care needs at home. This can be allayed since we see in Table 5 that there is no difference between the treated and the control.

Additionally, to look at whether these results are driven by a need for childcare, I ran similar

Table 7: Impact of having two or more children during the sterilization campaign on long term female labor market outcomes - decomposed outcomes

VARIABLES	(1) Not Working	(2) Professional	(3) Clerical	(4) Sales	(5) Agricultural	(6) Service	(7) Manual
Dep Var. Mean	.608	0.03	0.012	0.21	0.223	0.072	0.033
Child dummy	0.0171***	-0.0105***	-0.00512***	0.00257*	0.00743	0.00936***	-0.0209***
	(0.00570)	(0.00156)	(0.000943)	(0.00155)	(0.00550)	(0.00268)	(0.00217)
District Intensity (DI)	-0.0597**	0.00252	0.00162	0.00125	0.0105	0.0455***	-0.00170
	(0.0270)	(0.00476)	(0.00313)	(0.00590)	(0.0244)	(0.00915)	(0.00767)
Child Dummy * DI	0.0576***	0.00298	-0.00111	-0.00236	-0.0453***	-0.0113*	-0.000487
	(0.0172)	(0.00475)	(0.00327)	(0.00411)	(0.0152)	(0.00620)	(0.00691)
Constant	0.264**	-0.0336**	0.00535	0.0166	0.502***	0.186***	0.0600**
	(0.119)	(0.0147)	(0.0107)	(0.0217)	(0.134)	(0.0440)	(0.0273)
Observations	51,108	51,108	51,108	51,108	51,108	51,108	51,108
R-squared	0.046	0.097	0.025	0.003	0.140	0.016	0.008
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

specifications with quantiles of total children born per woman (Illustrated in Tables A1 and A2). This would illustrate if work is substituted by child-care needs i.e. an additional child could mean more child-care requirements implying less time allocated for work. However, an end to their fertility is counter-intuitive to an increase in child-care needs and this is also in part addressed by results in Table 5. And given that the substitution in Table 3 towards "not working" from agriculture and not other financially viable career paths such as seen in (2), (3), (6) and (7) of Table 6 indicate that this is not necessarily driven by a reduced financial need due to sterilization.

The direction of results in Table 3 to 7 are robust to using continuous variables (in lieu of dummy treatment variable as in the baseline specifications) on district-level sterilization intensity albeit smaller in magnitude.

3.4 Testing for exogeneity of districts

In order to ensure that none of the effects is driven by unobservable district-level factors, the specifications from equation 2 should be run to isolate the exogeneity of treatment on the district characteristics before 1975. However, the analysis is restricted by the data that is available. Ad-

ditionally, district boundaries frequently changed before and after this campaign, period making it difficult to isolate these effects using district-level data from earlier time periods. I partly test this by using district-level data on population levels, labor force participation, and population percentages that belong to scheduled caste and tribe categories digitized by Vanneman and Barnes (2000) for the year 1971. Results of this test are illustrated in tables A3 and A4. Columns (1)-(4) of both tables contain standardized values of average district-level labor force participation, literacy rates, share of scheduled caste (SC) and scheduled tribe (ST) populations respectively from the 1971 census[7]. The results were insignificant for both specifications 1 and 2, however, it should be noted here that I was able to verifiably match only 137 out of 459 districts for which I had sterilization information. The remainder of the districts underwent splits or were merged with other districts or had boundary lines redrawn on multiple occasions.

4 Mechanisms

4.1 Measures of autonomy

The outcomes tested here include having a say in household decisions (decisions on health care and large household purchases). This is then decomposed into decisions taken *solely by the female respondent* and *those taken jointly with her husband*. Table 8 displays the impact of exposure to forced sterilization on women over the age of 30 when compared to a younger cohort on intra-household decision-making. Households reporting decisions taken by the woman alone shows a 2% and 3% reduction in decisions made by women on general household expenses. This indicates that there is a reduction in women's ability to allocate household income towards expenses reflective of their reduced autonomy and bargaining power. However, this effect does not translate to decisions relating to healthcare expenditure. I also test this channel using specification (2) and while the direction of the effects as well as the magnitudes remain the same, the point estimates for decisions taken jointly on both healthcare and general expenses are not statistically significant.

4.2 Health Outcomes

Another potential mechanism by which forced sterilization affects female labor market participation could be through worsened health outcomes (La Rupelle and Dumas 2020). If a woman

7. Data was from http://www.vanneman.umd.edu/districts/files/index.html on March 2021.

Table 8: Impact of forced sterilization on other measures of autonomy

VARIABLES	(1) Expenses	(2) Expenses	(3) Healthcare	(4) Healthcare
Dep Var. Mean	0.05	0.08	0.12	0.20
Age Cohort	-0.05***	-0.07***	-0.11***	-0.14***
	(0.00)	(0.00)	(0.00)	(0.01)
District Intensity (DI)	0.01	0.00	0.00	-0.01
	(0.01)	(0.01)	(0.02)	(0.03)
Age cohort * DI	-0.02**	-0.03**	-0.03*	-0.03
	(0.01)	(0.01)	(0.02)	(0.02)
Constant	0.09**	0.17***	0.07	0.17
	(0.04)	(0.05)	(0.07)	(0.10)
Observations	42,900	42,900	42,900	42,900
R-squared	0.02	0.03	0.04	0.04
Joint Decisions Incl	No	Yes	No	Yes
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. Columns (1) & (2) indicate general household expenditure and columns (3) & (4) are decisions on healthcare expenditure. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

having exposure to high levels of forced sterilization has poorer health outcomes, it could be a determinant of her labor force participation. The results I observe of reduced employment in the high-intensity district could be driven by worsened female health outcomes. The NFHS-I collects limited sterilization-related information and this mechanism could also be confounded by other unobservable factors such as public health conditions in the district since the campaign, poor health-seeking behaviors within the household etc. However, the survey did collect information on health problems arising specifically from sterilization such as back pain, sepsis, fever etc. There are insufficient observations to test each of these outcomes separately. I instead test the channel of forced sterilization affecting women through general health concerns stemming directly from sterilization as well as anemia. The latter is an outcome tested based on the minimum hemoglobin level of 12g/dl set by the World Health Organization (WHO) (Geneva, Organization, et al. 1968 and Organization et al. 2011). Ergo, anyone with hemoglobin measured under this level would be classified as anemic. I run this using both specifications 1 and 2 and the results

are in table A5. As seen in columns (1) through (4) of table A5, exposure to forced sterilization during the campaign did not have significant sterilization-related health concerns nor did it result in a disproportionately higher incidence of anemia indicating that poorer health outcomes may not be a channel by which the campaign reduced women's labor force participation.

5 Robustness checks

5.1 State-level measure of coercion

Following the work done by Pelras and Renk (2023), I digitize and use archival data from the Shah Commission Third and Final Inquiry (1978) to construct a measure of coercion at the state level. This measure reflects states who carried out more sterilizations than the nationally mandated state target numbers.

$$SterilizationIntensity = \frac{achievement_{1976/77} - target_{1976/77}}{target_{1976/77}} \tag{3}$$

The results using this measure of coercion instead of district level intensity of sterilization has statistically insignificant results for both equation (1) and equation (2) as illustrated in tables 9 and 10. A likely explanation for these null results could be that sterilization was carried out by district collectors and magistrates (Gwatkin 1979) and therefore aggregating treatment to the state level results in loss of significant variation and granularity. An additional source of bias could also be that state and district government officers tasked with carrying out the sterilization program admitted to large-scale fabrication of the records concerning sterilization as per the Shah Commission Third and Final Inquiry 1978.

$$SterilizationIntensity = \frac{sterilization_{1976/77} - sterilization_{1975/776}}{totalsterilization1975/77} \tag{4}$$

Archival data digitized from the Ministry of Health and Family Welfare archives was also used to run specifications (1) and (2). Here I constructed sterilization intensity as illustrated in equations 4 measured similarly to specification 3 but disaggregated by targets and achievements at the state-level of vasectomies and tubectomies carried out over 1975-76 and 1975-77. The sterilizations in excess of the numbers in 1975-76 would reflect the levels of coercion. Results are in tables A6 to A9 in the appendix. The lack of statistical significance can be attributed much in the same way as when using the sterilization intensity measured at the state-level using data from the Shah Commission Report which masks significant district-level heterogeneity.

Table 9: Impact of forced sterilization on long term female labor market outcomes - Shah Commission State-level measure (1975-77)

VARIABLES	(1) Paid work	(2) unpaid work	(3) All work	(4) Self Employed
Age Cohorts	-0.0257*	0.00623	-0.0312	-0.0239*
	(0.0149)	(0.0163)	(0.0252)	(0.0136)
District Intensity (DI)	0.0184	-0.0226***	-0.00153	0.0148
	(0.0113)	(0.00805)	(0.0117)	(0.0159)
Age Cohorts * DI	0.00657	0.00332	0.0114	0.00328
	(0.0128)	(0.00863)	(0.0204)	(0.0122)
Constant	0.370**	0.348**	0.764***	0.560**
	(0.178)	(0.139)	(0.244)	(0.218)
Observations	35,134	35,134	35,134	35,134
R-squared	0.024	0.055	0.049	0.024
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

5.2 REDS 1982 Medium-Term Occupational Outcomes

I conduct additional robustness checks using the 1982 rural economic and demographic survey wave surveys (REDS). The REDS data set includes a household panel complemented by cross-sectional observations to create a representative sample of the entire rural population in 1971, 1982, 1999, and 2006 in this analysis I use the 1982 wave. It includes a demographic questionnaire administered to women between 15 and 50 years old in sampled households—from which I use data at the woman level to construct a sample similar to that used in Table 2 with the NFHS-I dataset. $AgeCohort_i$ is defined as in (1) i.e. equal to 1 if the respondent is over the age of 30 and 0 if aged between 16-20 years.

In table 11, I find similar results to the sample using the NFHS. Exposure to the sterilization campaign also had an impact on women's medium-term labor market participation. Agricultural labor force participation reduced by 16 % in the REDS sample whereas those reported as *not working* had a 25 % increase when exposed to the policy. While employment in clerical sectors showed a 1% increase while professional, sales and other categories registered no significant medium-term effects. This would indicate that there is a reduction of the effect of forced steril-

Table 10: Impact of having two or more children during the sterilization campaign - Shah Commission State-level measure (1975-77)

VARIABLES	(1) Paid Work	(2) Unpaid work	(3) All Paid	(4) Self Employed
Child Dummy	0.00439	0.0220*	0.0190	0.00873
	(0.0105)	(0.0117)	(0.0158)	(0.0113)
District Intensity (DI)	0.0130	-0.0224*	-0.00882	0.00906
	(0.0153)	(0.0117)	(0.0172)	(0.0146)
Child Dummy * DI	0.00858	0.000170	0.0141	0.00943
	(0.0119)	(0.00640)	(0.0158)	(0.00903)
Constant	0.309*	0.303***	0.658***	0.459**
	(0.168)	(0.116)	(0.255)	(0.191)
Observations	35,134	35,134	35,134	35,134
R-squared	0.022	0.048	0.051	0.023
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample selected is women between the ages of 20 and 30 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Impact of forced sterilization on medium term female labor market outcomes - ARIS-REDS 1982

VARIABLES	(1) Not Working	(2) Professional	(3) Clerical	(4) Sales	(5) Agriculture	(6) Others
Dep. Var. Mean	0.22	0.02	0.01	0.011	0.36	0.39
Age Cohort	-0.64***	0.00	0.00	0.01**	0.49***	0.15***
	(0.02)	(0.00)	(0.00)	(0.00)	(0.02)	(0.02)
Dist. Intensity (DI)	-0.24**	-0.00	0.00	-0.00*	-0.00	0.25**
	(0.11)	(0.00)	(0.00)	(0.00)	(0.01)	(0.12)
Age Cohort * DI	0.25**	0.00	0.01**	0.02	-0.16***	-0.12
	(0.10)	(0.01)	(0.01)	(0.01)	(0.04)	(0.10)
Constant	0.74***	-0.02	0.00	-0.02***	0.08*	0.22***
	(0.05)	(0.01)	(0.01)	(0.01)	(0.04)	(0.07)
Observations	13,900	13,900	13,900	13,900	13,900	13,905
R-squared	0.52	0.04	0.01	0.02	0.20	0.05
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes

Sample is all women above the age of 17 during the campaign

Robust standard errors in parentheses, clustered at the district level

Wild bootstrapped p-values, *** p<0.01, ** p<0.05, * p<0.1

ization on labor market outcomes in the longer run, given that the impact is significantly larger in the medium-term.

6 Heterogeneity Analysis

6.1 Religious minorities and Household location

Table 12: Impact of having two or more children during the sterilization campaign (1975-77) - Scheduled Caste Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Not Working	Professional	Clerical	Sales	Agricultural	Service	Manual
Child Dummy	-0.0281**	-0.00261	-0.00199	-0.000249	0.0469***	0.0197***	-0.0336***
	(0.0142)	(0.00354)	(0.00172)	(0.00393)	(0.0109)	(0.00751)	(0.00579)
District Intensity (DI)	-0.0954**	-0.000627	-0.000973	0.00445	0.0438	0.0618***	-0.0130
	(0.0487)	(0.0110)	(0.00451)	(0.00984)	(0.0605)	(0.0236)	(0.0125)
Child Dummy * DI	0.0960***	0.000428	0.00761	-0.000721	-0.0694**	-0.0288	-0.00515
	(0.0277)	(0.0105)	(0.00494)	(0.0106)	(0.0272)	(0.0235)	(0.0108)
Constant	0.411**	-0.0364	0.00702	0.0522**	0.302	0.0437	0.221***
	(0.208)	(0.0284)	(0.0166)	(0.0232)	(0.221)	(0.0824)	(0.0627)
Observations	6,159	6,159	6,159	6,159	6,159	6,159	6,159
R-squared	0.037	0.097	0.015	0.003	0.122	0.035	0.012
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women between 20 and 30 years old during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Gwatkin (1979) indicates that the pressures of sterilization were more severe on religious minorities. I test to see if there is heterogeneous effects on Muslims and members of schedule castes (SC) and schedule tribes (ST). The largest and statistically significant reduction in employment from being exposed to the sterilization campaign was shown in the scheduled caste sample. Table 12, and 13 illustrate these analyses for respondents belonging to scheduled castes and tribes. Column (1) for table 12 indicates a 9.6% increase in not working for the scheduled caste members of the sample and a 7% decline in agricultural employment. Any gains from having access to contraception for women with education are not seen for the SC sample. When investigating the effect of two or more children on ST women, all coefficients are statistically insignificant except labor in the services industry which improves by 8.2%. Effects of forced sterilization on labor

market outcomes by belonging to an older age cohort i.e. specification 1 produces proportionally larger estimates for samples of SC and ST women.

When testing whether results differ by the location of residence i.e. urban or rural, the impact of having two or more children at the time of the campaign is more pronounced in the rural sample with a 4.7% increase in unemployment and a 4.8% decrease in agricultural work. Results are in A10 and A11 in the appendix. The coefficients on the urban sample are both smaller in magnitude and statistically not significant. One possible interpretation is that officials tasked with meeting sterilization targets could exert more coercive influence in rural areas relative to urban areas. This is in line with the evidence from Gwatkin (1979), that state that "teachers, public health workers, village level workers, and local leaders" applied more pressure in ensuring larger sterilization uptake in rural areas. Additionally, the large majority of agricultural work in India also occurs in rural areas thereby disproportionately capturing the reduction in agricultural labor.

Table 13: Impact of having two or more children during the sterilization campaign (1975-77) - Scheduled Tribe Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Not Working	Professional	Clerical	Sales	Agricultural	Service	Manual
Child Dummy	0.0283*	-0.0154***	-0.00710**	0.00584	-0.0147	0.0238***	-0.0208***
	(0.0164)	(0.00415)	(0.00360)	(0.00522)	(0.0131)	(0.00761)	(0.00652)
District Intensity (DI)	-0.0103	0.00706	-0.0136	-0.0232	-0.0217	0.0441	0.0175
	(0.0662)	(0.0144)	(0.00834)	(0.0146)	(0.0655)	(0.0273)	(0.0255)
Child Dummy * DI	-0.0415	-0.00547	0.0180	0.00217	-0.0450	0.0829**	-0.0111
	(0.0414)	(0.0107)	(0.0111)	(0.0115)	(0.0427)	(0.0378)	(0.0277)
Constant	0.0804	-0.0128	0.00798	-0.0430	0.941***	-0.0434	0.0694
	(0.305)	(0.0483)	(0.0220)	(0.0554)	(0.302)	(0.122)	(0.0859)
Observations	5,249	5,249	5,249	5,249	5,249	5,249	5,249
R-squared	0.023	0.133	0.056	0.027	0.118	0.028	0.012
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women between 20 and 30 years old during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

6.2 Hindi speaking states

The central government in India based out of Delhi had a large sphere of influence over adjoining "Hindi-belt" states, thereby increasing the levels of coercive sterilizations to improve program

performance. [8] I find that the reduction in agricultural labor is 5.2% (national sample coefficient was 4.5%) and the proportion of women who were exposed to this policy reporting not working to be much larger (7.9% whereas in the overall sample, the increase was by 5.76%) in the Hindi-speaking belt. Results are in A12. In addition to a reduction in agricultural labor, clerical, and service industry employment also reduced by 0.96 % and 1.2% respectively. The improvement in the employment of women with access to education that was witnessed in column (2) of table A12 did not translate to the Hindi-speaking states. This could indicate that a threat to fertility via this forced sterilization campaign had negative consequences beyond what is observed in the literature. Women did not better their labor market outcomes when there was an increased supply of permanent contraceptives conditional on higher educational attainment.

7 Conclusion

This paper provides empirical evidence on the long-term impact of forced sterilization on women's labor market outcomes as evidenced during the 1975-77 emergency era. I argue that the sterilization program negatively affected women's labor force participation by reducing their bargaining power within the household. Specifically, the program exogenously ended the value that Indian women brought to their household i.e. their ability to bear children. This reduced bargaining power plays favorably into the disutility that Indian men derive from having a working wife. This effect is primarily found in agricultural labor, wherein we see a 5% reduction in women's participation when exposed to the program. To explore the mechanism of reduced autonomy and bargaining power, the study examines decision-making within households regarding general expenses.

This result is contrary to existing literature that indicates that women's access to contraception increases their labor market participation, which has been argued by Goldin and Katz (2002) and Miller (2010). This paper argues that there is a key distinction between the contexts of the previous studies regarding access to contraception and its impacts, which is sterilization in India during the emergency period was coercive and exogenous to household's decision-making, thus is not a consequence of female empowerment nor is it conducive to female empowerment.

8. I test the impact of this sterilization campaign on Haryana, Uttar Pradesh, Rajasthan, Bihar, Delhi, Himachal Pradesh, Madhya Pradesh and Punjab which were Indira Gandhi's political strongholds, Hindi-speaking states as well as closer to the national capital in distance.

Similar estimates were also found by Byker and Gutierrez (2021) using data on the forcible sterilization program in Peru where they find no welfare effects or improvements in the labor force participation of women after being coercively sterilized. Thus underlining the finding here that when contraception is coercive, the benefits of making fertility choices may not accrue to women. However, the estimates also suggest that the program was beneficial for women who were previously empowered as shown through increased access to white-collar professional and managerial jobs which is a product of both high educational attainment and access to contraceptives, which are highlighted by the results from earlier studies. This could also be explained by the hypothesis that women who are previously empowered would choose to be sterilized as a family planning method. Combining the effect of the program on older women who are exposed to the policy with women in their 20s who are most likely to change their fertility patterns in response to sterilization, indicates that the results are not driven by child-care effects which could have potentially confounded the results.

The study has some limitations stemming principally from the availability or lack thereof of granular data. This restricts the study from identifying women and/or households subjected to forced sterilizations versus voluntary sterilizations due to an increased supply of contraception. It would be ideal to have data that specifically identifies these individuals, but government data collection was limited to the state level and sporadic at the district level. As a result, the study focuses on individuals who may have had a higher probability of being exposed to the program using the district-level coercion measure. Additionally, those subjected to coercive sterilizations often aged out of the scope of the DHS, this is a limitation of the identification strategy, and I acknowledge this. Additionally, it would be valuable to conduct robustness and exogeneity tests using the men's module of the DHS and district censuses from 1971 and 1961. Unfortunately, neither of these data sources is available, which limits the analysis.

However, the findings reported here are important because they show that forcible family planning methods could have potentially long-term consequences on women's ability to work outside their homes. The intervention was meant to reduce population growth rates drastically, which could have been explored through mixed family planning methods or mass communication drives. Instead, India continues to rely heavily on female sterilization as the primary contraceptive and has a relatively low average age at first birth (21 years for married women in 2015) and showed a declining trend of Contraceptive Prevalence Rate (CPR) from 56.3% to 53.5% between 2005–06 and 2015–16 among all married couples highlights the need for family planning policy guidance coupled with a socio-economic environment and health care system that empow-

ers women. The questions regarding women's access to suitable reproductive healthcare systems and their effect on women's well-being will be the object of future work.

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Table A1: Impact of forced sterilization on other measures of autonomy

VARIABLES	(1) Paid Work	(2) Unpaid Work	(3) Any Work
Dep Var. Mean	0.18	0.15	0.39
District Intensity (DI)	0.0486**	0.0270*	0.0654***
	(0.0238)	(0.0138)	(0.0224)
sextile of children born = 2	-0.0110	-0.00956	-0.0332***
	(0.0111)	(0.00769)	(0.0120)
sextile of children born = 3	-0.0708***	-0.00325	-0.0864***
	(0.00998)	(0.00788)	(0.0114)
sextile of children born = 4	-0.0959***	0.0156**	-0.0953***
	(0.00959)	(0.00731)	(0.0112)
sextile of children born = 5	-0.0967***	0.0165*	-0.0929***
	(0.00963)	(0.00873)	(0.0110)
sextile of children born = 6	-0.115***	0.0164**	-0.112***
	(0.00988)	(0.00793)	(0.0108)
DI*2.sextchild	-0.0236	0.00916	0.0136
	(0.0253)	(0.0151)	(0.0265)
DI*3.sextchild	-0.0138	-0.0407**	-0.0471*
	(0.0256)	(0.0167)	(0.0266)
DI*4.sextchild	-0.0340	-0.0530***	-0.0578**
	(0.0232)	(0.0156)	(0.0243)
DI*5.sextchild	-0.0200	-0.0390**	-0.0365
	(0.0253)	(0.0176)	(0.0265)
DI*6.sextchild	-0.0140	-0.0438***	-0.0362
	(0.0258)	(0.0166)	(0.0229)
Observations	51,108	51,108	51,108
R-squared	0.027	0.052	0.050
Individual Controls	Yes	Yes	Yes
District Controls	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. Cohorts of women have been split into sextiles of children born to them. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A2: Impact of having two or more children during the sterilization campaign on long term female labor market outcomes - quantiles of total children born

VARIABLES	(1) Not Working	(2) Professional	(3) Clerical	(4) Sales	(5) Agricultural	(6) Service	(7) Manual
Dep Var. Mean	.608	0.03	0.012	0.21	0.223	0.072	0.033
District Intensity (DI)	-0.0661***	0.00524	-0.00346	0.00404	-0.0121	0.0517***	0.0206**
	(0.0206)	(0.0116)	(0.00706)	(0.00746)	(0.0136)	(0.0152)	(0.00983)
sextile of children born = 2	0.0326***	-0.00367	-0.00169	0.000667	-0.00887	-0.0158***	-0.00326
	(0.0104)	(0.00528)	(0.00357)	(0.00364)	(0.00894)	(0.00530)	(0.00361)
sextile of children born = 3	0.0863***	-0.0287***	-0.0119***	-2.07e-06	-0.0209**	-0.0221***	-0.00269
	(0.0103)	(0.00450)	(0.00308)	(0.00290)	(0.00848)	(0.00493)	(0.00324)
sextile of children born = 4	0.0951***	-0.0363***	-0.0143***	0.000110	-0.0134*	-0.0230***	-0.00826**
	(0.00944)	(0.00468)	(0.00289)	(0.00285)	(0.00757)	(0.00551)	(0.00353)
sextile of children born = 5	0.0925***	-0.0334***	-0.0135***	0.00167	-0.00788	-0.0311***	-0.00824**
	(0.0118)	(0.00418)	(0.00263)	(0.00330)	(0.00819)	(0.00446)	(0.00371)
sextile of children born = 6	0.112***	-0.0292***	-0.0131***	-0.000464	-0.0253***	-0.0357***	-0.00812***
	(0.0102)	(0.00380)	(0.00247)	(0.00326)	(0.00843)	(0.00461)	(0.00315)
DI*2.sextchild	-0.0125	0.0139	0.0207**	-0.00328	0.0375**	-0.0339**	-0.0223**
	(0.0233)	(0.0147)	(0.00928)	(0.00948)	(0.0168)	(0.0162)	(0.0108)
DI*3.sextchild	0.0493*	0.00144	-0.000430	-0.0121*	0.0136	-0.0246*	-0.0272***
	(0.0253)	(0.0116)	(0.00782)	(0.00703)	(0.0149)	(0.0139)	(0.0102)
DI*4.sextchild	0.0594**	-0.00569	0.00492	-0.00171	-0.0186	-0.0183	-0.0200*
	(0.0269)	(0.0128)	(0.00773)	(0.00831)	(0.0140)	(0.0176)	(0.0104)
DI*5.sextchild	0.0363	-0.00398	0.00428	-0.00886	-0.0158	0.00471	-0.0167
	(0.0238)	(0.0137)	(0.00801)	(0.00836)	(0.0184)	(0.0185)	(0.0105)
DI*6.sextchild	0.0363*	-0.00469	0.00155	0.00146	-0.00267	-0.000655	-0.0313***
	(0.0208)	(0.0119)	(0.00727)	(0.00802)	(0.0177)	(0.0167)	(0.0102)
Constant	0.185***	-0.0120	0.0144	0.0177*	0.522***	0.217***	0.0566***
	(0.0406)	(0.0142)	(0.0101)	(0.0103)	(0.0339)	(0.0224)	(0.0122)
Observations	51,108	51,108	51,108	51,108	51,108	51,108	51,108
R-squared	0.050	0.101	0.028	0.003	0.140	0.017	0.004
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. Cohorts of women have been split into sextiles of children born to them. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Role of Pre-policy district characteristics on sterilizations

VARIABLES	(1) LFP	(2) Literacy	(3) SC Pop	(4) ST Pop
Age Cohort	-0.00382	-0.0473**	0.0157	0.0389
	(0.0174)	(0.0238)	(0.0223)	(0.0335)
District Intensity (DI)	0.111	0.141	-0.0538	-0.0899
	(0.325)	(0.351)	(0.236)	(0.282)
Age Cohort * DI	-0.0424	-0.00912	-0.0157	-0.0335
	(0.0299)	(0.0505)	(0.0397)	(0.0411)
Constant	-1.039	-2.053	-2.586	0.514
	(1.392)	(1.373)	(1.588)	(1.573)
Observations	11,941	11,941	11,941	11,941
R-squared	0.583	0.480	0.448	0.406

Notes: Sample is all women above the age of 17 during the campaign. Women in 137/459 districts for whom sterilization information is available. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Role of Pre-policy district characteristics on sterilizations

VARIABLES	(1) LFP	(2) Literacy	(3) SC Pop	(4) ST Pop
Child Dummy	-0.00869	-0.00993	-0.00468	0.00268
	(0.0128)	(0.0115)	(0.0106)	(0.0157)
District Intensity (DI)	0.115	0.161	-0.0870	-0.0518
	(0.272)	(0.463)	(0.181)	(0.329)
Child dummy * DI	-0.0207	-0.0232	0.0205	-0.0202
	(0.0276)	(0.0295)	(0.0180)	(0.0270)
Constant	-1.127	-2.286	-2.601	0.400
	(1.647)	(1.507)	(1.792)	(1.949)
Observations	16,527	16,527	16,527	16,527
R-squared	0.583	0.482	0.460	0.402

Notes: Sample is all women between the ages of 20 and 30 during the campaign. Women in 137/459 districts for whom sterilization information is available. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Mechanism: Sterilization related health outcomes

VARIABLES	(1) Sterilization Problem	(2) Anemic	(3) Sterilization Problem	(4) Anemic
Child dummy	-0.0158*	-0.0775***		
	(0.00844)	(0.00448)		
Dist. Intensity (DI)	-0.0109	-0.00255	0.0104	-0.0133
	(0.0206)	(0.0257)	(0.0246)	(0.0311)
Child dummy * DI	0.00728	-0.0129		
	(0.0253)	(0.0191)		
Age Cohorts			-0.0475***	-0.190***
			(0.0106)	(0.00565)
Age Cohorts * DI			-0.0166	0.00239
			(0.0166)	(0.0350)
Constant	0.0839	0.309***	0.215*	0.353***
	(0.120)	(0.0861)	(0.116)	(0.0920)
Observations	12,535	48,146	8,477	35,295
R-squared	0.011	0.018	0.014	0.058
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. Outcomes conditional on being sterilized during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A6: Impact of forced sterilization on long-term female labor market outcomes using State-level coercion (vasectomies) measure from the Ministry of Health and Family Welfare

	(1)	(2)	(3)	(4)
VARIABLES	Paid Work	Unpaid Work	Any Work	Total Children
Age Cohort	-0.0517***	0.0234	-0.0692	0.681***
	(0.0176)	(0.0350)	(0.0453)	(0.203)
Sterilization Intensity (SI)	0.00394	-0.101**	-0.106	-0.0556
	(0.0657)	(0.0424)	(0.0736)	(0.164)
Age Cohort*SI	0.0487	-0.0158	0.0790	0.591*
	(0.0365)	(0.0451)	(0.0599)	(0.324)
Constant	0.317	0.319**	0.687***	5.269***
	(0.226)	(0.140)	(0.256)	(0.774)
Observations	33,062	33,062	33,062	33,062
R-squared	0.023	0.057	0.055	0.170
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Impact of forced sterilization on long term female labor market outcomes using State-level coercion (Tubectomies) measure from the Ministry of Health and Family Welfare

	(1)	(2)	(3)	(4)
VARIABLES	Paid Work	Unpaid Work	Any Work	Total Children
Age Cohort	-0.0211	0.0110	-0.0224	1.066***
	(0.0196)	(0.0201)	(0.0361)	(0.129)
Sterilization Intensity (SI)	0.0194	-0.0114	0.0146	-0.110
	(0.0912)	(0.104)	(0.107)	(0.241)
Age Cohort*SI	-0.00555	-0.0160	-0.0289	-0.0138
	(0.0483)	(0.0692)	(0.101)	(0.437)
Constant	0.330*	0.165	0.541**	5.319***
	(0.186)	(0.226)	(0.254)	(0.523)
Observations	33,062	33,062	33,062	33,062
R-squared	0.023	0.053	0.053	0.169
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Impact of having two or more children during the sterilization campaign (1975-77) State-level coercion (Vasectomies) measure from the Ministry of Health and Family Welfare

	(1)	(2)	(3)	(4)
VARIABLES	Paid Work	Unpaid Work	Any Work	Total Children
Child dummy	-0.00221	0.0389	0.0106	2.338***
	(0.0177)	(0.0252)	(0.0340)	(0.116)
Sterilization Intensity (SI)	0.00358	-0.105***	-0.117	-0.192
	(0.0682)	(0.0374)	(0.0886)	(0.121)
Child Dummy * SI	0.0263	-0.0229	0.0411	0.488**
	(0.0279)	(0.0311)	(0.0469)	(0.244)
Constant	0.220	0.279	0.558*	3.806***
	(0.229)	(0.169)	(0.286)	(0.414)
Observations	128,769	128,769	128,769	128,769
R-squared	0.024	0.051	0.059	0.271
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Impact of having two or more children during the sterilization campaign (1975-77) State-level coercion (Tubectomies) measure from the Ministry of Health and Family Welfare

	(1)	(2)	(3)	(4)
VARIABLES	Paid Work	Unpaid Work	Any Work	Total Children
Child dummy	0.0105	0.0314**	0.0400***	2.613***
	(0.0109)	(0.0141)	(0.0126)	(0.0614)
Sterilization Intensity (SI)	0.0280	-0.0146	0.0230	0.0272
	(0.0928)	(0.0725)	(0.0956)	(0.168)
Child Dummy * SI	-0.0219	0.0345	0.00860	-0.240
	(0.0365)	(0.0488)	(0.0342)	(0.269)
Constant	0.226	0.122	0.389	3.601***
	(0.174)	(0.203)	(0.301)	(0.388)
Observations	128,769	128,769	128,769	128,769
R-squared	0.024	0.046	0.056	0.270
Individual Controls	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes

Notes: Sample is all women above the age of 17 during the campaign. All paid includes paid work and self-employed paid work. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Impact of having two or more children during the sterilization campaign (1975-77) - Urban Sample

VARIABLES	(1) Not Working	(2) Professional	(3) Clerical	(4) Sales	(5) Agricultural	(6) Service	(7) Manual
Child Dummy	0.0450***	-0.00493	0.000697	0.00126	-0.0272***	0.0131*	-0.0279***
	(0.0150)	(0.00346)	(0.00160)	(0.00371)	(0.0103)	(0.00668)	(0.00637)
District Intensity (DI)	-0.0520	0.0175*	0.00225	0.0156	0.0112	0.0630**	-0.0575***
	(0.0480)	(0.0103)	(0.00385)	(0.0139)	(0.0408)	(0.0266)	(0.0184)
Child Dummy * DI	0.0291	-0.0156	-0.00704*	-0.0102	0.0110	-0.0278	0.0205*
	(0.0485)	(0.0106)	(0.00373)	(0.0171)	(0.0253)	(0.0263)	(0.0119)
Constant	0.867***	-0.0763**	0.00847	0.0271	-0.0839	0.135	0.123
	(0.250)	(0.0297)	(0.0147)	(0.0588)	(0.190)	(0.0855)	(0.0844)
Observations	4,620	4,620	4,620	4,620	4,620	4,620	4,620
R-squared	0.024	0.057	0.005	0.004	0.090	0.014	0.014
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women between 20 and 30 years old during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Impact of having two or more children during the sterilization campaign (1975-77) - Rural Sample

VARIABLES	(1) Not Working	(2) Professional	(3) Clerical	(4) Sales	(5) Agricultural	(6) Service	(7) Manual
Child Dummy	0.0107	-0.00716***	-0.00133*	0.00172	0.00804	0.00699**	-0.0190***
	(0.00802)	(0.00135)	(0.000726)	(0.00157)	(0.00850)	(0.00293)	(0.00182)
District Intensity (DI)	-0.0586	-0.00197	-0.00309**	0.00823	0.00826	0.0376***	0.00962
	(0.0416)	(0.00405)	(0.00124)	(0.00722)	(0.0353)	(0.0120)	(0.00904)
Child Dummy * DI	0.0474***	0.00408	0.00199	-0.00171	-0.0484*	0.00231	-0.00567
	(0.0173)	(0.00430)	(0.00147)	(0.00605)	(0.0255)	(0.00844)	(0.00698)
Constant	0.228	0.00664	0.00272	0.00672	0.589***	0.120***	0.0456*
	(0.193)	(0.0129)	(0.00658)	(0.0220)	(0.215)	(0.0458)	(0.0240)
Observations	31,271	31,271	31,271	31,271	31,271	31,271	31,271
R-squared	0.031	0.070	0.011	0.001	0.047	0.007	0.007
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women between 20 and 30 years old during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

Table A12: Impact of having two or more children during the sterilization campaign (1975-77) - Hindi Speaking States

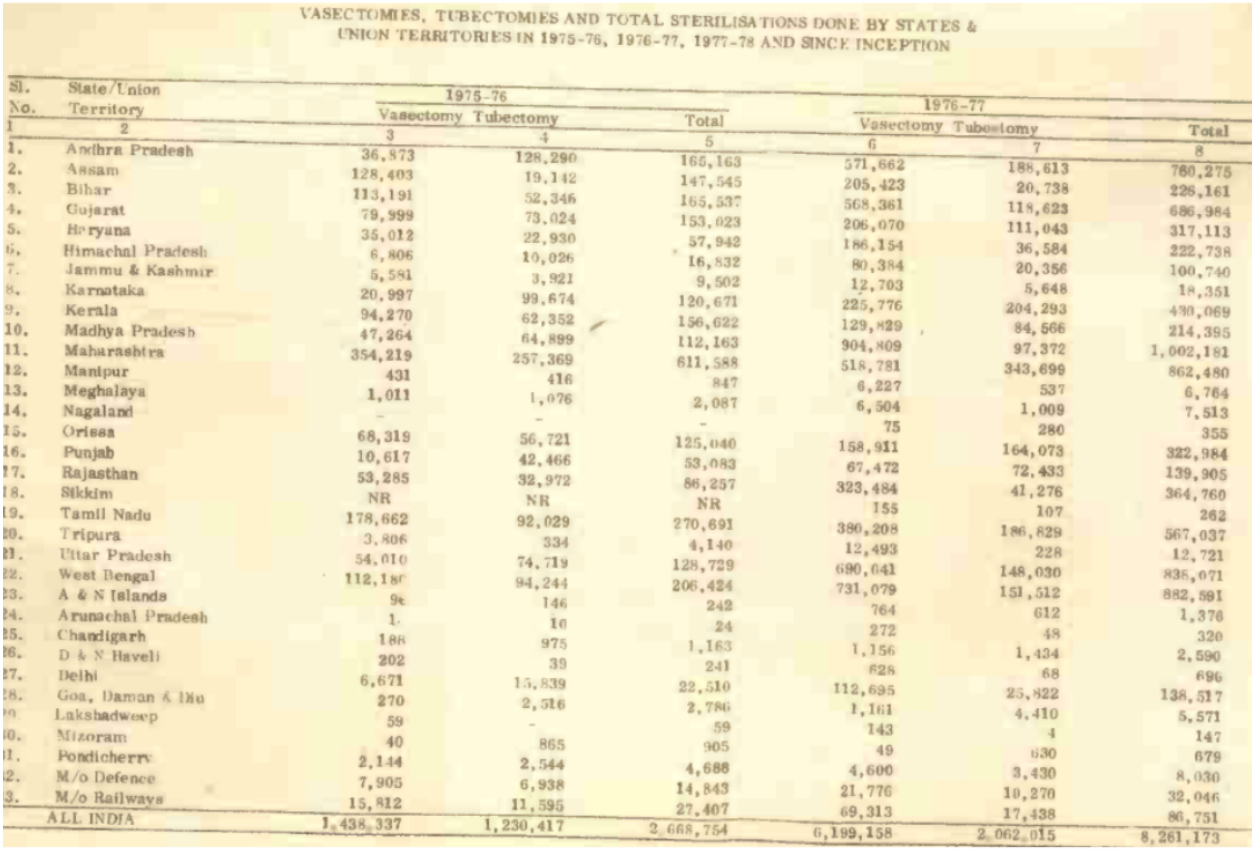
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Not Working	Professional	Clerical	Sales	Agricultural	Service	Manual
Child Dummy	-0.00736	-0.00436***	-0.000777	-0.00361*	0.0176**	0.0125***	-0.0140***
	(0.00949)	(0.00162)	(0.00126)	(0.00210)	(0.00886)	(0.00310)	(0.00218)
District Intensity (DI)	-0.0167	0.0127*	0.0109*	0.00180	-0.0407	0.0323***	-0.000316
	(0.0382)	(0.00727)	(0.00564)	(0.00438)	(0.0368)	(0.00971)	(0.0127)
Child Dummy * DI	0.0795***	-0.00481	-0.00967*	0.000181	-0.0529***	-0.0129**	0.000613
	(0.0187)	(0.00573)	(0.00554)	(0.00338)	(0.0170)	(0.00580)	(0.00570)
Constant	0.289*	-0.0245	-0.00833	0.0176	0.581***	0.0466	0.0983***
	(0.154)	(0.0208)	(0.0182)	(0.0145)	(0.178)	(0.0371)	(0.0321)
Observations	21,147	21,147	21,147	21,147	21,147	21,147	21,147
R-squared	0.043	0.107	0.020	0.005	0.123	0.025	0.009
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Sample is all women between 20 and 30 years old during the campaign. Individual controls include religion, caste, household location and educational attainment. District controls include population, sex ratio, female literacy rates, female labor force participation rates, and state fixed effects. Robust standard errors in parentheses. Wild bootstrapped p-values *** p<0.01, ** p<0.05, * p<0.1.

STERILISATIONS—TARGETS AND ACHIEVEMENT

Name of State/U.T.	1975-76			1976-77		
	Target set by Government of India	Target as revised by State Government/U.T. Admn.	Achievement	Target set by Government of India	Target as revised by State Government/U.T. Admn.	Achievement
1	2	3	4	5	6	7
Andhra Pradesh	2,94,200	..	1,65,163	4,00,000	6,00,000	7,41,713
Assam	67,300	..	1,47,545	1,70,000	..	2,26,205
Bihar	2,02,500	..	1,65,531	3,00,000	6,00,000	6,80,000
Gujarat	1,82,400	..	1,53,000	2,00,000	3,78,240	3,17,000
Haryana	74,300	45,000 (With Central Govt.'s approval)	57,942	52,000	2,00,000	2,22,000
Himachal Pradesh	18,600	..	16,830	31,500	1,00,000	1,00,740
Jammu & Kashmir	7,000	..	9,502	31,000	..	15,794
Karnataka	1,39,000	..	1,20,671	2,44,500	6,00,000	4,88,861 (upto 28-2-77)
Kerala	1,48,400	..	1,56,622	2,22,500	..	2,06,600
Madhya Pradesh	1 ,63,800	..	1,12,000	2,67,500	7,00,000	10,01,000
Maharashtra	3,18,300	5,68,000	6,11,000	5,62,000	12,00,000	8,33,000
Manipur	1,600	..	847	4,500	..	6,286
Meghalaya	1,500	..	2,100	3,500	..	7,513
Nagaland	..	..	..	..	1,000	355
Orissa	1,09,200	..	1,25,040	1,95,500	4,62,000	3,22,984
Punjab	43,100	..	53,083	46,500	2,50,000	1,39,905
Rajasthan	1,06,100	..	86,000	1,75,000	3,50,000	3,64,760
Sikkim	..	..	..	..	..	262
Tamil Nadu	2,11,300	..	2,70,691	5,00,000	6,00,000	5,69,756
Tripura	3,400	..	4,140	9,000	10,000	12,600
Uttar Pradesh	1,75,000	..	1,28,000	4,00,000	15,00,000	8,37,000
West Bengal	1,96,100	..	2,06,421	3,92,500	11,00,000	8,80,000
Andaman & Nicobar Islands	200	..	242	500	1,300	1,376
Arunachal Pradesh	100	..	22	600		268
Chandigarh	1,300	..	1,163	2,000	..	2,590
Dadra & Nagar Haveli	350	..	241	600	630	695
Delhi	11,200	..	22,510	29,000	1,00,000	1,38,517
Goa, Daman & Diu	4,400	..	2,800	8,000	..	5,571
Lakshadweep	50	..	56	200	..	149
Mizoram	900	..	905	1,800	..	679
Pondicherry	3,400	..	4,688	5,300	7,300	8,030
TOTAL	24,85,000		26,24,755	42,55,500		81,32,209

Figure 2: State Level Sterilization Reports published in 3rd and final inquiry by the Shah Commission Report



VASECTOMIES, TUBECTOMIES AND TOTAL STERILISATIONS DONE BY STATES & UNION TERRITORIES IN 1975-76, 1976-77, 1977-78 AND SINCE INCEPTION

Sl. No.	State/Union Territory	1975-76			1976-77		
		Vasectomy	Tubectomy	Total	Vasectomy	Tubectomy	Total
1	2	3	4	5	6	7	8
1.	Andhra Pradesh	36,873	128,290	165,163	571,662	188,613	760,275
2.	Assam	128,403	19,142	147,545	205,423	20,738	226,161
3.	Bihar	113,191	52,346	165,537	568,361	118,623	686,984
4.	Gujarat	79,999	73,024	153,023	206,070	111,043	317,113
5.	Haryana	35,012	22,930	57,942	186,154	36,584	222,738
6.	Himachal Pradesh	6,806	10,026	16,832	80,384	20,356	100,740
7.	Jammu & Kashmir	5,581	3,921	9,502	12,703	5,648	18,351
8.	Karnataka	20,997	99,674	120,671	225,776	204,293	430,069
9.	Kerala	94,270	62,352	156,622	129,829	84,566	214,395
10.	Madhya Pradesh	47,264	64,899	112,163	904,809	97,372	1,002,181
11.	Maharashtra	354,219	257,369	611,588	518,781	343,699	862,480
12.	Manipur	431	416	847	6,227	537	6,764
13.	Meghalaya	1,011	1,076	2,087	6,504	1,009	7,513
14.	Nagaland	-	-	-	75	280	355
15.	Orissa	68,319	56,721	125,040	158,911	164,073	322,984
16.	Punjab	10,617	42,466	53,083	67,472	72,433	139,905
17.	Rajasthan	53,285	32,972	86,257	323,484	41,276	364,760
18.	Sikkim	NR	NR	NR	155	107	262
19.	Tamil Nadu	178,662	92,029	270,691	380,208	186,829	567,037
20.	Tripura	3,806	334	4,140	12,493	228	12,721
21.	Uttar Pradesh	54,610	74,719	128,729	690,641	148,030	838,671
22.	West Bengal	112,180	94,244	206,424	731,079	151,512	882,591
23.	A & N Islands	96	146	242	764	612	1,376
24.	Arunachal Pradesh	14	10	24	272	48	320
25.	Chandigarh	188	975	1,163	1,156	1,434	2,590
26.	D & N Haveli	202	39	241	628	68	696
27.	Delhi	6,671	15,839	22,510	112,695	25,822	138,517
28.	Goa, Daman & Diu	270	2,516	2,786	1,161	4,410	5,571
29	Lakshadweep	59	-	59	143	4	147
30.	Mizoram	40	865	905	49	630	679
31.	Pondicherry	2,144	2,544	4,688	4,600	3,430	8,030
32.	M/o Defence	7,905	6,938	14,843	21,776	10,270	32,046
33.	M/o Railways	15,812	11,595	27,407	69,313	17,438	86,751
	ALL INDIA	1,438,337	1,230,417	2,668,754	6,199,158	2,062,015	8,261,173

Figure 3: State Level Sterilization Reports published in the 1977-78 yearbook of the Ministry of Health and Family Welfare