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Abstract

Using administrative data on over 4 million hospital visits, we document striking gender disparities within a government health insurance program that entitles 46 million poor individuals to free hospital care in Rajasthan, India. Females account for only 33% of hospital visits among children and 43% among the elderly. These shares are lower for more expensive types of care, and far lower than sex differences in illness prevalence can explain. Almost two-thirds of non-childbirth spending is on males. We combine these data with patient survey, census, and electoral data to show that 1) the program is unable to fully offset the costs of care-seeking, which results in disparities in hospital utilization because some households are willing to allocate more resources to male than female health; 2) lowering costs does not reduce disparities, because males benefit as much as females do; and 3) long-term exposure to village-level female leaders reduces the gender gap in utilization, but effects are modest and limited to girls and young women. In the presence of gender bias, increasing access to and subsidizing social services may increase levels of female utilization but fail to address gender inequalities without actions that specifically target females.

JEL classification: I12, I13, J16, O12
Keywords: Gender Bias, Healthcare, Political Quotas

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1 Introduction

India consistently ranks among the five worst countries in the world for the health and survival of females (World Economic Forum, 2021). A substantial body of research has documented gender bias in the allocation of household resources and of health inputs in particular, and has shown that it results in worse female health outcomes. Expanding access to and heavily subsidizing health care has been a key policy response to address health inequality, including along gender. For decades, this largely entailed direct provision of health care through a large network of public health facilities. Since 2008, substantial public funds have been invested in the scale-up of government health insurance programs that entitle poor households to free hospital care. Ensuring universal and equitable access to health care is an explicit goal of these programs. This paper shows evidence of substantial gender disparities in the context of such programs and investigates why they persist.

We study gender disparities within the Bhamashah Swasthya Bima Yojana (BSBY), a government health insurance program that targets 46 million poor individuals in Rajasthan, India.[1] We compile a dataset of insurance claims for all 4.2 million hospital visits under the program from its launch in 2015 through late 2019. We geocode both hospital locations and patient addresses, which allows us to measure geographic proximity to hospitals and the distance traveled for every hospital visit. We also match patient residence locations to two rounds of the population census and to data on the gender of local political leaders (Sarpanches) across three elections between 2005 and 2015. To our knowledge, this is the first dataset of its type in India and allows us to study health care seeking under insurance with unusual granularity across time, geography, and type of care.

We document large gender disparities on both the extensive and intensive margins of BSBY utilization. Females account for only 45% of all hospital visits, with the biggest gaps among children under 10 years (33%) and adults 50 years and older (43%) (Figure 1). These differences are considerably larger than can be explained by Rajasthan's skewed population sex ratio (females account for 47% of the under-10 population and 48% overall). Differences in underlying health needs also cannot account for these gaps: across several health conditions, the female

[1] In September 1, 2019, BSBY was renamed the Ayushman Bharat Mahatma Gandhi Rajasthan Swastya Bima Yojana (AB-MGRSBY).

share of BSBY hospital visits is more than 10 percentage points (pp) lower than would be expected based on sex-specific illness prevalence estimates. Given relative prevalence, and using male BSBY utilization as the benchmark, we estimate over 225,000 missing female hospital visits between 2017 and 2019 for nephrology, cardiology, and oncology services alone. Females are particularly underrepresented in higher-value tertiary care. As a result of these disparities, public spending is pro-male: 57% of total spending and 60% of non-childbirth spending on BSBY is on males. To put this in perspective, 57% of annual Medicaid spending in the United States is on females.[2] Furthermore, the female shares of utilization and spending *decrease* over four years of BSBY implementation, even as total utilization increases substantially (Figure 2), indicating that program expansion alone is insufficient to address these gender gaps.

We provide evidence that male-biased household resource allocation is a key factor behind the observed disparities in BSBY utilization. Using over 20,000 surveys with BSBY patients, we document widespread out-of-pocket (OOP) charges by hospitals for care that is supposed to be free under the program, and show that these charges disproportionately deter care-seeking for females. We also show that female utilization decreases relative to male utilization as the distance to the nearest hospital (another measure of care-seeking costs) increases and, conditional on getting care, households travel significantly further for male care. These relationships cannot be fully explained by supply-side discrimination or female-specific care-seeking barriers, such as limited mobility. Instead, they are consistent with some households being more willing to spend on male than female health, which results in disparities in utilization because, even under BSBY, care-seeking costs are not zero. We then exploit the empanelment of private hospitals into BSBY near locations with previously limited access to examine the effect of *decreasing* care-seeking costs on female utilization. Hospital empanelment increases female utilization substantially, but increases male utilization by a similar proportion and fails to reduce gender disparities.

A key insight from these results is that, when a large share of households prefer to spend their marginal rupee on males due to gender bias, lowering costs may not necessarily reduce disparities because males may benefit as much or more than females.This goes against the

[2]Authors' calculations using the data available here: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/AgeandGenderTables.zip (last accessed on 2/6/2020).

common assumption, implicit in much government policy in India, that expanding geographic access and reducing the cost of health care will automatically reduce inequalities (Reddy et al., 2011), but is consistent with theories of intra-household inequality and discrimination (Kanbur and Haddad, 1994; Oster, 2009). Gender-neutral subsidies may increase levels of utilization for both males and females, thus benefiting females substantially, but addressing gender disparities may require additional strategies that explicitly target barriers to female care-seeking and gender bias.

In the final section of the analysis, we look at whether political reservations for females in village elected councils (Gram Panchayats), a gender-targeted policy that has been shown to reduce bias in perceptions of and investments in females (Beaman et al., 2009, 2012), has any effect on gender disparities in BSBY utilization. Exploiting the randomized reservation of Panchayat leadership positions across three elections between 2005 and 2015, we find little change in the share of claims filed for female patients (0.23pp, p-value=0.313) for each reserved 5-year term overall, but significant increases among children (0.85pp, p-value=0.006) and adults 15 to 49 years (0.69pp, p-value=0.033), and decreases among the elderly (0.56pp, p-value=0.073). Effects are not concurrent, but accumulate over fifteen years of exposure, and the evidence suggests that long-term changes in gender norms and maternal and child health investments, rather than direct assistance with BSBY, are the primary mechanisms. These results add to the growing literature on the effects of female political reservations (see Hessami and da Fonseca (2020) for a review) and demonstrate that interventions that attempt to counteract gender bias by strengthening the position of women can have downstream, complementary effects on the extent to which females benefit from seemingly unrelated policies. However, changing gender attitudes is a slow and incremental process; effects may be modest, uneven across groups, and take years to manifest. Ensuring BSBY reaches females at least as effectively as it does males will require actions targeting women more directly.

Our paper contributes to a large literature on gender inequality in India. Gender differences in health outcomes are summarized most strikingly in the estimated 63 million missing women in India in 2018 (Government of India, 2019). Women who are alive have high rates of under-nutrition and anemia, and female height has grown less rapidly than male height over

the past decades of economic growth.[3] Gender discrimination in health-related inputs, including immunization, nutrition, breast-feeding, medical treatment, and health care expenditure endures in India and contributes to worse female health outcomes.[4] Whereas much of this evidence comes from household surveys and focuses on early childhood primary care services, we provide large-scale state-level evidence using administrative insurance records for the full range of hospital care across the age distribution.

Our finding that gender disparities persist, and even worsen, at older ages draws attention to the known but underemphasized fact that elderly women in India, particularly widows, are socio-economically disadvantaged and suffer substantial discrimination (Chen and Drèze, 1992; Jensen, 2007). Anderson and Ray (2010) show that the majority of missing women in India are adults, and within these, most are 50 years or older. Yet, systematic evidence of discrimination, particularly in health inputs, remains limited.[5] Maharana and Ladusingh (2014) show large gender disparities in food and health expenditures among the elderly that narrow but persist between 2000 and 2008. Most recently, Calvi (2020) shows that older women are poorer than older men within the same household, reflecting their declining bargaining power, and links this to increased mortality, but does not identify the role of differential health care. Studies of hospital use find larger gender differences at older ages (Kapoor et al., 2019; Shaikh et al., 2018; Pandey et al., 2017). We provide large-scale evidence isolating intra-household bias in health care inputs, and show that this is resistant to public subsidies and female political representation. Government health programs, particularly at the village level, focus heavily on maternal and child health. Gender empowerment efforts that work to build female aspirations and agency typically also leave out the elderly. Ensuring social policy takes into account the specific circumstances of elderly women will become only more important as the Indian population ages.

Our main contribution is to show that a massive public subsidy is not reaching women as

[3] See IIPS (2017), Deaton (2008).

[4] We do not attempt to summarize the vast literature, but Saikia and Bora (2016), Rajan and Morgan (2018), Khera et al. (2014), and Pande (2003) provide extensive summaries of the literature on differences spanning the last several decades.

[5] For example, Anderson and Ray (2010) remain agnostic about the factors behind the missing adult women and write: "There is an entire array of hypotheses to explain the phenomenon. It could be genetic [...]. Lifestyle differences by gender may be important [...]. Or it may truly be lack of care: women seek or receive medical care less often in developing countries [...]".

effectively as it is men, and that large gender disparities persist even when care is highly subsidized due to household male bias, even in areas where women have held leadership positions in local governance. Our results are consistent with raw gender differences observed in health insurance programs in other states (Kaur et al., 2020). Shaikh et al. (2018) show that, between 2008 and 2012 under a similarly designed government health insurance program in Andhra Pradesh, the female share of hospitalizations for "sex-neutral" conditions is 42%, and the female share of program spending 39%. By geocoding and linking our insurance claims data to other complementary datasets, we extend this work substantially, demonstrating that male-biased resource allocation within the household is a key mechanism behind the gender gaps, and that program expansion and further subsidies may not be sufficient to close them. We build on insights from studies that show that the relationship between increased household resources (Kanbur and Haddad, 1994) or subsidized social services (Oster, 2009) and intra-household inequality may be non-monotonic and that disadvantaged members may not necessarily benefit as much as others. More generally, we provide empirical support for the view that gender-neutral health and development policies are insufficient to address gender inequity (Duflo, 2012; Raj, 2011). The implications for policy are critical and generalize to services beyond healthcare: In the presence of deep gender biases, increasing access and reducing the costs of social services may help increase utilization among vulnerable populations, including women. However, ensuring that females benefit as much as males from social programs and addressing gender disparities in outcomes will require strategies directly targeting the costs and barriers faced by females in the short run, alongside longer term legal and social endeavors to strengthen the rights and bargaining power of females.

The paper proceeds as follows. Section 2 provides background on BSBY and on India's political reservation system; Section 3 describes the rich data we compile; Section 4 documents gender disparities in BSBY utilization; Section 5 provides evidence that male-biased household resource allocation is a key driving factor; Section 6 examines the impact of female political reservations; and Section 7 concludes.

2 Program Context

2.1 The BSBY Insurance Program

The Bhamashah Swasthya Bima Yojana (BSBY) is a government health insurance program launched in December 2015 that entitles low-income households to free secondary and tertiary care at public and empaneled private hospitals.[6] All members of households that meet state poverty criteria are eligible and automatically enrolled in BSBY. To verify eligibility at the point of care, households must simply present their Bhamashah Card, a biometrically-linked card that is issued to all households in Rajasthan (in the name of the female head of household) and provides access to a range of social programs. Hospital care under the program is supposed to be entirely free to households: premiums are paid directly by the government to the Insurer, hospitals are reimbursed directly by the Insurer, and households are not supposed to pay a copay.

The program uses a prospective payment system, where approximately 1,400 services are eligible for coverage and are reimbursed at pre-specified rates that do not vary with care intensity or individual costs. The reimbursement rate is supposed to cover all costs associated with a patient visit for a service, including hospital fees, diagnostics, and medicines, so that patients pay nothing. Households are entitled to up to 130,000 INR ($\sim$ \$1,900) in hospital care per household per year (this coverage increased to $\sim$\$4,700 two years into the program). The same amount paid to the hospital is deducted from the household annual allowance. While limits on financial coverage under insurance are unusual in contexts like the U.S., all public and many private health insurance programs in India follow this design, in part to prevent egregious fraud. Less than 1% of households reach their annual allowance and over 80% spend less than half the allowance, suggesting that the annual cap is not a key factor explaining gender differentials. The program has a single, semi-governmental insurer that was chosen through a

[6]Primary healthcare denotes the first point of contact between individuals and the health system, and includes routine preventive care, health monitoring, and treatment of common diseases. In India, primary care received at any of the vast network of public primary health centers and sub-centers is supposed to be entirely free, which partly explains why these services are not covered under BSBY. Secondary healthcare refers to the next tier of facilities, typically community health centers and small hospitals, that provide services like basic hospital stays and uncomplicated child deliveries. Tertiary healthcare refers to the most specialized facilities providing complex services, including in-patient intensive care and major surgeries. Under the Indian public health system, tertiary care services are provided by medical colleges and advanced medical research institutes.

standard public procurement system. The verification of patients, as well as the filing, review, and reimbursement of hospital claims is managed through a central IT system managed by the government, which generates the administrative data we use. Program spending through October 2019 was approximately 26 billion INR ($\sim$ \$370 million).

2.2 The Panchayat System and Female Reservations

The Panchayati Raj system consists of elected councils at the district, block, and village levels. A village council, or Gram Panchayat (GP), covers 1 to 15 villages and a population of 1,000 to 10,000. It is comprised of 5 directly elected council members and is headed by a Sarpanch (also known as a Pradhan) elected directly by citizens or indirectly by other council members. In 1992, the 73rd Constitutional Amendment devolved local governance to GPs, including provision and maintenance of local public goods such as roads, irrigation, sanitation, and drinking water, oversight of government education and health services, and delivery of public benefits such as subsidized food. The amendment also required that one-third of all council members and Sarpanch seats be reserved for women in each five-year term, with reserved Sarpanch seats selected randomly with replacement from the list of GPs before each election. In Rajasthan, the share of reserved seats was increased to 50% in 2009 and a requirement that candidates have completed at least secondary education was introduced in 2014. The random variation in exposure to a female Sarpanch thus generated has been previously exploited to study how female local leaders change GP investments (Chattopadhyay and Duflo, 2004) as well as gender attitudes in the electorate (Beaman et al., 2009, 2012). We use the same variation in this paper to test whether exposure to female Sarpanches affects gender disparities in BSBY care utilization.

3 Data

3.1 Insurance Claims Data

We obtained access to administrative data on the universe of insurance claims filed under the BSBY program from its launch in December 2015 through October 2019. These data include information on the 1) hospital: ID, name, sector (public/private), and district location; 2)

care provided: health service codes, associated reimbursement rates, claim filing date, and the transaction ID that links all claims for a single patient-visit; and 3) patient: age, sex, residence address, and the Bhamashah ID that links all members of a household.[7] Because we were unable to obtain data on the full list of individuals eligible for BSBY, we cannot compare female and male utilization rates—i.e. the share of eligible individuals that utilized BSBY. Instead, we use the claims data to compare the female and male shares of hospital visits and gender differences in patterns of care-seeking (type of hospital visited or care sought, for example). The unit of observation for most of our analysis is the hospital visit, which may include more than one claim if multiple services were provided (results are not sensitive to this choice).

Our main analysis uses claims filed in 2017 or later because the quality of the administrative data (patient residence and sex in particular) was poorer in the first year of implementation. We also exclude childbirths, which have no male counterpart, and neonatal claims, for which demographic information is missing.[8] We verify the accuracy of the patient's gender classification in the claims data by comparing it with reported gender in over 10,000 surveys conducted with patients soon after a claim was filed in their name (discussed in section 3.3). Gender in the claims data was confirmed in 97.1% of surveys, and figure A1 shows that this rate was slightly lower for female than male claims, except for the under-10 and over-80 age groups, for which we have far fewer phone surveys. Discrepancies could be due to errors in the survey as well as the claims data, but we show below that even if they were entirely due to claims errors, they cannot explain the large gender gaps we document (see section 4.1).

We geocode the exact location of 1,601 of the 1,639 hospitals that filed any claim in our dataset through the Google Maps API. Using patient addresses in the claims data, which include the location name, Postal Index Number (PIN) code, and district name, we match patient residence

[7]Although hospitals upload detailed documentation of test results, procedures, diagnoses, and prescriptions, these are only available to the Insurer to help it review claims prior to reimbursement and are not included in the administrative data. The only service details available to us are the service name and code from the government's predefined service list and the medical specialty (e.g. Urology or Cardiology). Though uniquely detailed for the Indian context, our data are not as rich as U.S. insurance data.

[8]We exclude childbirths because they only apply to females and there is no male counterpart, but keep gynecology claims because they are mirrored by urology claims for men. Very young children who are not yet registered on the household Bhamashah card receive care under their parent's name, so demographic details for neonatal care visits are often for the parent rather than the child. Because the status of trans patients is not clearly or reliably recorded in the administrative data, we cannot analyze them, and we drop the the 0.09% of claims where sex was recorded as "other".)

locations to villages/towns in the 2011 Population Census and the corresponding GPS polygons. Match accuracy is high: using approximately 2,000 patient surveys during which location details were recorded, we confirmed the matched locations in 98.2% of cases. Using coordinates for the centroid of the census location polygons and hospital locations, we calculate the distance traveled in kilometers for every hospital visit and each patient residence location's proximity to BSBY hospitals. Finally, we linked patient residence locations to the 2001 Population Census using the SHRUG data platform (Asher et al., 2021).

Table 1 provides summary statistics from the compiled dataset on hospital visits. We study 3.21 million hospital visits by 1.97 million unique patients from 1.67 million households between January 2017 and October 2019. Patient residence locations were successfully geocoded for 71% of all observations, or 2.29 million visits.[9] Just over half (55%) of all BSBY visits were to private hospitals, 15% were for long-term chronic care, and 26% were for more complex tertiary care.[10] Only 19% of patients visited the hospital closest to their residence; the average distance traveled to get care is about 50 km. Table A1 provides the distribution of care specialties among filed claims, as well as the district locations of the hospitals filing the most claims over the study period.

3.2 Gram Panchayat Reservations Data

To examine the effects of reserving seats for females in Gram Panchayats (GPs), we match GP electoral histories with BSBY patient residence locations. We obtained the lists of Gram Panchayats (GPs) and their reservation status for the 2005, 2010, and 2015 elections from the Rajasthan State Election Commission.[11] Because GPs changed slightly over time and there is no unique GP identifier, we linked GPs across the three rounds of elections by matching their names, using names from the 2015 round as the master list. Finally, we used the government listing of 2011 Population Census villages within each GP (a GP covers 5 to 25 villages on average) as a crosswalk to link the GP names in the reservation history dataset to their

[9] We find no meaningful differences in the demographic and other characteristics of hospital visits that were and were not geocoded through this procedure, indicating that selection into the matched sample is minimal.

[10] Chronic care requires multiple visits over several months, including chemotherapy and dialysis. Tertiary care includes higher value, specialized services like heart surgery. Chronic care may also be tertiary care.

[11] Data were downloaded in March 2020 from http://sec.rajasthan.gov.in/StatisticsArchiveNew.aspx Electoral data for the first two rounds of GP elections, in 1995 and 2000, were unavailable.

component villages, and match these to the census village locations of BSBY patients in the claims data.[12]

We were able to match the patient residence location to the complete 2005, 2010, and 2015 reservation history for 52.9% of all BSBY hospital visits in the study sample (about 1.7 million visits).[13] Of these, 12.5% of hospital visits in the analysis sample were for patients from locations that were never reserved, 52% were from locations reserved once, 30.8% were reserved twice, and 4.7% were reserved in all three elections between 2005 and 2015 (Table 1). Table A2 presents summary statistics for the 7,465 GPs with "complete" reservation history for the period 2005-2015 and matched to our analysis sample. The table highlights that the reservations have been highly successful at increasing female leadership: less than 10% of elected Sarpanches are female in unreserved GPs, and compliance with reservations is very high, with 99.9% of Sarpanches in reserved GPs being female in 2005, 100% in 2010, and 92.5% in 2015.

Since female-reserved GP seats are selected randomly and independently before each election, exposure to past female reservations (including those in 1995 and 2000) is, in expectation, balanced across levels of exposure to future reservations. We test whether female reservation status is orthogonal to characteristics among locations with complete reservation history in Table A3. We find some imbalance in 2001 and 2011 census population, scheduled caste share of population, and availability of a banking facility, but these differences are small in magnitude and, overall, the results suggest the randomization protocol was adhered to and that attrition due to incomplete matching is uncorrelated with reservation status. We control for all characteristics in Table A3 in our analyses of the effects of reservations.

3.3 Survey Data

The administrative data described thus far allow us to examine care-seeking with granularity and at scale, but do not provide details on the hospital-patient interaction or household decision-

[12]The list of villages within each GP was downloaded in March 2020 from the Local Government Directory, the official listing of administrative and Panchayati Raj units, and is available here: https://lgdirectory.gov.in/

[13]The matching process was limited by several factors: 1) because GPs only govern rural areas, BSBY patients residing in urban locations will (correctly) not be matched, but we cannot distinguish these "legitimate" unmatched urban locations from villages with "missing" matches because urban administrative status is not clearly identified; 2) because some government administrative lists do not include a unique numeric location identifier, we had to use "fuzzy" name matching; 3) because GPs and villages can split over time, new units that do not share the name with the parent unit may not be matched.

making. We supplement them with data from three different surveys.

Audit Surveys: To understand details of patients' experience at the hospital and verify whether hospitals are charging patients for care against program rules, we conducted over 20,000 "audit" surveys with BSBY patients between June 2017 and July 2018. Using regularly updated claims data, we sampled a random subset of hospital visits every two weeks, and conducted phone surveys with patients using contact numbers included in the claims data. The sample covered private hospital visits across 13 different services, as well as public hospital visits for childbirths and hemodialysis. Surveys were conducted within 3 weeks of the hospital visit to reduce recall bias and collected information on out-of-pocket (OOP) payments, services received, care quality, demographics, and socioeconomic status. Approximately 75% of sampled patients were successfully surveyed and attrition was almost entirely due to incorrect or unreachable phone numbers in the administrative claims data.

Household Surveys: To examine the effects of female political reservations on village residents, we conducted phone surveys with BSBY-eligible households between November 2019 and January 2020. As we did not have BSBY eligibility data, in order to identify a representative sample of BSBY-eligible households, we used the insurance claims data to sample households with a BSBY-covered childbirth in 2017 (since childbirth is less prone to selection than other services). We randomized whether the survey was to be administered to a male or female adult in order to get a representative sample of respondents of both genders. Because we relied on phone numbers from claims filed over a year earlier, we only reached about 60% of households, but compliance with the gender assignment was high (83% and 97% among female- and male-assigned households respectively). These surveys collected data on BSBY awareness and gender attitudes.

Sarpanch Surveys: To investigate differences in the actions and priorities of male versus female Sarpanches, we randomly sampled 1,332 GPs, stratifying by whether the GP was reserved for a female Sarpanch and its district location, and conducted phone surveys with the Sarpanch that was in office during the 2015-2020 term. Phone surveys were conducted between November 2020 and January 2021, after the 2020 GP elections. Most of the 2015 Sarpanches had not been re-elected. Attrition due to incorrect phone numbers in the government's Sarpanch directory was substantial, and our final dataset includes 561 complete

interviews (42% of the original sample). The survey collected data on Sarpanch spending priorities, interactions with government health and education workers serving their area, and awareness of and involvement in the BSBY program.

4 Gender Disparities in Utilization of Insured Care

4.1 Missing Female Patients

We find striking gender disparities in both the quantity and type of care received under BSBY. Figure 1 plots the female share of all hospital visits (excluding childbirths) under BSBY in ten-year age bins. For reference, we also show the age-specific female shares in the 2011 Population Census and in the poorest half of the 2014 and 2018 National Sample Survey samples, which more closely corresponds to the low-income population eligible for BSBY. Females account for 45% of all visits, and this share is lowest among children under 10 years (33%) and adults 50 years and older (43%). These differences are substantially larger than the population sex imbalance (females comprise 47% of the under-10 population, 50.5% of the 50 and older population, and 48% of the total population in Rajasthan). Gender differences in enrollment are unlikely to explain the gap, as all members listed on the Bhamashah card are automatically enrolled in BSBY.[14] Mismeasurement of gender in the claims data also cannot account for the gap, since patient surveys confirmed the recorded gender 97.1% of the time (Figure A1). Although this is lower among children under 10 years, for whom we have fewer surveys, the most conservative adjustment for this only increases the female share of claims to 39.7%, still far short of the 47% female population share in this age group.[15] Importantly, the female share of utilization *decreases* over time, from 47% in 2016 to 44% in 2019, even as total utilization increases sharply over this period, indicating that program expansion was insufficient to address gender gaps (Figure 2).[16]

[14]Survey data confirm that even among children that may have been born after the household got its Bhamashah card, girls are no less likely than boys to be registered on the card. Households have an incentive to enroll all members on the card to avail social services. See Section 2.

[15]Using the mean male and female survey confirmation rates, the adjusted female share is 0.33*(0.94)+0.67*(0.08) = 36.4%. Using the highest of the female confirmation and lowest of the male confirmation rate ranges, the adjusted female share is 0.33*(0.98)+0.67*(0.11) = 39.7%.

[16]One limitation of our data is that we only observe care received under the BSBY scheme. If women disproportionately receive unsubsidized care at non-BSBY hospitals, the low BSBY utilization we observe may not reflect lower utilization of any hospital care. This scenario is unlikely. In the 2018 National Sample Survey

To test whether the gender gap in patient composition is driven by differences in the prevalence of health conditions, we combine data on gender- and age-specific disease prevalence for India from the Global Burden of Disease Study (IHME, 2019) with Rajasthan's demographics from the 2011 Population Census to compute the predicted female share of total prevalence for a condition. We conduct this exercise for 7 broad categories of health conditions that can be mapped from the medical specialties recorded in BSBY claims to GBD classifications and which together comprise 26% of total non-childbirth claims and 54% of claims for specialized services excluding general medicine and surgery. Figure 3 plots results. The female share of hospital visits under BSBY is markedly below what would be expected based on GBD prevalence estimates for almost every age group and specialty we examine. For example, among patients 15 years and older suffering from chronic kidney disease, the female share is only 30% in BSBY but over 48% in the population per GBD estimates. When we compare the condition-specific overall female share across all age groups in BSBY with that in the GBD (weighting each age group in the GBD by the age-group share of total BSBY visits for that condition among males), we find deficits of 10pp or more for 4 of the 7 specialties we study (Table 2).

Using male utilization of BSBY as a benchmark, we estimate missing female visits for each medical specialty: the number of additional female visits we would observe if female utilization of BSBY, conditional on estimated illness prevalence, was the same as for males. The calculation for each specialty and age group g is as follows:

$$\begin{aligned} Missing_g &= (GBDFemaleShare_g * BSBYExpectedVisits_g) - BSBYFemaleVisits_g \\ &= \left(GBDFemaleShare_g * \left(\frac{BSBYMaleVisits_g}{1 - GBDFemaleShare_g}\right)\right) - BSBYFemaleVisits_g \end{aligned}$$

where $GBDFemaleShare_g$ is the expected female share of total hospital visits based on gender-specific GBD prevalence estimates and the population sex ratio, $BSBYExpectedVisits_g$ is the total expected BSBY visits given the volume of observed male BSBY visits $BSBYMaleVisits_g$ and the prevalence-based expected male share

(NSS), the female share of reported hospitalizations was 44%, just below what we observe. Because the NSS includes total (reported) hospitalizations, not just those for the limited set of BSBY-covered services and poorer BSBY-eligible population, it is not perfectly comparable to BSBY utilization, but likely provides an upper bound on the hospitalization rate in the BSBY population.

$(1 - GBDFemaleShare_g)$, and $BSBYFemaleVisits_g$ is the volume of observed female BSBY visits. We sum across age groups and show the estimates by medical specialty in Table 2. The large gaps shown in Figure 3 translate into relatively small numbers of missing hospital visits for low-prevalence conditions, but we estimate approximately 226,000 missing female visits between 2017 and late 2019 for nephrology, oncology, and cardiology services alone.[17]

4.2 Differential Patterns of Utilization

In addition to the lower likelihood of female utilization, we document substantial gender differences in care-seeking patterns conditional on utilization. In Figure 4, we show the outcomes of regressions of care characteristics on a dummy for whether the patient is female with age group, month, and patient residence district fixed effects. A negative coefficient indicates that females comprise a lower share of visits for that outcome than males do. Females are particularly under-represented in tertiary, chronic, and private hospital care (relative to secondary, one-time, and public hospital care respectively), and receive lower value care. Given that private and tertiary care are typically perceived as higher quality, more specialized, and more expensive, these disparities suggest that households are willing to spend more and seek better care for males than for females. We test this formally in the next section.

4.3 Differential Incidence of BSBY Spending

As a result of these differences in the likelihood and type of utilization, program spending is male-skewed: 57% of all BSBY hospital reimbursements and 60% of all non-childbirth reimbursements under the program are for male patients (Figure 2). This is in sharp contrast with the substantially higher spending on female healthcare observed in most other countries for which similar data is available. In the U.S. Medicaid program and in the Netherlands, Korea, and the Czech Republic, just under 45% of healthcare spending is on males.[18]

[17] GBD prevalence estimates are modeled if directly measured data are unavailable. Rather than male and female estimated GBD illness prevalence levels, we are using the female:male ratios, which are less subject to modeling error.

[18] See footnote 2 for Medicaid data. Data for the other countries was obtained from https://www.oecd.org/health/Expenditure-by-disease-age-and-gender-FOCUS-April2016.pdf

5 Factors Driving Gender Disparities in Utilization

5.1 Care Costs and Bias in Household Resource Allocation

We provide evidence that a key factor driving gender disparities in BSBY utilization is households' willingness to allocate more resources to male than female health. Specifically, we build on the intuition that, if households are gender-biased, they will spend their marginal rupee on males over females, so any real or perceived costs of care-seeking under BSBY will exacerbate gender disparities in utilization. We show that, indeed, female utilization is more strongly negatively affected than male utilization by two types of care-seeking costs: hospital out-of-pocket (OOP) charges and distance to the nearest hospital.

5.1.1 Hospital Out-of-Pocket Charges

Although hospitals are not supposed to charge patients for services under BSBY, there is little oversight by the government or the Insurer to ensure they comply. Summary statistics from our post-visit audit surveys with BSBY patients show that OOP charges are, in fact, widespread. Approximately 28% of patients visiting private hospitals were charged for their care and average payments were just around 1,400 INR ($\sim$ \$20), with a standard deviation of 3,830 INR ($\sim$ \$55). Figure 5 shows that charges vary substantially across services; angioplasties, childbirths, and kidney stone treatments have the highest charges. For childbirths and hemodialysis, where we audited both private and public claims, we find that public hospitals also charge for care, although the amounts are significantly lower.[19]

To examine whether hospital charges deter care-seeking for females more than for males, we first calculate the mean OOP charge for each service at each hospital, using only surveys for male visits (to avoid endogeneity) and hospital-services with at least 10 male visits (to increase the reliability of the OOP charge estimates). Table 3 presents the results of regressions of a dummy for the visit being for a female patient on this hospital-service measure of OOP charges. Overall, the female share of visits for a service decreases by 1.32pp with every 1,000 INR ($\sim$ \$14)

[19]The OOP charges for deliveries are particularly surprising, as childbirths at public hospitals are supposed to be free even without insurance and are additionally compensated under government conditional cash transfer programs. The fact that hospital charges are pervasive for this service also means that a key opportunity to inform women about free care under BSBY is lost. Indeed, as we will show below, there is a substantial gender gap in awareness of the BSBY scheme.

increase in the average charge for that service, suggesting that financial costs disproportionately deter female utilization. This effect is most pronounced among elderly patients (1.67pp, column 4). This deterrence effect is not found among children (column 2), among whom females are most underrepresented (38%, bottom row).[20]

5.1.2 Distance Traveled for Health Care

We conduct a similar analysis to examine whether distance to health facilities, another measure of the cost of care-seeking, affects gender disparities in the likelihood of utilizing BSBY. Table 4 presents results from regressions of the female share of hospital visits in a village on the village distance to the nearest BSBY hospital, controlling for location female population share and district fixed effects. The female share decreases by 1.5pp with every additional 10 kilometers that a household must travel to reach the nearest hospital, and differentials are observed across all age groups. Among children under 15 years, the female share (39.0%) is substantially lower than the male share, even when the nearest hospital is in the same village or town. This increases slightly among the elderly (46.9%), and substantially among adults 15 to 49 years old (57.9%).

These results demonstrate how distance affects utilization on the extensive margin. In Table 5, we present gender differences in the distance traveled for care, conditional on seeking care. Each cell of the table corresponds to a separate regression and shows the coefficient on a dummy for whether a hospital visit was for a female patient. The results in column 1 show that, controlling for patient age group, residence district, and month fixed effects, females are 6.3pp more likely to get care at the hospital nearest their homes and travel 9 kilometers less than males (column 1). Adding specialty fixed effects to control for differences in underlying health conditions reduces the magnitude of these estimates somewhat (column 2). Strikingly, distance differences persist even when we include household fixed effects (column 3).[21]

It is possible that the cost of distance is higher for women—for example, because safety concerns

[20] We also find no evidence of differential hospital charges for males versus females, discussed in Section 5.2.

[21] Because we only observe patients with insurance claims, column 3 is restricted to the subset of households that sought care for at least one male and one female. To provide a sense of how selected this sample is, in column 4 we present the same specification as in column 1 but on the sub-sample included in column 3. The coefficients are similar to those in column 1, suggesting that households with visits for both males and females are not very different from the full sample.

increase their costs of travel outside their residence location or because men travel to further away towns for work anyway—and this could contribute to the distance differences we observe. To the extent this is true, while the distance differences still reflect systemic biases that affect the care females receive, they may not reflect differences in household *willingness* to spend on females. However, given that children and, often, the elderly must be taken to the hospital by someone else in the household, the cost of travel should not vary by the gender of the patient for these groups. Table 4 shows that a 10-kilometer increase in distance to the nearest hospital is associated with significant decreases in the female share of visits among children (1.58pp) and the elderly (1.33pp), in addition to adults 15 to 49 years (1.57pp). Similarly, Table A5 shows that gender differences in distance traveled among those who seek care are also economically meaningful and statistically significant among children and the elderly, even with household fixed effects. These results support the interpretation of distance differentials as the willingness of households to allocate more resources to male than female health care.[22]

5.2 Other Potential Explanations for Gender Disparities

Thus far, we have provided evidence of gender differences in BSBY utilization that, we argue, reflect differential household investments in female and male health due to gender bias and the lower willingness to pay for female health. This section discusses alternative explanations for the observed gender differences.[23]

If hospitals discriminate against females—for example, if they turn them away, provide them lower quality care, or charge them more—this could reduce female health care utilization. Hospitals may also provide females less care if they believe the benefit to them from treatment is lower (a form of statistical discrimination discussed by Chandra and Staiger (2010)). Supply

[22]Son-biased fertility stopping behavior results in biased households having more unwanted girls, who may get fewer resources due to discrimination (Clark, 2000). However, son-biased fertility stopping behavior can also result in girls having more siblings, which mechanically reduces the resources per child in households with girls even without explicit discrimination in the allocation of post-natal resources (Yamaguchi, 1989; Jayachandran and Kuziemko, 2011). The fact that differences in patterns of care are strong even with household fixed effects indicates that gender differences in care-seeking for children are not simply the mechanical result of females being in households with more children.

[23]If household spending is biased towards males, the annual household spending/coverage limit in BSBY's design could worsen disparities because female care might be perceived to be crowding out male care. However, in practice, less than 1% of households come within 5% of their annual spending limit (Figure A2); surveys show that households are mostly unaware of the limit; and there is no bunching of hospital visits near the end of the year that would suggest households anticipate and rush to exhaust their allowance.

side discrimination could also begin earlier in the care-seeking process, if lower-level health care providers dismiss female concerns, under-diagnose them, and are less likely to refer them for more complex hospital care. While these factors likely contribute to low female use of health care, they cannot fully explain the large gaps we observe. First, private hospitals have a financial incentive to maximize patient volumes and to attract and accept females at least as much as males unless females are both less profitable *and* hospitals face capacity constraints. Hospital reimbursements for services are not gender-specific and, while females may be more expensive to treat than males for some conditions, this is unlikely to apply across almost every service covered by BSBY (and particularly not for relatively standardized services such as dialysis, the service for which we estimated close to 150,000 missing female visits in section 4.1). Hospitals also increase their BSBY patient volumes substantially over time, suggesting they are not at capacity and that they are not averse to accepting and treating more female patients. We find no evidence that hospitals charge females more than males: Table A4 shows that, conditional on getting a given type of care at a given hospital, males and females do not face significantly different OOP charges.[24] Finally, supply side discrimination is unlikely to explain the differential patterns of care-seeking for females, such as the shorter distance traveled for their care even controlling for the type of care shown in Table 5.

Another explanation is that disparities in BSBY utilization arise because females face specific (supply- and demand-side) barriers that increase their cost of care seeking relative to males (we use cost broadly here to include non-financial costs) rather than because of bias in household resource allocation. For example, female travel to the hospital may be more expensive because they need an escort or special transport provisions (as we note in Section 5.1.2), they may prefer female doctors (which are relatively rare in India), they may be less informed about the BSBY program, or they may internalize biases and under-report their own illness and prioritize the care of males. It is important to note that these types of female-specific barriers are themselves the result of societal biases that reduce female welfare. Furthermore, while these types of barriers may affect care-seeking by adult females, they are unlikely to affect young girls more than young boys, both of whom must be taken to the hospital by someone else in the household (this argument also applies to some extent to the elderly). Yet, we find some of the

[24]This is consistent with other studies that find that provider discrimination does not explain gender differences in India (Ray et al., 2014; Daniels et al., 2019).

largest disparities among children under 10 years (recall Figure 1), providing strong evidence that households do indeed allocate fewer resources to females.

Finally, we turn to the argument that, due to the higher returns to investments in male health, prioritizing male health is rational and benefits everyone, including the females—for example, if the male is the breadwinner. This explanation seems unlikely because 1) it would require household income to be more important in a woman's utility function than her own health, which is a very strong assumption, 2) particularly in our context of critical hospital services, under-utilization can lead to severe illness and death, which cannot be welfare improving for the woman, and 3) it cannot explain lower care-seeking for young girls relative to boys. It remains possible (even likely) that there are economic or cultural incentives for households to under-invest in female health—for example, patrilocality or patrilinearity may reduce the returns to parents, including mothers, of investing in girls relative to boys—that may reflect societal biases against females rather than taste-based discrimination within the household. Both mechanisms nevertheless result in the allocation of fewer resources to, and under-investment in, female health within the household against their best interest.

In sum, while supply-side discrimination as well as the many barriers that make it harder and costlier to seek care for females likely do contribute to gender disparities in BSBY utilization, they cannot fully explain the patterns we observe, particularly the disparities among very young children. The evidence suggests that the allocation of fewer resources to female health within the household contributes substantially.

5.3 Does Lowering Costs Reduce Gender Disparities? The Effect of Hospital Empanelment

Having shown that care-seeking costs contribute to gender disparities due to household bias, we next exploit the empanelment of private hospitals near locations that previously had limited access to BSBY care to examine the effects of *decreasing* the cost of available care options on female utilization. In December 2017, the government renewed BSBY for another two years. At the same time, it revised hospital reimbursement rates to better align them with costs (rates increased on average). It also relaxed eligibility requirements to allow smaller hospitals

to participate and conducted a major empanelment drive with the goal of increasing hospital access, particularly in under-served areas. The number of private hospitals increased from 600 in November 2017 to 712 by April 2018 and 801 by August 2018.[25]

Using the BSBY claims data with geocoded hospital and patient residence locations, we restrict the sample to locations with no empaneled private hospital within 20km (approximately the 50th percentile of the distance to the nearest empaneled hospital) as of November 2017. We conduct an event study analysis comparing locations that saw entry of a private hospital within 20km in the first quarter of 2018 with locations that had not seen similar entry by December 2018. We focus our analysis on empanelments in the first quarter of 2018, immediately after the policy reform, as these were most likely driven by the sudden administrative relaxation of hospital eligibility criteria, rather than changes in factors that could be correlated with female BSBY utilization. The analysis is conducted at the location-quarter level and covers the period January 2017 to December 2018.[26] Figure 6 presents results.

Panel A confirms that the distance to the closest empaneled private hospital decreases by approximately 10 kilometers on average (note, however, that the distance to the closest empaneled hospital is unaffected because most locations already have a nearby public hospital). Panel B shows that this led to an increase in BSBY hospital visits for both men and women, but Panel C shows that this is not accompanied by a significant increase in the female *share* of visits.[27] In other words, the empanelment increased male and female BSBY utilization by similar proportions and did not reduce the gender gap. This finding is consistent with the descriptive fact from Figure 2 that gender disparities did not decrease, and in fact widened somewhat, even as the program substantially expanded its reach over four years of implementation. These results illustrate the somewhat counter-intuitive point that, while reducing the cost of care is likely to increase absolute access to care for females, in the

[25]The supply of public health facilities is based on population estimates and does not change substantially over time. All public hospitals were empaneled in BSBY when the program was launched. Therefore, there is little variation in public hospital empanelment.

[26]Because we are interested in testing the relationship between distance and the female share, and not simply the overall program response to empanelments, we do not include weights for population or BSBY visit volumes that would reduce the importance of smaller villages.

[27]Location-quarters with no visits are included in the analysis if they meet the other inclusion criteria. However, the female share of visits is undefined for these observations. Therefore, while Panels A and B represent the same balanced location-quarter panel, Panel C is the unbalanced panel of location-quarters with at least one BSBY hospital visit.

presence of gender bias it may not reduce disparities because the marginal beneficiary is as or more likely to be male than female.[28]

6 Can Female Political Reservations Reduce Gender Disparities?

Political reservations increased the likelihood of a female Sarpanch by 95pp in 2005, 91pp in 2010 and 87pp in 2015 in reserved Gram Panchayats (GPs) in our study sample (Table A2). Similarly, females occupied 91% of reserved seats and 2.4% of unreserved seats in our survey of 2015 GPs.

To study the effect of female political reservations on gender disparities in BSBY utilization, we regress a dummy for whether a hospital visit was for a female on a categorical measure of whether the patient's residence location was reserved 0, 1, 2 or 3 times between 2005 and 2015. Table 6 shows that each reserved election cycle increased the female share of hospital visits among children under 15 years old by 0.85pp (a 2.6% increase; p-value=0.006) and among women of childbearing age by 0.69pp (1.4% increase; p-value=0.033). Including childbirths in column 5 barely changes the effect among women 15 to 49 years, suggesting that reservations do not only influence formal care-seeking for childbirths. In contrast, the female share of visits by patients 50 years or older is 0.56pp *lower* for each reserved election cycle (1.3% decrease; p-value=0.073). Although our data do not allow us to precisely estimate the effect of reservations on absolute levels of BSBY utilization, in part due to population imbalances across locations, the location-level analysis of visit volumes shown in Table A6 suggests that the positive effect on female share among children is driven by an increase in visits for girls with little change among boys, while the negative effect on female share among the elderly is due largely to an increase in male visits.

The effects of reservations may be working through several channels. Long-term exposure

[28]Composition effects can explain the co-existence of these two phenomena: (1) the finding that lower distance costs do not increase the female share, and (2) the finding from section 5.1.1 that lower out-of-pocket charges *do* increase the female share. E.g., some households are far enough from a facility that they do not seek care for anyone, but as distance costs are reduced they start seeking care for males only; other households seek care for males only when distance is far, but as distance is reduced they start seeking care for females too, and the more so the lower out-of-pocket charges.

to females in positions of authority may reduce gender bias, raise aspirations for females, and increase households' willingness to invest in female health. Second, female leaders could increase (young) women's agency, enabling them to more effectively seek and obtain care for themselves and their children. Third, female leaders may prioritize and invest more resources in health, particularly that of women and girls. For example, they may support and monitor village health workers, increase awareness of government health programs like BSBY, allocate GP funds to health-activities, and encourage women to utilize formal health care.[29]

To examine the evidence for these mechanisms, we first examine whether the effects of reservations are contemporary or protracted. Table A7 shows estimates of the causal effect of being reserved in 2015 separately from the effect of reservations in the earlier two elections and the interaction of the two. The "Reserved 2015" coefficients are small and not significant, indicating that being reserved in 2015 alone is not driving the effect of reservations, but that it is long-term, cumulative exposure to female leaders that matters (the "Average 2015 Reservation" effects, which include the interaction with prior reservations and are shown at the bottom of the table, are significant). In other words, direct assistance with BSBY by female leaders who were in place after its launch in 2015 is not the only or primary channel. Instead, mechanisms that require longer term exposure and take longer to manifest, such as changes in gender attitudes and aspirations for females, broader increases in health investments targeting females, or role model effects, are also playing a role.

In Table 7, we test whether reservations affect household health care contacts and gender attitudes using household surveys. In unreserved areas, women are more likely to have talked to the ASHA in the last month (32.9% compared to 13.5% of men), but are less informed about BSBY (0.84 standard deviations lower on an index of awareness of BSBY coverage). Exposure

[29]There are three types of government health workers that are active at the village level: Accredited Social Health Activists (ASHAs) are responsible for helping women visit formal health facilities for childbirth, ensuring children come to village immunization sessions, and generally connecting households to the health system. Auxiliary Nurse Midwives (ANMs) manage the public primary health centers and provide basic maternal and child health services. Anganwadi Workers (AWWs) organize government supplementary feeding programs, monitor child growth, provide basic health and nutrition advice to pregnant/lactating women, and help with immunization activities. All three types of health workers focus on health activities that target women of childbearing age and young children, and are often the primary contact females have with the public health system. Sarpanches are supposed to monitor and support these health workers, facilitate their contacts with village residents (e.g. through village health committees), and coordinate with them to determine how local health funds will be spent.

to each female-reserved GP election further increases the likelihood of ASHA contact by 10pp for women (p-value=0.013) but has no effect on ASHA contacts for men. This appears to have somewhat reduced the striking gender gap in BSBY awareness, but the standard errors are very large. Next, column 3 shows the impact on an index of "progressive" gender attitudes.[30] The coefficients are positive and large for both male and female respondents, but here again effects are imprecisely estimated. Finally, column 4 shows a 0.198 standard deviation increase (p-value=0.108) in an index of female agency that includes measures of decision-making power, travel, and earnings reported by women residing in reserved areas. Interestingly, male reports of the same measures of female agency do not show a similar increase, which could reflect differences in reporting or changes in women's behaviors that are unobserved by men.

Next, we examine whether leaders' actions and priorities are different in female-reserved locations using data from Sarpanch surveys. Table 8 shows the effect of reservation in 2015 on the Sarpanch's reported actions and priorities during their term in office. Results are imprecise because the survey sample is small, and we had to speak with a male proxy knowledgeable of Sarpanch duties in over a third of interviews for female-reserved seats (typically because the husband or another male relative refused permission). Nevertheless, we find suggestive differences in the priorities in female-reserved GPs. Sarpanches in female-reserved seats were 7.8pp more likely to meet ASHAs at least weekly (p-value=0.059, compared to an unreserved mean of 21.4%), which is consistent with household reports of greater exposure to ASHAs in Table 7, but contacts with other village health workers did not increase as much (column 3). Effects on meetings with school principals go in the opposite direction, indicating that meetings are not systematically over-reported in reserved areas and that health is, in fact, an area of focus for female leaders. Female Sarpanches more actively engaged with their constituents and were 8.4pp more likely to organize monthly village meetings (p-value=0.084). Health was also 6.5pp more likely to be a top spending priority for female than male leaders (over an unreserved mean of 23%), but the difference is not significant (p-value=0.141). Reservations do not, however, affect hospital supply, as GP-level

[30]Respondents were asked whether they agree or disagree with four statements: "A woman's most important role is being a good homemaker" (93% agree), "A man should have the final word about decisions in the home" (82% agree), "If there is not enough money for all the children in a family to go to school, the boys should get to go instead of the girls" (30% agree), "A woman should be able to travel outside her village alone" (52% disagree).

leaders have little control over the placement of health facilities: Table A8 shows that reservations do not change the availability of a government health facility or the distance to the nearest BSBY hospital.

Political reservations are likely to work through multiple, complementary channels that we cannot perfectly disentangle with our data. Nevertheless, our results suggest that direct information about BSBY was not the key channel for the effect of female political leaders. Instead, the fact that effects are cumulative over several rounds of exposure to a female Sarpanch, the concentration of effects among children and women of child-bearing age, and the survey results on increased female agency and health worker contacts suggest that the effects of reservations are largely driven by longer term changes in gender attitudes and in maternal and child health investments. These findings are consistent with other studies that find that female leaders are more likely to focus on health, particularly female health, and that long-term exposure to female political leaders can shift female aspirations as well as deep-seated household perceptions of and investments in females (Beaman et al., 2009, 2012; Bhalotra and Clots-Figueras, 2014; Bhalotra et al., 2020).[31]

This might also explain why elderly females do not benefit from reservations. Public health activities at the village level that are most within the control of Sarpanches and village health workers largely focus on maternal and child health (for example, immunizations, antenatal and post-natal care, institutional delivery, primary care for childhood illnesses like diarrhea), but not on the conditions that typically afflict the elderly. And, to the extent that reservations work by shifting aspirations, they are most likely to affect younger females rather than the elderly. Elderly women typically have low bargaining power within the household (Calvi, 2020); they may not be able to advocate for health care for themselves as effectively as elderly males and, if budget constrained households allocate more resources to younger females, this may come at the cost of care for elderly women.

[31] Beaman et al. (2009) find that GP reservations shifted the aspirations of adolescent girls 11 to 15 years (they suggest this was through a role model effect), parental attitudes towards their daughters, and girls' education, but that effects only manifested after exposure to female Sarpanches over two election terms. Bhalotra and Clots-Figueras (2014) show that female politicians at the state-legislature level invest more in public health infrastructure than men, resulting in significantly greater access to antenatal care and institutional deliveries for women, which results in lower neonatal and maternal mortality.

7 Conclusion

Pro-male gender bias has been well-studied in India and is known to contribute to worse female health outcomes. Programs that increase geographic access to health facilities and subsidize health services have been the primary policy interventions to decrease inequalities in health, including by gender. Studying millions of hospital visits under a health insurance program that entitles poor households in Rajasthan to free hospital care, we show that deep-seated gender biases meaningfully reduce the extent to which females benefit from these programs relative to males: households prefer to spent their marginal rupee on the health of males over females, which results in gender disparities in utilization because the program does not fully offset the costs of care-seeking. Given existing estimates of sex-specific disease prevalence, and using male utilization of BSBY as a benchmark, we calculate over 225,000 missing female hospital visits under the program over a three-year period, for kidney disease, cancer, and cardiology alone.

Gender-neutral policies that reduce the cost of accessing social benefits increase utilization among females, but may fail to reduce disparities in the presence of gender bias because males benefit as much or more than females. Female representation in local governance reduces the gender gap, but effects are small and take over a decade of exposure. Ensuring social programs reach females and addressing gender disparities in outcomes will require strategies directly targeting the costs and barriers faced by females in the short run, coupled with longer term legal and social endeavors to strengthen their rights and bargaining power.

References

Anderson, Siwan and Debraj Ray, "Missing women: age and disease," *The Review of Economic Studies*, 2010, *77* (4), 1262–1300.

Asher, Sam, Tobias Lunt, Ryu Matsuura, and Paul Novosad, "Development Research at High Geographic Resolution: An Analysis of Night Lights, Firms, and Poverty in India using the SHRUG Open Data Platform," 2021. World Bank Economic Review.

Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova, "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India," *Science*, 2012, *335* (6068), 582–586.

_ , Raghabendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova, "Powerful Women: Does Exposure Reduce Bias?," *Quarterly Journal of Economics*, 2009, *124* (4), 1497–1540.

Bhalotra, Sonia and Irma Clots-Figueras, "Health and the Political Agency of Women," *American Economic Journal: Economic Policy*, 2014, *6* (2), 164–197.

Bhalotra, Sonia R, Damian Clarke, and Joseph Gomes, "Maternal mortality and women's political participation," 2020.

Calvi, Rossella, "Why Are Older Women Missing in India? The Age Profile of Bargaining Power and Poverty," *Journal of Political Economy*, 2020, *128* (7), 2453–2501.

Chandra, Amitabh and Douglas O Staiger, "Identifying provider prejudice in healthcare," Technical Report, National Bureau of Economic Research 2010.

Chattopadhyay, Raghabendra and Esther Duflo, "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India," *Econometrica*, 2004, *72* (5), 1409–43.

Chen, Marty and Jean Drèze, "Widows and health in rural north India," *Economic and Political weekly*, 1992, pp. WS81–WS92.

Clark, Shelley, "Son Preference and Sex Composition of Children: Evidence from India," *Demography*, 2000, *37*, 95–108.

Daniels, Benjamin, Ada Kwan, Srinath Satyanarayana, Ramnath Subbaraman, Ranendra K Das, Veena Das, Jishnu Das, and Madhukar Pai, "Use of standardised patients to assess gender differences in quality of tuberculosis care in urban India: a two-city, cross-sectional study," *The Lancet Global Health*, 2019, *7* (5), e633–e643.

Deaton, Angus, "Height, health, and inequality: the distribution of adult heights in India," *American Economic Review*, 2008, *98* (2), 468–74.

Duflo, Esther, "Women empowerment and economic development," *Journal of Economic literature*, 2012, *50* (4), 1051–79.

Government of India, "Economic Survey 2018-2019," Technical Report, Ministry of Finance 2019. Available at https://www.indiabudget.gov.in/budget2019-20/economicsurvey/.

Hessami, Zohal and Mariana Lopes da Fonseca, "Female political representation and substantive effects on policies: A literature review," *European Journal of Political Economy*, 2020, *63*, 101896.

IHME, "Global Burden of Disease Study 2019 (GBD 2019) India Profile," 2019.

IIPS, "National Family Health Survey (NFHS-4), 2015–16," *International Institute for Population Sciences (IIPS), Mumbai, India*, 2017.

Jayachandran, Seema and Ilyana Kuziemko, "Why Do Mothers Breastfeed Girls Less Than Boys? Evidence and Implications for Child Health in India," *The Quarterly Journal of Economics*, 2011, *126* (3), 1485–1538.

Jensen, Robert, "Caste, Culture, and the Status and Well-Being of Widows in India," in David A. Wise, ed., *Analyses in the Economics of Aging*, University of Chicago Press, 2007, chapter 11.

Kanbur, Ravi and Lawrence Haddad, "Are better off households more unequal or less unequal?," *Oxford Economic Papers*, 1994, *46* (3), 445–458.

Kapoor, Mudit, Deepak Agrawal, Shamika Ravi, Ambuj Roy, S V Subramanian, and Guleria Randeep, "Missing female patients: an observational analysis of sex ratio among outpatients in a referral tertiary care public hospital in India," *BMJ Open*, 2019.

Kaur, Sukhvinder, Nishant Jain, and Sanjay Kumar, "Addressing gender issues under Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) in India: implications for equity," Working Paper 005, National Health Authority 2020.

Khera, Rohan, Snigdha Jain, Rakesh Lodha, and Sivasubramanian Ramakrishnan, "Gender bias in child care and child health: global patterns," *Archives of disease in childhood*, 2014, *99* (4), 369–374.

Maharana, Barsharani and Laishram Ladusingh, "Gender disparity in health and food expenditure in India among elderly," *International Journal of Population Research*, 2014, *2014*.

Oster, Emily, "Does increased access increase equality? Gender and child health investments in India," *Journal of Development Economics*, 2009, *89*, 62–76.

Pande, Rohini, "Selective gender differences in childhood nutrition and immunization in rural India: the role of siblings," *Demography*, 2003, *40* (3), 395–418.

Pandey, Anamika, George B Ploubidis, Lynda Clarke, and Lalit Dandona, "Hospitalisation trends in India from serial cross-sectional nationwide surveys: 1995 to 2014," *BMJ open*, 2017, *7* (12).

Raj, Anita, "Comment: Gender equity and universal health coverage in India," *The Lancet*, 2011, *377* (9766), 618–619.

Rajan, Sowmya and S Philip Morgan, "Selective versus generalized gender bias in childhood health and nutrition: evidence from India," *Population and development review*, 2018, *44* (2), 231.

Ray, Debraj, Rajshri Jayaraman, and Shing Yi Wang, "Gender Differentials in Eye Care: Access and Treatment," *Economic and Political Weekly*, 2014, *49* (25).

Reddy, K Srinath, Vikram Patel, Prabhat Jha, Vinod K Paul, AK Shiva Kumar, Lalit Dandona, Lancet India Group for Universal Healthcare et al., "Towards achievement of universal health care in India by 2020: a call to action," *The Lancet*, 2011, *377* (9767), 760–768.

Saikia, Nandita and Jayanta Kumar Bora, "Gender difference in health-care expenditure: evidence from India human development survey," *PloS one*, 2016, *11* (7), e0158332.

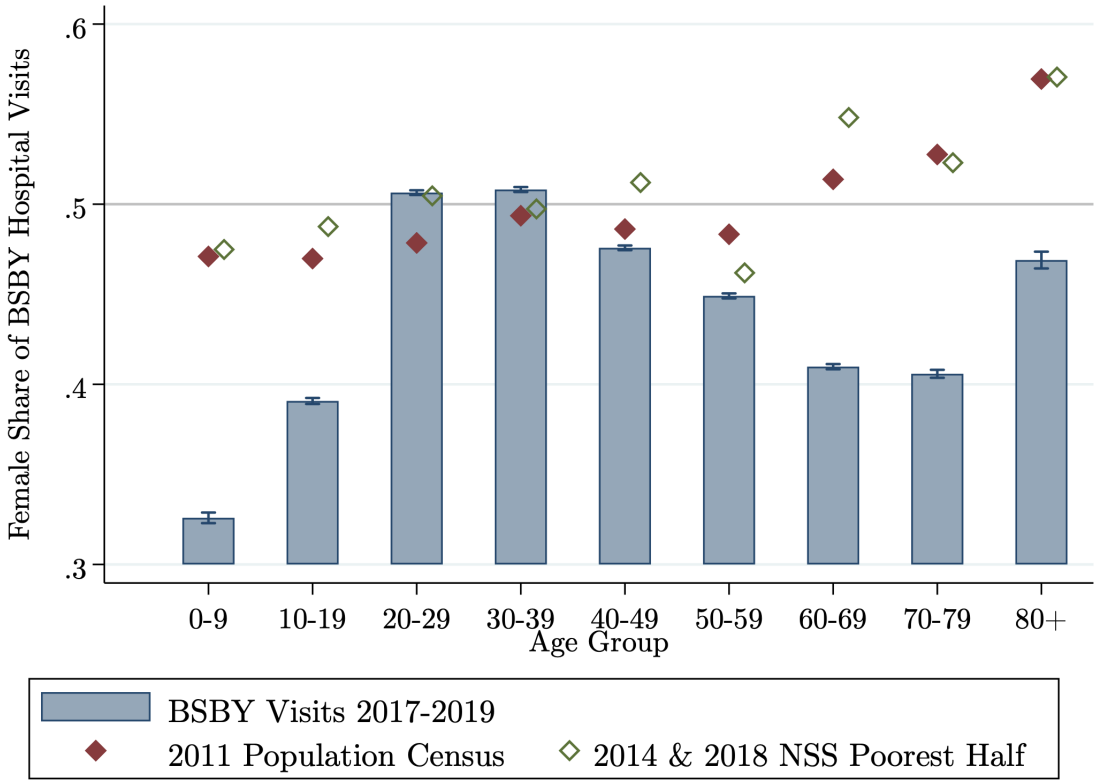
Shaikh, Maaz, Sanne A E Peters, Mark Woodward, Robyn Norton, and Vivekanand Jha, "Sex differences in utilization of hospital care in a state sponsored health insurance programme providing access to free services in South India," *BMJ Glob Health*, 2018, *3*, 2018–00085.

World Economic Forum, "Global Gender Gap Report 2021," Report, World Economic Forum 2021.

Yamaguchi, Kazuo, "A Formal Theory for Male-Preferring Stopping Rules of Childbearing: Sex Differences in Birth Order and in the Number of Siblings," *Demography*, 1989, *26*, 451–465.

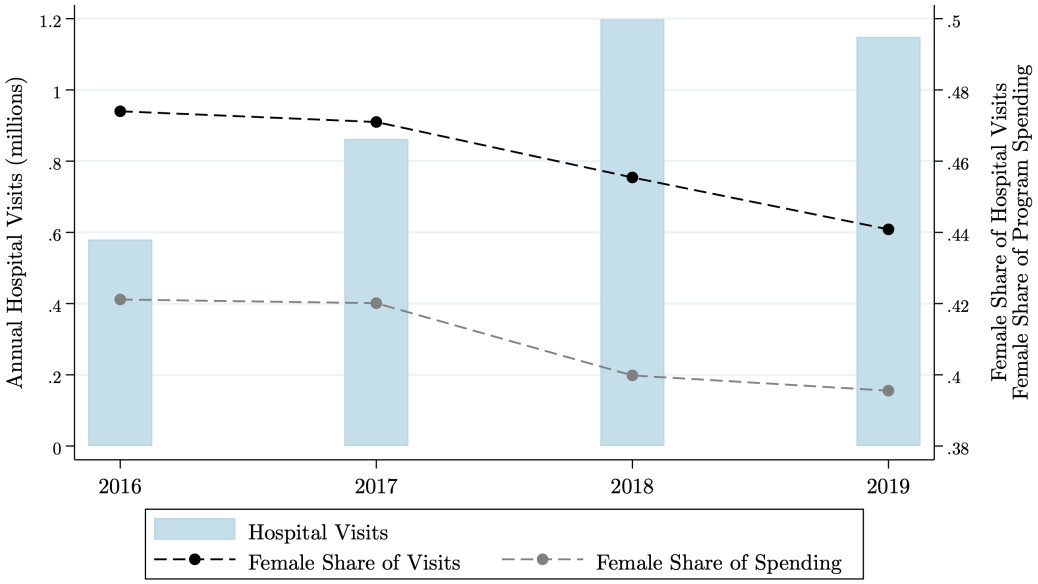
Figures and Tables

Figure 1: Female Share of BSBY Hospital Visits, by Age



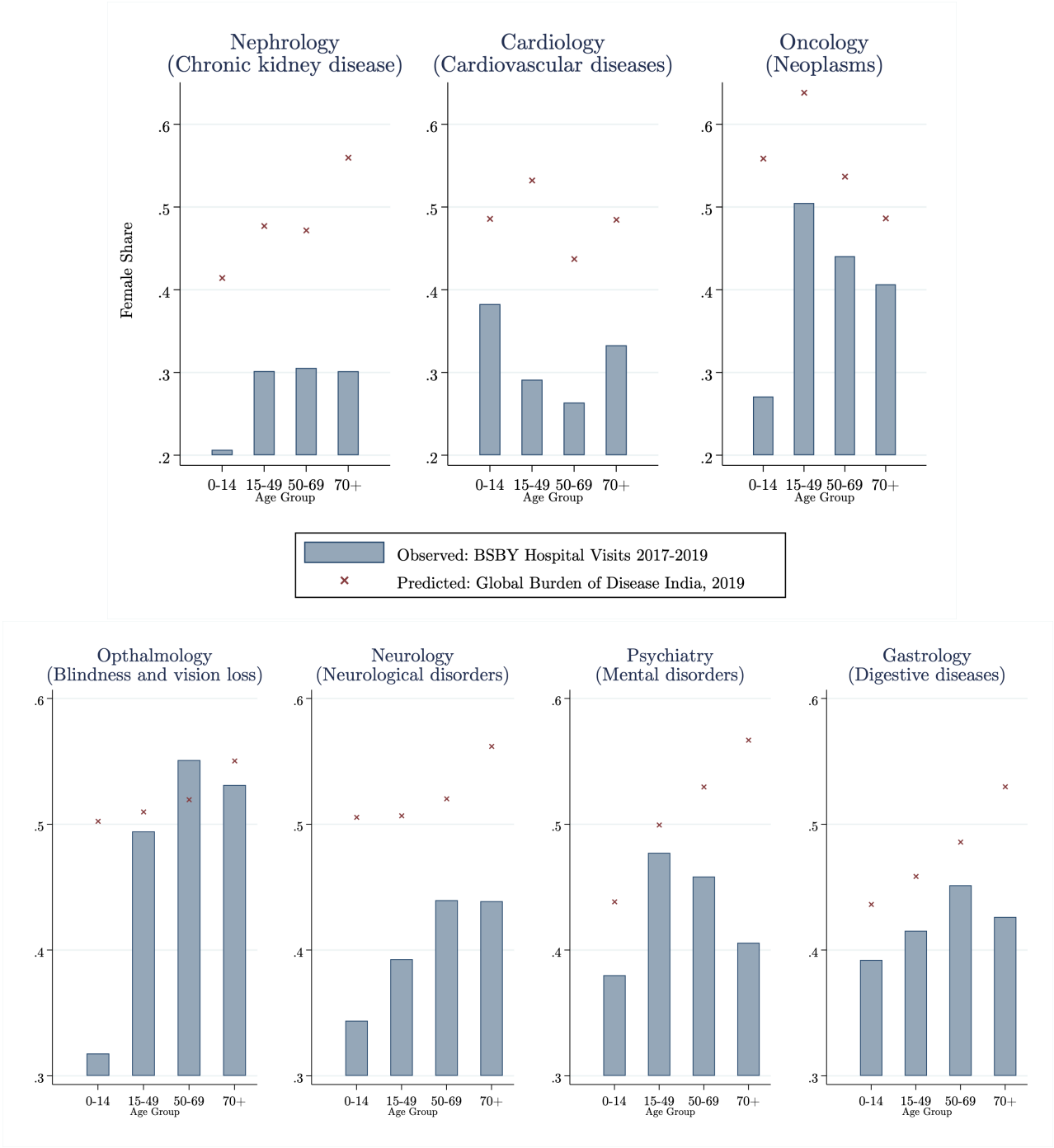
Notes: The figure presents the female share of total BSBY hospital visits, excluding childbirths, within each age group using program administrative claims data (blue bars; capped spikes represent 95% confidence intervals). The age-specific female shares in the 2011 Population Census and in the poorest half of the National Sample Survey (NSS), which more closely approximates the low-income population eligible for BSBY, are shown for reference. The NSS is a population survey representative at the state level; we combine data from the 2014 and 2018 rounds.

Figure 2: BSBY Utilization Over Time



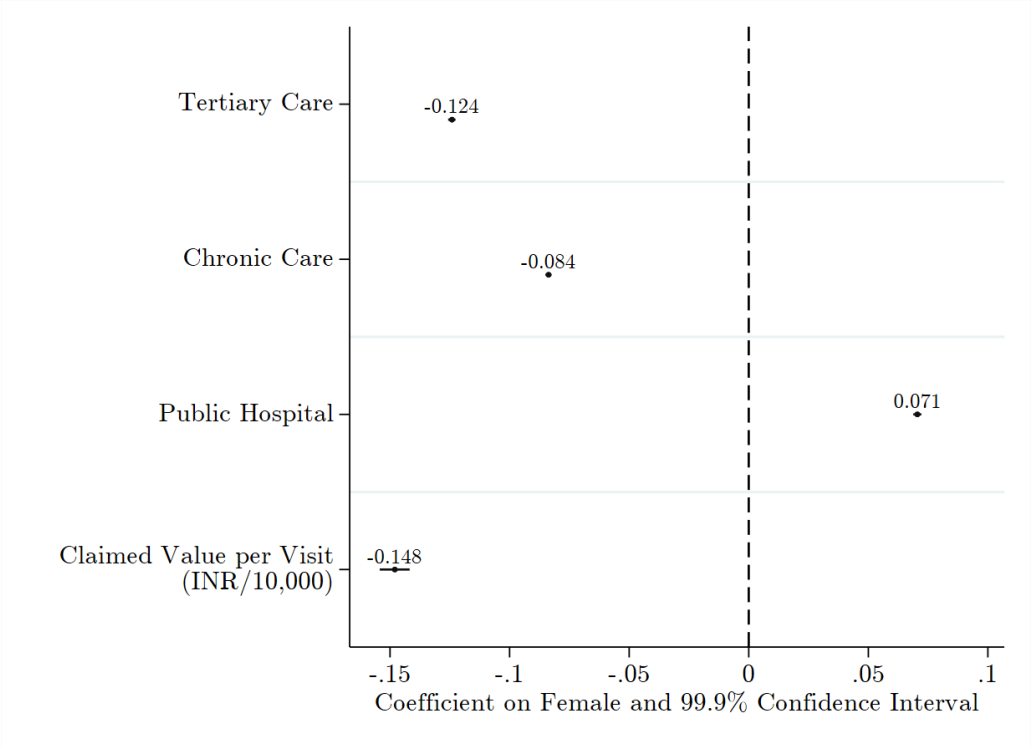
Notes: The figure shows total annual hospital visits, the female share of visits, and the female share of total program spending under BSBY using program administrative claims data from January 2016 (shortly after the launch of the program in December 2015) through October 2019 (when our access to the data ended). Program spending is the total value reimbursed to hospitals for insurance claims filed. Childbirth and neonatal care visits are excluded.

Figure 3: Observed Versus Prevalence-based Predicted Female Share of Hospital Visits



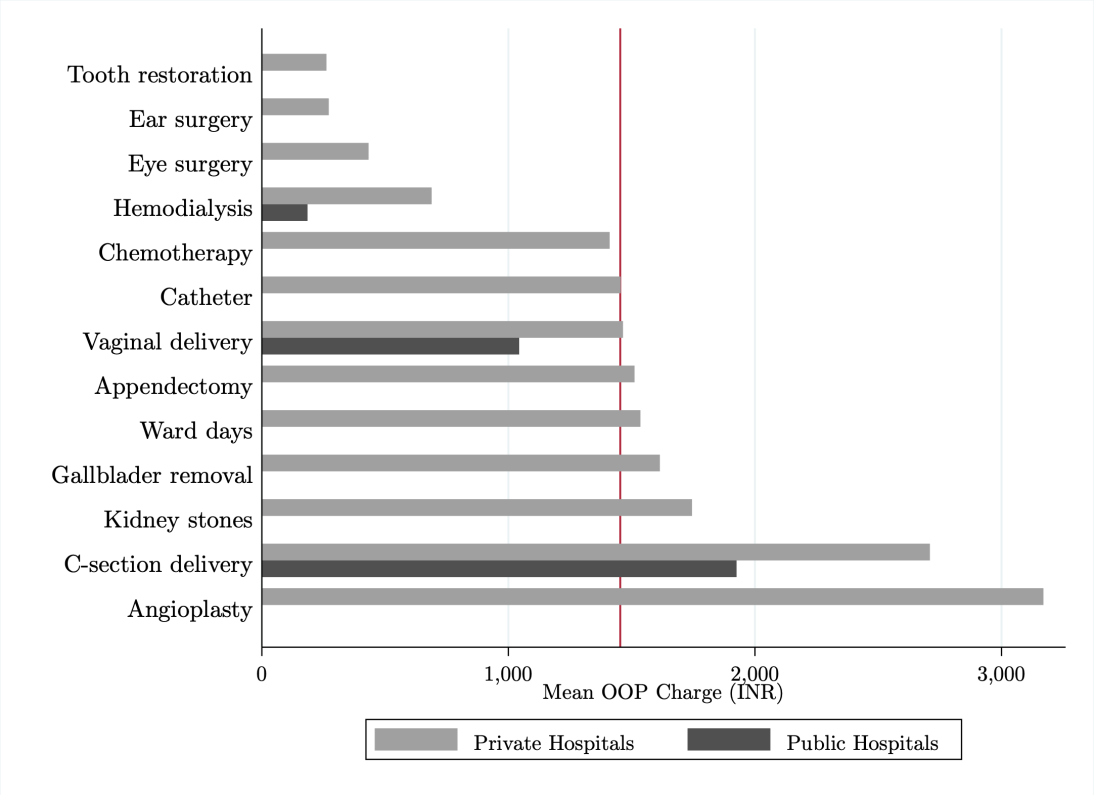
Notes: The observed female share of BSBY hospital visits is based on claims data. To generate the predicted female share of hospital visits for each condition, we combine age-sex specific estimates of illness prevalence from the Global Burden of Disease (GBD) 2019 estimates for India with Rajasthan's age-sex specific population from the 2011 Population Census. We match GBD health conditions to BSBY care specialties as follows: Chronic kidney disease = Nephrology; Cardiovascular diseases = Cardiology; Neoplasms = Oncology; Blindness and vision loss = Ophtamology; Neurological disorders = Neurology; Mental disorders = Psychiatry; Digestive diseases = Gastrology.

Figure 4: Gender Differences in Patterns of BSBY Utilization



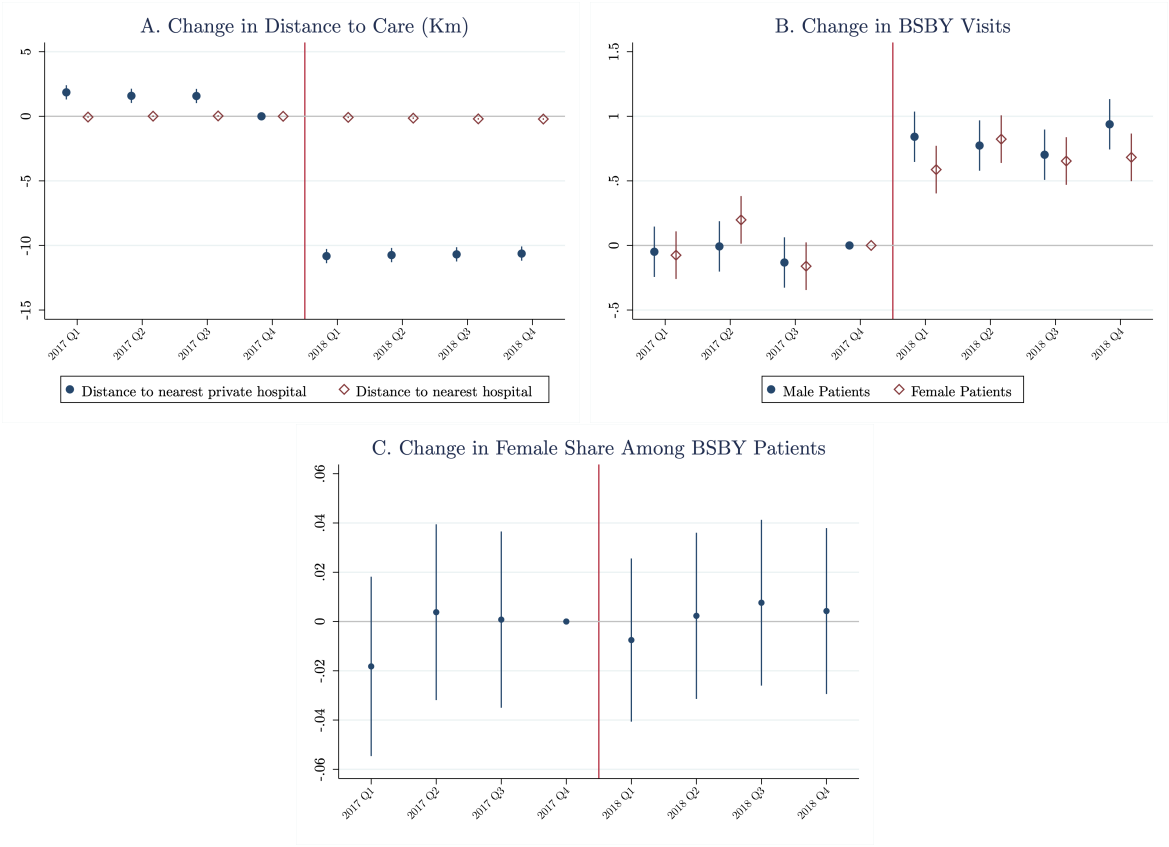
Notes: The figure shows estimated coefficients and confidence intervals for a series of regressions of the dependent variables listed on the y-axis on a dummy for whether the patient is female using program administrative claims data. The dependent variables are dummies for whether the visit was for tertiary care, chronic care, or a public hospital (versus secondary care, one-time care, or a private hospital), and a continuous measure of the claimed value of the visit (in 10,000 INR ($\sim$ \$143)). Female visits are 12.4pp less likely to be for tertiary (versus secondary) care and 7.1pp more likely to be at public (versus private) hospitals than male visits are. All regressions include age group, month, and patient residence district fixed effects. Childbirth and neonatal care visits are excluded.

Figure 5: Out-of-Pocket Charges at BSBY Hospitals



Notes: The figure shows average out-of-pocket (OOP) charges for services received under BSBY calculated from 20,969 audit surveys conducted by the research team with BSBY patients (or their relatives) between July 2017 and July 2018 (see section 3.3 for details). Patients were randomly sampled from the BSBY claims data for survey. The sample was largely restricted to patients visiting private hospitals; for deliveries and hemodialysis, patients visiting public hospitals were also sampled. Monetary values are expressed in Indian Rupees (INR). Red line displays the weighted mean at private hospitals across all services shown.

Figure 6: Event Study: Impact of Hospital Empanelment on Utilization by Gender



Notes: The figure presents an event study analysis of the effect of hospital empanelment near a location on total and female utilization of BSBY from that location. We exploit a sudden increase in private hospital empanelments in early 2018, when the BSBY program was renewed (because the supply of public hospitals is almost completely fixed and all public hospitals were empaneled at the launch of the program, there is almost no variation in the timing of public hospital empanelments). The analysis covers the period January 2017 to December 2018. The unit of observation is a location-quarter (N=142,656). Using BSBY claims data with geocoded hospital and patient residence locations, we restrict the sample to residence locations with no empaneled private hospital within 20km (roughly the 50th percentile of the distance to the nearest empaneled hospital) as of November 2017. We then compare outcomes across locations that saw entry of a private hospital within 20km in the first quarter of 2018 (1,316 locations) with locations with no similar entry by December 2018 (16,572 locations). Panels A and B show the change in distance to the nearest public/private BSBY hospital and number of male and female BSBY hospital visits for the balanced panel of locations. Panel C shows the female share of BSBY visits for the unbalanced panel of location-quarters with non-zero BSBY visits.

Table 1: Descriptive Statistics on BSBY Hospital Visits

Panel A: Study Sample	
Full Sample	
Total hospital visits	4,168,282
Unique patients	2,518,184
Main Analysis Sample (Excluding 2016, childbirths and neonatal visits)	
Hospital Visits	
Total hospital visits	3,209,675
Unique patients	1,973,878
Unique households	1,671,255
Unique BSBY hospitals	1,639
Observations Geocoded	
Patient residence geocoded (%)	71.2
Patient residence geocoded (#)	2,286,001
Patient residence geocoded and hospital geocoded (#)	2,262,729
Unique patient residence locations (village/town)	38,015
Observations with GP Reservations Information	
Patient residence merged with GP reservations (%)	52.9
Patient residence merged with GP reservations (#)	1,696,785
Never reserved (%)	12.5
Reserved once (%)	52.0
Reserved twice (%)	30.8
Reserved thrice (%)	4.7
Panel B: Descriptive Statistics (Main Analysis Sample)	
Patient and Care Characteristics	
Female (%)	45.4
Age (years)	41.7
Chronic care (%)	15.0
Tertiary care (%)	26.4
Claims filed per hospital visit (#)	1.6
Claimed value per visit (INR)	8,757.4
Characteristics of Hospital Visited	
Private hospital (%)	54.7
Hospital nearest to patient's residence (%)	19.3
Hospital outside patient's district (%)	29.4
Distance traveled to hospital (km)	49.2
Observations (hospital visits)	3,209,675

Notes: The table presents descriptive statistics on hospital visits between January 2017 and October 2019 from the BSBY administrative claims data. Visits in 2016 and those for childbirth and neonatal care are excluded (see Section 3 for discussion). The unit of observation is the hospital visit, which may be associated with multiple claims if the patient received multiple services. Patient residence locations from the claims data were 1) geocoded by linking them to the 2011 Population Census and 2) matched to Gram Panchayat female reservation status for the 2005, 2010, and 2015 elections (locations with data for all three rounds are considered matched). The locations of hospitals participating in BSBY were also geocoded in order to calculate the distance between residence and hospital locations. Table A1 provides additional details on hospital visit characteristics. Values are expressed in Indian Rupees (INR) with a conversion rate of 70 INR= USD 1.

Table 2: Missing Female Visits

Specialty	(1) Female Share in BSBY	(2) Predicted Female Share (GBD)	(3) Missing Female Visits
Nephrology	0.30	0.48	147,319
Oncology	0.46	0.58	43,341
Cardiology	0.28	0.47	35,149
Neurology	0.41	0.52	9,503
Psychiatry	0.47	0.51	202
Gastrology	0.43	0.48	167
Opthalmology	0.53	0.52	-826

Notes: The table aggregates results from Figure 3 and presents the female share, across all ages, of hospital visits observed in BSBY (column 1) and predicted based on India's 2019 Global Burden of Disease (GBD) sex-specific prevalence estimates and population sex ratio (column 2). Missing female visits are the additional female visits we would observe under BSBY between January 2017 and October 2019 (the study period) if, given observed male BSBY utilization levels, the female share of utilization of BSBY was as predicted in column 2 (instead of as in column 1). The analysis is restricted to the 7 medical specialties that could be matched from BSBY to the GBD, which account for 54% of all hospital visits under BSBY excluding general medicine/surgery.

Table 3: Out-of-Pocket (OOP) Charges and Female Utilization

	(1)	(2)	(3)	(4)
	Dependent Variable: Patient is Female			
	All	Under 15 years old	15-49 years old	50+ years old
Average charge ('000 INR)	-0.0132	0.0048	-0.0089	-0.0167
	(0.0010)	(0.0074)	(0.0016)	(0.0014)
	{<0.0001}	{0.5151}	{<0.0001}	{<0.0001}
Age Group Fixed Effects	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes
Hospital District Fixed Effects	Yes	Yes	Yes	Yes
Service Fixed Effects	Yes	Yes	Yes	Yes
Observations	368,897	17,345	206,887	144,664
Female share | OOP charges sub-sample	0.406	0.381	0.413	0.398

Notes: The table presents results from regressions of a dummy for whether a BSBY hospital visit is for a female on the average out-of-pocket (OOP) charge faced by males for the same type of care in the same facility. All regressions include ten-year age bins to control for age group. The unit of observation is a hospital visit. Survey data on OOP charges (described in section 3.3 and figure 5 notes) were used to compute the hospital-specific average OOP charge paid by males for each service, for the 126 private hospital-service combinations with at least 10 completed audit surveys with male patients. The regression analysis is restricted to hospital visits in the BSBY claims data for these 126 private hospital-service combinations. The female share of visits overall for this sub-sample is reported (with sampling weights) in the bottom row of the table for reference and is slightly lower than the female share in BSBY as a whole (45%). Monetary values are expressed in 1,000 INR. Standard errors in parentheses, p-values in curly brackets.

Table 4: Distance to the Nearest BSBY Hospital and Female Utilization: Location-Level

	(1)	(2)	(3)	(4)
	Dependent Variable: Female Share of BSBY Visits			
	All	Under 15 years old	15-49 years old	50+ years old
Distance to nearest BSBY hospital (km/10)	-0.0149	-0.0158	-0.0157	-0.0133
	(0.0016)	(0.0035)	(0.0019)	(0.0022)
	{<0.0001}	{<0.0001}	{<0.0001}	{<0.0001}
Percent female in population (2011)	0.0027	0.0034	0.0031	0.0022
	(0.0005)	(0.0010)	(0.0006)	(0.0006)
	{<0.0001}	{0.0011}	{<0.0001}	{0.0008}
District Fixed Effects	Yes	Yes	Yes	Yes
Observations	38,015	26,087	36,635	35,147
Female share | Hospital is in same village/town	0.515	0.389	0.579	0.469

Notes: The table presents regressions of the female share of BSBY hospital visits from a village or town location on the distance to the nearest public or private BSBY-empaneled hospital from that location. The analysis is at the location level. Locations with no visits are excluded since for them the share female is undefined. The number of observations varies across columns because locations with no visits in a given age-group are omitted. Distances are expressed in tens of kilometers. The female share of visits from residence locations that have a hospital within the location boundary (i.e. where the distance to the hospital is considered zero km) is reported at the bottom of the table for reference. Standard errors in parentheses, p-values in curly brackets.

Table 5: Gender Differences in Distance Traveled for BSBY Care

	(1)	(2)	(3)	(4)
Dependent Variable	Coefficient on Female			
Visited hospital nearest patient residence	0.0625	0.0402	0.0292	0.0734
	(0.0005)	(0.0005)	(0.0007)	(0.0007)
	{<0.001}	{<0.001}	{<0.001}	{<0.001}
Visited hospital in different district from residence	-0.0661	-0.0382	-0.0355	-0.0627
	(0.0006)	(0.0006)	(0.0008)	(0.0007)
	{<0.001}	{<0.001}	{<0.001}	{<0.001}
Distance to hospital visited (km)	-8.91	-5.51	-5.11	-8.08
	(0.07)	(0.07)	(0.11)	(0.09)
	{<0.001}	{<0.001}	{<0.001}	{<0.001}
Age Group Fixed Effects	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes
Patient District Fixed Effects	Yes	Yes	Yes	Yes
Specialty Fixed Effects	No	Yes	No	No
Household Fixed Effects	No	No	Yes	No
Household Fixed Effects Sample			Yes	Yes
Observations	2,262,729	2,262,729	1,415,801	1,415,801
Visited hospital nearest patient residence | Male	0.162	0.162	0.181	0.181
Visited hospital in different district | Male	0.361	0.361	0.350	0.350
Distance to hospital visited (km) | Male	53.733	53.733	51.240	51.240

Notes: The table presents gender differences in the distance traveled for BSBY hospital visits from the patient's residence. Each cell corresponds to a separate regression and shows the coefficient on a dummy for whether a hospital visit was for a "female" in a fixed effect regression with the variable in the left-hand column as the outcome. The sample is restricted to BSBY hospital visits where both the patient residence location and the hospital visited in the claims data are successfully geocoded (see Table 1). All regressions include ten-year age bins to control for age group. Column 3 includes household fixed effects and is, therefore, restricted to the subset of households that sought care for at least one male and one female; Column 4 presents results for the same sample but does not include household fixed effects. Mean values of each of the outcomes for male patients are reported at the bottom of the table for comparison. Standard errors in parentheses, p-values in curly brackets.

Table 6: Effect of Political Reservations on Female Share of BSBY Care

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Patient is Female				
	All Claims	Under 15 years old	15-49 years old	50+ years old	15-49 years old, including childbirths
Number of times reserved	0.0023	0.0085	0.0069	-0.0056	0.0073
	(0.0023)	(0.0031)	(0.0033)	(0.0031)	(0.0029)
	{0.312}	{0.006}	{0.033}	{0.073}	{0.012}
Age Group Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Patient District Fixed Effects	Yes	Yes	Yes	Yes	Yes
Specialty Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	1,696,785	129,621	947,895	619,269	1,087,280
Female share | Never reserved	0.455	0.327	0.479	0.443	0.544
Effect size (%)	0.50	2.60	1.44	-1.27	1.33

Notes: The table presents regressions of a dummy for whether a BSBY hospital visit was for a female on a categorical measure of whether the patient resided in a location with a female-reserved Sarpanch seat zero, one, two, or three times between 2005 and 2015. The sample is restricted to BSBY hospital visits where the patient residence location is successfully matched to GP reservations history (see Table 1). Childbirth visits are excluded, except in column 5 (included within the "general medicine" specialty). All regressions include location level controls for the 2001 and 2011 Population Census variables listed in Table A3, and for the distances to district and sub-district headquarters in the 2011 Census. All regressions include ten-year age bins to control for age group. The female share of visits in locations with Sarpanch seats that were never reserved for a female between 2005 and 2015 the effect size are reported at the bottom of the table for reference. Standard errors clustered at the GP level in parentheses, p-values in curly brackets.

Table 7: Effect of Political Reservations on Household Awareness and Attitudes

	(1)	(2)	(3)	(4)
	Talked with ASHA in Last Month	BSBY Awareness Index	Gender Attitudes Index	Female Agency Index
Female respondent	0.194	-0.836	-0.069	-0.619
	(0.115)	(0.461)	(0.367)	(0.360)
	{0.091}	{0.070}	{0.850}	{0.086}
Female X Number times reserved	0.103	0.147	0.113	0.198
	(0.041)	(0.140)	(0.135)	(0.123)
	{0.013}	{0.295}	{0.404}	{0.108}
Male X Number times reserved	0.023	-0.186	0.109	-0.118
	(0.029)	(0.130)	(0.101)	(0.100)
	{0.412}	{0.153}	{0.280}	{0.241}
Strata Fixed Effects	Yes	Yes	Yes	Yes
Claim Type Fixed Effects	Yes	Yes	Yes	Yes
Surveyor Fixed Effects	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes
Observations	838	838	813	823
Mean | Male resp, never reserved	0.135	0.000	0.000	0.000

Notes: The table presents the effect of reservations on the attitudes and awareness of residents using data from phone surveys conducted between November 2018 and January 2020 with a sample of households who had given birth at a BSBY facility between January and May 2017. Standard errors clustered at the GP level in parentheses, p-values in curly brackets. Mean values of each of the outcomes for male patients in locations with Sarpanch seats that were never reserved for a female between 2005 and 2015 are reported at the bottom of the table for comparison. All specifications include sampling weights and controls for whether the patient is of scheduled tribe, whether the household was randomly assigned to have a female respondent, age, education, and assets bins. "Claim Type" refers to whether the household had no child visit, only male child visit(s), or at least one female child visit in the BSBY claim data subsequent to the childbirth. ASHAs are village-level government health workers that are responsible for immunizations, pregnant woman care, and basic health activities. All indices have been normalized over the male respondent group in never reserved locations. The BSBY awareness index combines dummies for whether the respondent is aware that BSBY covers hospital, doctor, tests, medicines, and not transport costs. The gender attitudes index combines dummies for "progressive" views (either agree or disagree, depending on the statement) on four statements reflecting attitudes about gender roles. The female agency index combines dummies for whether the woman was in involved in major purchase decisions and in health care decisions for children in the household; whether she traveled to shops within the same village alone, another village alone, and another village with someone else in the last year (for urban residents we asked about the same urban neighborhood); and whether she has any source of her own earnings and owns her own mobile phone.

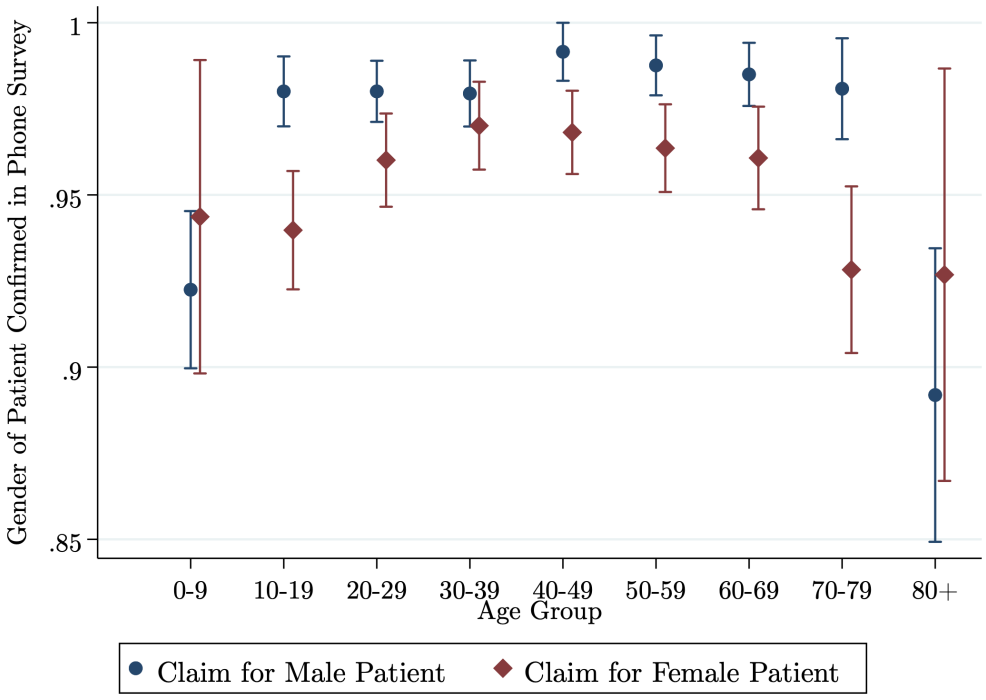
Table 8: Differences in Sarpanch Priorities by Reservation Status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Resp was Female Sarpanch	Met Weekly with ASHAs	Met Weekly with All VHWs	Met Weekly with Schools	Organized Monthly Village Meetings	Health among Top 3 Budget Items	Sanitation among Top 3 Budget Items
Female-reserved 2015	0.836	0.078	0.037	-0.126	0.084	0.065	-0.023
	(0.020)	(0.041)	(0.033)	(0.039)	(0.049)	(0.044)	(0.042)
	{<0.001}	{0.059}	{0.250}	{0.001}	{0.084}	{0.141}	{0.577}
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Surveyor Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	547	546	546	546	527	527	527
Mean | Never reserved	0.014	0.214	0.124	0.259	0.355	0.230	0.791

Notes: The table presents differences in Sarpanch priorities and actions by Gram Panchayat female reservation status using data from phone surveys conducted between November 2020 and January 2021 with Sarpanches from the 2015 election cycle. All regressions include controls for whether the survey respondent is the Sarpanch or a proxy, and whether the Sarpanch seat was caste-reserved (separately from female-reserved). ASHAs are village-level government health workers that are responsible for immunizations, pregnant woman care, and basic health activities. VHWs are village health workers, including ASHAs, Anganwadi workers (who manage child feeding programs), and ANMs (nurses that deliver immunizations and staff public health centers). The health budget item includes spending on health care as well as maternal and child nutrition services. Standard errors in parentheses, p-values in curly brackets. Mean values of each of the outcomes in locations with Sarpanch seats that were never reserved for a female between 2005 and 2015 are reported at the bottom of the table for comparison.

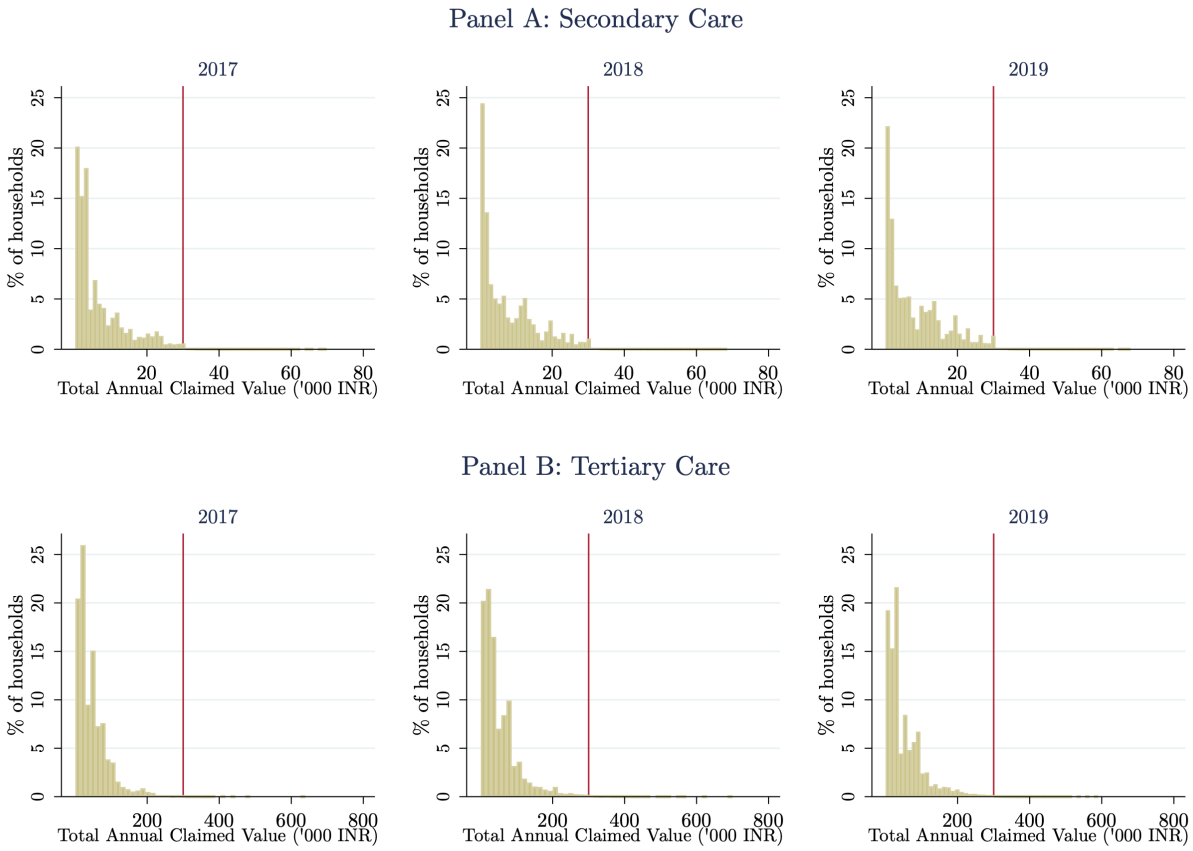
Appendix Figures and Tables

Figure A1: Reliability of Gender Information in Claims Data



Notes: The figure presents the share of observations in each age group with patient gender classified as male (female) in the BSBY claims data that were confirmed as male (female) in 10,489 patient surveys (discussed in Section 3.3). Whiskers represent 95% confidence intervals. There are only 41 (37) surveys for female (male) patients 80+, and 71 (129) surveys for female (male) patients under 10, which is why confidence intervals for these groups are larger.

Figure A2: BSBY Annual Household Spending Limits Are Not Binding



Notes: The figure presents histograms of households' total claimed value each year to examine the share of households that reach the annual BSBY household spending caps, which are indicated by the vertical red lines. All claims, including those for childbirth, are included. The amounts for 2019 are incomplete, as we only have claims data through the end of October 2019. Monetary values are expressed in 1,000 Indian Rupees (INR).

Table A1: Additional Statistics on BSBY Hospital Visits

	(1) Mean	(2) Share Female
Care Specialty		
General Medicine	0.345	0.551
General Surgery	0.165	0.390
Nephrology	0.136	0.302
Orthopedics	0.067	0.316
Oncology	0.048	0.459
Otolaryngology (ENT)	0.046	0.453
Urology	0.044	0.302
Dentistry	0.038	0.534
Opthalmology	0.033	0.527
Cardiology	0.030	0.284
Obgyn	0.028	1.000
Neurology	0.014	0.411
Plastic Surgery	0.003	0.250
Pediatrics	0.001	0.130
Psychiatry	0.001	0.468
Gastrology	0.001	0.428
District Location of Hospital Visited (Top 7)		
Jaipur	0.229	0.401
Udaipur	0.067	0.463
Jodhpur	0.060	0.382
Alwar	0.056	0.475
Ganganagar	0.048	0.445
Kota	0.045	0.432
Sikar	0.042	0.451
Observations	3,209,675	3,209,675

Notes: The top panel of the table presents the distribution of BSBY hospital visits across different care specialty in Column 1 (i.e. the share of all visits classified as each specialty) and the female share of visits for the specialty in Column 2. The bottom panel show the 7 districts with the highest BSBY hospital visit volumes, defined by the location of the hospital visited. See Table 1 for notes on the BSBY claims data.

Table A2: Descriptive Statistics on Gram Panchayats Matched to BSBY Visits

	Mean
GP Reservation Status	
Number of times GP reserved	1.3
GP never reserved (%)	11.8
GP reserved once (%)	51.8
GP reserved twice (%)	31.9
GP reserved thrice (%)	4.6
Reservation and Compliance Status per Year	
2005: Reserved for female (%)	33.7
2005: Filled by female (%)	36.5
2005: Filled by female (reserved) (%)	99.9
2005: Filled by female (unreserved) (%)	4.3
2010: Reserved for female (%)	47.7
2010: Filled by female (%)	52.7
2010: Filled by female (reserved) (%)	100.0
2010: Filled by female (unreserved) (%)	9.4
2015: Reserved for female (%)	47.9
2015: Filled by female (%)	47.0
2015: Filled by female (reserved) (%)	92.5
2015: Filled by female (unreserved) (%)	5.3
Observations	7,465

Notes: The table presents statistics on Gram Panchayats (GPs) included in the study—that is, the GPs for the patient residence locations in the BSBY claims data that were successfully geocoded and matched to GP reservation histories for the 2005, 2010 and 2015 election cycles (see Table 1 on BSBY observations matched to GP reservation histories). Note that 33% of all GPs are required to have seats reserved for a female Sarpanch. In 2009, Rajasthan increased this to 50%, which explains the higher reserved shares in the 2010 and 2015 elections. In 2014, Rajasthan introduced minimum education requirements for Sarpanches, which may explain the slightly lower adherence to reservation randomization in the 2015 election.

Table A3: Patient Residence Location Characteristics by Reservation Status

	Mean if Never Reserved (SD)	Coefficient (SE) on: Reserved 2015	Coefficient (SE) on: Nbr Times Reserved
2001 Population Census Characteristics			
Population ('000)	1.399	-0.0733	-0.0479
	(1.681)	(0.0559)	(0.0248)
Share female population	0.481	0.0001	0.0003
	(0.027)	(0.0003)	(0.0002)
Share female under-6 population	0.477	0.0000	0.0006
	(0.057)	(0.0007)	(0.0005)
Share SC population	0.172	-0.0011	0.0056
	(0.165)	(0.0022)	(0.0017)
Share ST population	0.160	0.0017	-0.0033
	(0.272)	(0.0038)	(0.0030)
Share with bus service	0.469	-0.0009	0.0066
	(0.499)	(0.0066)	(0.0050)
Share with banking facility	0.083	-0.0051	-0.0057
	(0.276)	(0.0033)	(0.0026)
Share with paved road	0.581	0.0061	-0.0022
	(0.493)	(0.0068)	(0.0052)
Share with primary health center	0.251	-0.0001	-0.0015
	(0.434)	(0.0051)	(0.0039)
Share with hospital	0.005	-0.0002	-0.0002
	(0.069)	(0.0008)	(0.0007)
Share urban	0.001	-0.0003	-0.0004
	(0.026)	(0.0005)	(0.0002)
Number of Locations	2,946	33,483	25,551
2011 Population Census Characteristics			
Population ('000)	1.419	-0.0096	-0.0290
	(1.698)	(0.0176)	(0.0142)
Share female population	0.482	-0.0003	0.0001
	(0.025)	(0.0003)	(0.0003)
Share female under-6 population	0.471	-0.0003	-0.0006
	(0.063)	(0.0007)	(0.0006)
Share SC population	0.178	-0.0011	0.0060
	(0.172)	(0.0022)	(0.0017)
Share ST population	0.165	0.0017	-0.0028
	(0.279)	(0.0039)	(0.0031)
Number of Locations	2,946	33,483	25,601

Notes: The table examines balance in the characteristics of BSBY patient residence locations in the study sample by their GP reservation status to assess whether the randomization protocol was adhered to. The unit of observation is a patient residence location. The table presents coefficients from regressions of 2001 and 2011 Population Census characteristics on a dummy for whether the location was reserved for a female Sarpanch in 2015 and a categorical measure of the number of times it was reserved over the 2005, 2010, and 2015 GP elections. The sample is restricted to patient residence locations in the BSBY claims data that were successfully matched to the 2011 Population Census and have political reservation histories on the 2015 elections (see Table 1 notes on BSBY observations matched to GP reservation histories). Columns 1 and 3 further exclude locations with no reservation information on either 2005 or 2010 elections. SC and ST stand for Scheduled Caste and Scheduled Tribes. Standard deviations in parentheses in column 1, standard errors in parentheses in columns 2 and 3.

Table A4: No Gender Differences in Out-of-Pocket (OOP) Charges

	(1)	(2)
	Any Charge	Amount Charged
Female	0.012	25.458
	(0.009)	(81.624)
	{0.185}	{0.755}
Month Fixed Effects	Yes	Yes
Hospital Fixed Effects	Yes	Yes
Service Fixed Effects	Yes	Yes
Observations	9,845	9,844
Mean | Male	0.28	1229.63

Notes: The table presents results from regressions of a dummy for whether the hospital charged the patient (column 1) or the amount charged (column 2) on dummy for the patient being female. The unit of observation is a hospital visit for which OOP charges information is available. Survey data on OOP charges are described in section 3.3 and figure 5 notes. The regression analysis is restricted to private hospital visits. Childbirth visits excluded. Mean values of each of the outcomes for males are reported at the bottom of the table for comparison. Monetary values are expressed in INR.

Table A5: Gender Gaps in Point of Care by Age Group

	(1)	(2)	(3)
Dependent Variable	Coefficient on Female		
	Under 15 years old	15-49 years old	50+ years old
Visited hospital nearest patient residence	0.016	0.046	0.029
	(0.002)	(0.001)	(0.001)
	{<0.001}	{<0.001}	{<0.001}
Visited hospital in different district from residence	-0.008	-0.045	-0.034
	(0.002)	(0.001)	(0.001)
	{<0.001}	{<0.001}	{<0.001}
Distance to hospital visited (km)	-1.228	-6.495	-5.061
	(0.239)	(0.092)	(0.115)
	{<0.001}	{<0.001}	{<0.001}
Age Group Fixed Effects	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes
Patient District Fixed Effects	Yes	Yes	Yes
Specialty Fixed Effects	Yes	Yes	Yes
Observations	176,171	1,267,174	819,284
Visited hospital nearest patient residence | Male	0.284	0.161	0.128
Visited hospital in different district | Male	0.260	0.349	0.402
Distance to hospital visited (km) | Male	42.050	52.334	58.578

Notes: The table presents gender differences in the distance traveled for BSBY hospital visits by age group. Each cell corresponds to a separate regression and shows the coefficient on a dummy for whether a BSBY hospital visit was for a female patient, in a fixed effect regression with the variable in the left-hand column as the outcome (same format as Table 5). The sample is restricted to BSBY hospital visits where the patient residence location and the hospital location in the claims data were both successfully geocoded (see Table 1 notes on geocoded observations). All regressions include ten-year age bins to control for age group. Mean values of each of the outcomes for males are reported at the bottom of the table for comparison. Standard errors in parentheses, p-values in curly brackets.

Table A6: Effects of Political Reservations on Location-Level Care Volume

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Number of BSBY Visits							
	Under 15		15 to 49 years old		50+ years old		15 to 49 years old, including deliveries	
	Females	Males	Females	Males	Females	Males	Females	Males
Nbr of times reserved	0.028	-0.003	0.005	-0.012	-0.009	0.022	0.005	-0.012
	(0.019)	(0.015)	(0.015)	(0.015)	(0.014)	(0.013)	(0.013)	(0.015)
	{0.130}	{0.834}	{0.750}	{0.437}	{0.528}	{0.096}	{0.725}	{0.427}
Location-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,771	25,771	25,771	25,771	25,771	25,771	25,881	25,881
Mean | Never reserved	1.781	3.665	19.448	21.120	11.284	14.197	25.116	21.028

Notes: The unit of analysis is a BSBY patient residence location. The table presents poisson regressions of the number of BSBY hospital visits from a location on a categorical measure of whether the location had a female-reserved Sarpanch seat in zero, one, two, or three of the Gram Panchayat election terms between 2005 and 2015. The sample is restricted to locations successfully matched to GP reservations history (see Table 1). The number of observations varies between columns 1-6 and 7-8 because the latter includes locations with childbirth visits. All regressions include ten-year age bins to control for age group and location level controls for distance to the closest public and private hospitals admitting BSBY patients, for the 2001 and 2011 Population Census variables listed in Table A3, and for the distances to district and sub-district headquarters in the 2011 Census. Standard errors are clustered at the GP level and in parentheses, p-values are in curly brackets.

Table A7: Effects of Political Reservations: Contemporary vs. Historical Reservations

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: Patient is Female				
	All Claims	Under 15 years old	15-49 years old	50+ years old	15-49 years old, including childbirths
Reserved 2015	0.0005	-0.0000	0.0050	-0.0064	0.0051
	(0.0039)	(0.0052)	(0.0055)	(0.0057)	(0.0049)
	{0.899}	{0.997}	{0.365}	{0.261}	{0.297}
Reserved 2015 X Nbr prior res.	0.0004	0.0107	0.0029	-0.0047	0.0027
	(0.0044)	(0.0066)	(0.0063)	(0.0062)	(0.0055)
	{0.933}	{0.104}	{0.640}	{0.441}	{0.618}
Nbr prior reservations	0.0034	0.0056	0.0061	-0.0010	0.0068
	(0.0031)	(0.0040)	(0.0044)	(0.0045)	(0.0038)
	{0.275}	{0.169}	{0.162}	{0.821}	{0.076}
Age Group Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Patient District Fixed Effects	Yes	Yes	Yes	Yes	Yes
Specialty Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	2,112,816	162,926	1,182,319	767,571	1,355,101
Female share | Never reserved	0.455	0.327	0.479	0.443	0.544
Average 2015 Reservation Effect	0.001	0.011	0.008	-0.011	0.008
Average 2015 Reservation P-value	0.804	0.042	0.115	0.023	0.077

Notes: The table presents regressions of a binary measure for whether a BSBY hospital visit is for a female on a binary measure for whether the patient residence location had female-reserved Sarpanch seat in 2015, a categorical measure of whether it was reserved zero, one or two times over the 2005 and 2010 cycles, and the interaction of the two. The sample is restricted to BSBY hospital visits where the patient residence location is successfully matched to GP reservation status in 2015 (66% of hospital visits). When reservation status for 2005 and/or 2010 is missing (20% of the observations for which 2015 reservation status is known, balanced across 2015 reservation status), the variable "Number Prior Reservations" is set to zero and a dummy for "Missing prior reservations history" is included as a control. All regressions include location level controls for the 2001 and 2011 Population Census variables listed in Table A3, and for the distances to district and sub-district headquarters in the 2011 Census. All regressions include ten-year age bins to control for age group. The female share in locations with Sarpanch seats that were never reserved for a female between 2005 and 2015 is reported at the bottom of the table for comparison. Standard errors clustered at the GP level in parentheses, p-values in curly brackets.

Table A8: Effect of Political Reservations on Location-Level Health Facility Supply

	(1) Has public health center	(2) Has public hospital	(3) Distance to public BSBY hospital	(4) Distance to private BSBY hospital
Nbr of times reserved	0.0032	-0.0005	-0.0718	-0.0533
	(0.0026)	(0.0010)	(0.0905)	(0.1933)
	{0.209}	{0.609}	{0.428}	{0.783}
Location-level Controls	Yes	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes	Yes
Observations	25,882	25,882	25,582	25,885
Mean	0.110	0.009	11.248	22.369
Mean | Never reserved	0.109	0.014	11.794	21.841

Notes: Regressions are at the village/town location level. Data on 2020 health facilities was obtained in March 2021 from the PMGSY Rural Facilites Dataset (http://omms.nic.in/Home/PMGSYRuralDataset/). The sample is restricted to locations successfully matched to GP reservations history (see Table 1). All regressions include location level controls for the 2001 and 2011 Population Census variables listed in Table A3, and for the distances to district and sub-district headquarters in the 2011 Census. Columns 3 and 4: Distances are expressed in kilometers. Mean values of each of the outcomes in locations with Sarpanch seats that were never reserved for a female between 2005 and 2015 are reported at the bottom of the table for comparison. Standard errors are clustered at the GP level in parentheses, p-values in curly brackets.