

# Leaning In or Pushing Down: Do female leaders help other women achieve career successes in the Indian bureaucracy?

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## Abstract

A key issue in the literature around discrimination in both labor and education is whether teachers, doctors, or bosses that are female are less likely to discriminate against women. We utilize a unique dataset that follows Indian bureaucrats in the elite Indian Administrative Service (IAS) through their entire service to examine whether having a female chief of secretary leads to better career outcomes for their female subordinates. Chief secretaries are the most senior civil servants in a state and serve on the promotion committees for all IAS officers in the state. We find evidence that having a female chief secretary during a female bureaucrat's first promotion window has a negative impact on her later career success and evidence of a positive effect at a later promotion window. The negative result is contradictory to most of the concordance literature which finds either null or positive effects. Some combination of dynamic statistical discrimination, male resentment against powerful women, and institutional differences in chief secretaries power at different promotion windows may explain the results.

## 1 Introduction

Increasing the diversity of an organization's leadership is often thought to promote diversity across an organization. The theory is that female bosses are more likely to promote other females in the organization. However, female bosses could be concerned about the appearance of "favouring" women and end up discriminating against them instead. Men in the organization could also become resentful of women after a female leader is selected.

We focus on the impact of leaders within the Indian civil service. In particular, we examine the careers of elite IAS officers who are centrally recruited and whose careers generally follow a rigid progression. We focus on the gender identity of chief secretaries who are the most senior bureaucrats in an Indian state. Bureaucrats serve as chief secretaries at the very end of their careers. Chief secretaries have immense power and responsibility for the broader governance of their states as head of the civil service, but one of their primary tasks is managing their fellow IAS officers. While a state might have up to 500 IAS officers serving at a given time, the chief secretary is required to serve on the promotion committee for even officers with just four years of service and helps assign them to positions which can have important implications for their future careers.

We investigate whether female executives lead to better careers for their female subordinates in the Indian civil service. The concordance literature has looked at this phenomenon for teachers, academic economists, and corporate managers. The education literature shows that teachers or professors of similar gender lead to higher test scores Muralidharan and Sheth (2016) and more females taking more STEM courses Carrell et al. (2010). Teachers of the same gender as a student are less likely to accredit negative behaviors to those students Dee (2005). There is some evidence that female mentors reduces gender gaps in career performance among academic economists Boustan and Langan (2019). The private sector literature suggests female bosses reduce gender gaps in Norway, but having more female colleagues at the same level appears not to have an effect Kunze and Miller (2017).

Given the role that female chief secretaries play in the promotion committees of their subordinates, we expect to find some effect associated with having a female chief secretary. Prior work suggests that female chief secretaries may have a positive impact on the promotion probability of their female subordinates. However, our setting differs from the health and education arenas in that there are trade-offs when one chooses to give one person a position versus another. Coveted jobs in the bureaucracy are inherently rival unlike high quality education. It is unclear what role concordance plays in the allocation of rival goods. Also our setting allows us to observe discrimination at different points in a bureaucrats career.

We find robust negative effects for female bureaucrats who were reviewed by female chief secretaries at their 4th year promotion window and indicative evidence of positive effects at the 9th year window. However, our data are limited by the small number of female chief secretaries. At each promotion period only approximately 5% of bureaucrats in our sample had a female chief bureaucrat. Further, only 16 out of the 32 Indian states in our sample have ever had a female chief secretary. Figure A summarizes career success, as defined by eventually working in the central government in Delhi, and observation counts for male and female bureaucrats under male and female chief secretaries at different key promotion windows.

## 2 Data

This paper uses data from the Civil List which provides detailed information on bureaucrats in the Indian Administrative Service. As with many administrative datasets there appears to be some idiosyncratic errors. Importantly, there are also some years where we don't observe a chief secretary either due to errors in job titles or an actual vacancy or errors in job start and end dates. The variables used in this paper are summarized in Table 1.

### 2.1 Key Variables

The primary outcome variable is a dummy variable of whether or not the bureaucrat worked for the central government in Delhi at any-point in their career. This is viewed widely as a sign of a successful career in the Indian Civil Service (Iyer and Mani, 2012, pg. 730). Note that this isn't a running outcome variable: it takes on one value for each bureaucrat based on the bureaucrat's whole career. We generated the variable based on the whole career due to ambiguities in individual job title and start and end dates. In general, bureaucrats aren't eligible for jobs in Delhi until after 13 years of service, the final promotion window we consider. Our main independent variable is the interaction

of the dummy variable of whether the bureaucrat is female with the one of whether the bureaucrat worked under a female chief secretary at a promotion window.

## 2.2 Institutional Background

The primary source of identification in this analysis is the rigid nature of the Indian Administrative Service. A position in the IAS is coveted. For example, in 2015 465,882 candidates took the entrance exam in the hope of securing one of 120 places in the IAS Xu et al. (2020). Officers join the service before they are 30 and only 8% of officers retire before age 50 Bertrand et al. (2019). In our own data, women appear to stay in the service longer. Male bureaucrats in cohorts before 1980 have an average of 31 years of service while females have an average of 34 years.

Bureaucrats are allocated to states when they join the service and either work in that state or the central government for the rest of their careers. The allocation is based on an elaborate algorithm to ensure balance on caste and exam score across state. Other authors explain how the allocation mechanism is quasi-random Xu et al. (2018). Given the short tenures of chief secretaries it is unlikely bureaucrats would try to game the selection algorithm to increase the probability of a female chief secretary four or nine years in the future. The average female bureaucrat who served under a female chief secretary only served under a female chief secretary for just under two years. Even though bureaucrats do not select states, since state's elected governments select chief secretaries there is a risk that state governments who select female chief secretaries differ systematically from governments that do not. Unfortunately, it is largely impossible to control for this kind selection effect with the data we have available. We are in the process of obtaining a data-set that will allow us to add fixed effects for elected state governments often appoint multiple chief secretaries during their career.

The IAS is rotational in nature with bureaucrats starting in rural areas and slowly working up to the state, and possibly, national capital. Officers rotate across many roles during their careers with the median officer serving in 13 different departments over the course of their careers Xu et al. (2020). The median posting is also a relatively short fourteen months Xu et al. (2020). Bureaucrats are eligible for promotion after 4, 9, 13, 16, 25, and 30 years of service. Chief secretaries serve on the evaluation committee for all of these promotions (Bertrand et al., 2019, Online Appendix Table A1). The chief secretary is joined at year 4 and 13 by two mid-career officials with 16-25 years of experience and acts alone at year 9. Even though some form of promotion is almost guaranteed, experience explains 89% of variance in pay-grade Bertrand et al. (2019), we focus on promotion windows because they are moments when bureaucrats become eligible for a new class of positions. The kinds of position the bureaucrat fills after a promotion can have important consequences for career trajectory since some jobs are more prestigious and important than others. For example, the finance department is considered important because it controls budgets for other departments (Iyer and Mani, 2012, pg. 730).

## 3 Methodology

We estimate the effect of a female chief secretary on career success using bureaucrat-wise data. We estimate the specification below to determine the expectation of ever achieving a posting in the central government conditional on a female bureaucrat having a female chief secretary during key promotion windows in her career. The conditional expectation has a causal interpretation under the assumption that having a female chief

secretary at key points in a bureaucrats career is random. This is supported by balance tests, using a logistic fixed effects specification due to the rare nature of female chief secretaries, reported in Table 2. The F-stats on the covariates have p-values of .15 and .17 for years 4 and 9 respectively. Since the outcome is binary, we estimate both a linear probability model and logistic model with dummies noting it may be biased due to the incidental parameter problem. We use cohort fixed effects to address time trends in gender attitudes that are consistent across all states. For example, we observe many more women chief secretaries in recent years. The state fixed effects address state differences in gender attitudes that remain fixed throughout time. For example, South India is known to have more progressive gender attitudes.

$$Y_{sci} = \phi_1 + \beta_1 F_{sci} + \beta_2 F_{sci,4} + \beta_3 F_{sci} F_{sci,4} + \beta_2 F_{sci,9} + \beta_3 F_{sci} F_{sci,9} + \beta_2 F_{sci,13} + \beta_3 F_{sci} F_{sci,13} + \phi_2 X_{sci} + \phi_3 P_{sci,4} + \phi_4 P_{sci,9} + \phi_5 P_{sci,13} + \gamma_s + \eta_c + \epsilon_{si} \quad (1)$$

$Y_{sci}$  is dummy for whether the bureaucrat  $i$  in state  $s$  and cohort  $c$  eventually got a posting with the central government.  $F_{sci}$  is a dummy variable for whether the bureaucrat is female.  $F_{sci,4}$ ,  $F_{sci,9}$  and  $F_{sci,13}$  are dummy variables for whether there was a female chief secretary at the 4,9, and 13 year promotion windows. Later promotion windows are excluded since later promotions often take place years after a bureaucrats is first eligible.  $P_{sci,4}$ ,  $P_{sci,9}$  and  $P_{sci,13}$  are controls for the chief secretary at each promotion window: whether they are serving in their home state, their education level, and whether they ever served in the central government.  $X_{sci}$  are individual controls for the bureaucrat: education and whether they are working in their home state.  $\gamma_s$  are state fixed effects.  $\eta_c$  are cohort fixed effects. Since only 16 state have had female chief secretaries we will use the wild bootstrap to estimate clustered standard errors.

## 4 Results and Discussion

Table 3 reports the results with the primary specification of interest given in column 7. First we'll discuss the impact of working under a female chief on career outcomes for all bureaucrats, and then we will hone in on the chief's impact on the female bureaucrats. We observe that having a female chief secretary at some point in one's career has a positive impact on a bureaucrat working at the central government - this is shown in row 2. Pertaining to the impact of a female chief secretary on female bureaucrats' careers, we observe a negative effect for less experienced female bureaucrats and an equal and opposite positive effect for the more experienced female bureaucrats. In particular, female bureaucrats who work for female chief secretaries with 4 years of experience are 34 percentage points less likely to work at the central government, while those who work under a female chief 9 years into their service are 32 percentage points more likely to work at the central government. However, we see that the impact that a female chief secretary has on whether males make it to the central government is positive at year 4 and negative at years 9. This is simply because of the tradeoffs present in this setting. The number of positions are fixed, so if females are not being promoted to the central government, it must be that the men are. We also included a "placebo" interaction at year 7 which we estimate as small and insignificant which reinforces our theory that promotion windows are the key causal channel.

The other covariates behave as expected. We find that working in one's home state decreases one's likelihood of making it to the central government by 30.7 percentage points - a large and significant effect. While obtaining an additional level of education increases

one's likelihood of working at the center by 12.6 percentage points. This reinforces our claim that more successful bureaucrats are more likely to work in the center.

The reversing effects observed in year 4 and 9 match patterns of reversing discrimination overtime observed in the discrimination literature. More specifically, it indicates evidence for belief-based discrimination with bias as discussed in Bohren et al. (2019). Which essentially states that when there is very little or no information about the individual, decision makers use priors that might be discriminatory to make their decisions. However, as more information becomes available - in our case this seems to happen by year 9 - decision makers update and make decisions based on the new information available. Note for this model to fit our data female chief secretaries would need to have stronger negative priors and update more rapidly than male chief secretaries. In fact, male chief secretaries appear to have no dynamic discrimination at all in our data Figure A. However, our setting is unique in that years 4 and 13 have a committee make the promotion decisions, while in year 9 the chief is the sole decision maker. Given the data we have, we cannot rule out whether or not this structure is the key driving reason we observe these reversing effects. It is important to note that the other committee members have only 16 to 25 years of experience and thus a significantly lower rank than the chief secretary herself. Further, the other committee members would not have been inline for the chief secretary's job so it is unlikely the selection of a female chief secretary generated direct gender animus. It is thus not possible to rule out the explanation that the female chief is trying to appear "fair" when in the committees, but does not have the pressure to do this when they are making the decision alone. A final possibility is that female chief secretaries are less sympathetic to the challenges of rural chauvinism, which is likely to effect the younger female officers at year 4 the most, simply because the female chief secretaries overcame these issues themselves unlike male chief secretaries.

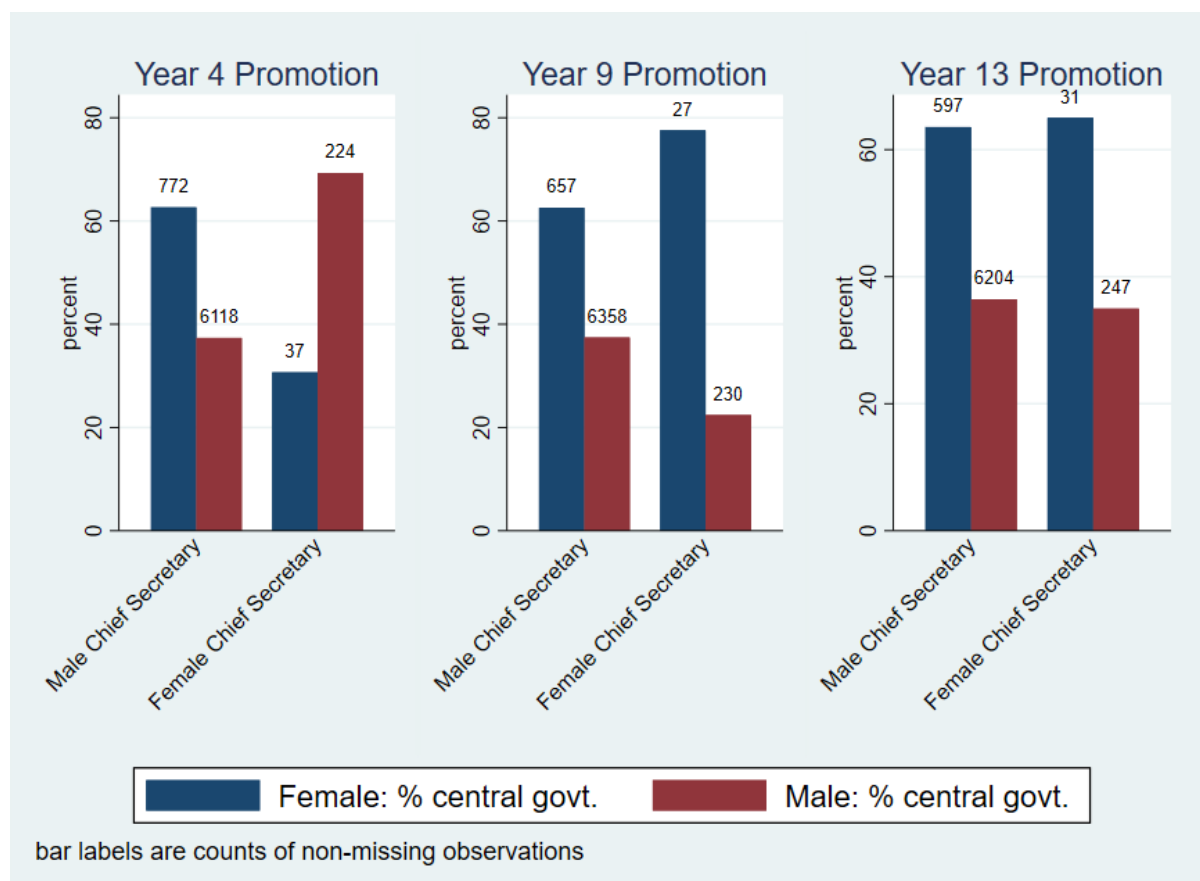
## 5 Conclusion

The negative effects of female chief secretaries for female bureaucrats in their initial promotion window is surprising. These early career officers are certainly not rivals of the chief secretaries nor are they likely to have substantial interactions. A possible explanation is that chief secretaries are trying to appear "fair" when they set on year 4 promotion committees to the extent they inadvertently end up harming women. Female chief secretaries could also spark resentment among other senior men in the bureaucracy. The positive results at the year nine promotion window could be driven by the fact the promotion is "automatic" so only the female chief is responsible for making the decision and no committee is called. This reduced formality may give the female chief secretaries more latitude to assign female bureaucrats to high quality posts. The large magnitude and opposite signs of these results suggest that the promotion decision might be prone to belief-based bias with discrimination, and that there are substantial gender dynamics at play within the Indian Bureaucracy. This suggests that there is reason to investigate this phenomenon within the Indian bureaucracy further.

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## A Figures



## B Tables

Table 1: Summary Statistics

	Full Data					All Non-Missing				
	Obs	Mean	Std.Dev.	Min	Max	Obs	Mean	Std.Dev.	Min	Max
Ever Served in Centre	13509	0.33	0.47	0	1	3522	0.31	0.46	0	1
Female	13509	0.11	0.32	0	1	3522	0.09	0.29	0	1
Ever Served Under Female Chief Secretary	13509	0.22	0.41	0	1	3522	0.37	0.48	0	1
Total Number of Quarters under Female	13509	1.44	3.40	0	18	3522	2.65	4.43	0	18
Work in Home State	13509	0.37	0.48	0	1	3522	0.55	0.50	0	1
Educational Attainment	10148	3.60	0.67	1	5	3522	3.54	0.70	1	5
Female	13509	0.11	0.32	0	1	3522	0.09	0.29	0	1
Female and Worked for Female Chief at 4 Years	7151	0.01	0.07	0	1	3522	0.00	0.05	0	1
Worked for Female Chief at 4 Years in Service	7151	0.04	0.19	0	1	3522	0.02	0.16	0	1
Chief at 4 Years Education	7147	3.84	0.45	3	5	3522	3.81	0.46	3	5
Chief at 4 Years Works in Home State	7151	0.42	0.49	0	1	3522	0.39	0.49	0	1
Chief at 4 Years Ever Served in Centre	7151	0.87	0.33	0	1	3522	0.90	0.30	0	1
Female and Worked for Female Chief at 9 Years	7272	0.00	0.06	0	1	3522	0.00	0.07	0	1
Worked for Female Chief at 9 Years in Service	7272	0.04	0.18	0	1	3522	0.04	0.20	0	1
Chief at 9 Years Education	7271	3.83	0.47	3	5	3522	3.82	0.50	3	5
Chief at 9 Years Works in Home State	7272	0.43	0.49	0	1	3522	0.41	0.49	0	1
Chief at 9 Years Ever Served in Centre	7272	0.86	0.34	0	1	3522	0.86	0.34	0	1
Female and Worked for Female Chief at 13 Years	7079	0.00	0.07	0	1	3522	0.01	0.08	0	1
Worked for Female Chief at 13 Years in Service	7079	0.04	0.19	0	1	3522	0.05	0.22	0	1
Chief at 13 Years Education	7073	3.83	0.45	3	5	3522	3.84	0.47	3	5
Chief at 13 Years Works in Home State	7079	0.43	0.50	0	1	3522	0.41	0.49	0	1
Chief at 13 Years Ever Served in Centre	7079	0.87	0.34	0	1	3522	0.86	0.35	0	1

Ever served in center is a dummy for whether the bureaucrat ever had a job in the central government which is a sign of success in the bureaucracy. It takes the value of 1 if the bureaucrat ever held a position in the following organisations: centre, centre (captive post), centre (deputation under rule 6(2)(ii) , centre (domestic training), centre

(ex-cadre), centre (foreign posting), centre (foreign training), centre (non- central Staffing scheme), centre (PSU), and centre (study leave). Female is a dummy for gender. Served Under female chief secretary is a dummy for whether a bureaucrat served under a female chief secretary before they moved to the central government. Number of quarters under chief secretary is the number of calendar quarters the bureaucrat served under a female bureaucrat.

Work in homestate is a dummy variable for whether an employee works in the same state as their home state. To construct this variable, we included home states that might be part of the unions but were missing from the work state variable in the raw data. The adjustments that were made include: adding Andaman & Nicobar, Chandigarh, Dadra& Nagar Haveli, Delhi, Goa, Lakshadweep, Mizoram, and Pondicherry home locations to the AGMUT union in the work location variable. We also did the same for Assam and Meghalaya home locations, adding these to the Assam Meghalaya work location variable.

Educational attainment is a coding of the "Qualification/University/Institute." Broadly 5 is for doctoral degrees, 4 is for masters and other post-graduate degrees, 3 is for bachelors degrees and accounting qualifications, 2 is for degree types that seem less than a bachelors such as secretarial certificate. 1 is for what seems to be the equivalent of no posted qualifications such as "N.A."



Table 2: Predicting Bureaucrat Working for Female Chief on Observables

	(1)	(2)
	Worked for Female Chief at Year 4	Worked for Female Chief at Year 9
Work in Home State	-0.157 (0.209)	0.298 (0.194)
Education	-0.154 (0.152)	0.168 (0.155)
Female Bureaucrat	-0.534 (0.275)	-0.390 (0.279)
F-stat	5.38	5.05
{P-Value}	{0.146}	{0.168}
Observations	4756	4781
State FE	YES	YES
Cohort FE	YES	YES

The curly brackets under F-stat are the p-value associated with the F-stat. The parentheses contain the standard error associated with the coefficients  
 \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 3: Wild Bootstrapped CI Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Center	Center	Center	Center	Center	Center	Center	Center
Female Bureaucrat	0.113*** [0.072, 0.152]	0.080*** [0.049, 0.112]	0.109*** [0.066, 0.153]	0.122*** [0.085, 0.160]	0.124*** [0.087, 0.162]	0.135*** [0.071, 0.197]	0.164*** [0.094, 0.240]	0.134*** [0.072, 0.194]
Female Chief Secretary	0.219*** [0.170, 0.271]	0.148*** [0.097, 0.207]	0.132*** [0.061, 0.215]	0.129*** [0.048, 0.220]	0.131** [0.038, 0.231]	0.127** [0.017, 0.235]	0.219*** [0.126, 0.302]	0.132** [0.017, 0.237]
Work in Home State		-0.254*** [-0.280, -0.228]	-0.279*** [-0.317, -0.242]	-0.290*** [-0.335, -0.247]	-0.300*** [-0.345, -0.256]	-0.308*** [-0.359, -0.257]	-0.263*** [-0.326, -0.202]	-0.307*** [-0.360, -0.255]
Education		0.118*** [0.097, 0.138]	0.118*** [0.090, 0.145]	0.126*** [0.098, 0.156]	0.122*** [0.093, 0.155]	0.125*** [0.092, 0.165]		0.126*** [0.093, 0.164]
Worked for Female Chief at 4 Years in Service			-0.009 [-0.074, 0.069]	-0.019 [-0.103, 0.075]	-0.011 [-0.104, 0.089]	0.008 [-0.116, 0.147]	0.015 [-0.097, 0.155]	-0.001 [-0.152, 0.178]
Female*Worked for Female Chief at 4 Yrs			-0.193 [-0.420, 0.056]	-0.264* [-0.493, 0.009]	-0.352*** [-0.546, -0.173]	-0.336** [-0.584, -0.091]	-0.312*** [-0.500, -0.146]	-0.340** [-0.559, -0.122]
Worked for Female Chief at 7 Years in Service				0.018 [-0.064, 0.141]	-0.007 [-0.077, 0.093]	-0.013 [-0.100, 0.100]	-0.020 [-0.071, 0.040]	-0.028 [-0.163, 0.124]
Female*Worked for Female Chief at 7 Yrs				-0.009 [-0.393, 0.371]	-0.053 [-0.426, 0.500]	-0.177 [-0.645, 0.589]	-0.121 [-0.483, 0.563]	-0.167 [-0.680, 0.642]
Worked for Female Chief at 9 Years in Service					-0.088* [-0.202, 0.014]	-0.131** [-0.222, -0.037]	-0.125** [-0.219, -0.023]	-0.138** [-0.226, -0.041]
Female*Worked for Female Chief at 9 Yrs					0.241** [0.003, 0.570]	0.329** [0.057, 0.623]	0.335** [0.072, 0.666]	0.319** [0.040, 0.642]
Worked for Female Chief at 13 Years in Service						-0.042* [-0.100, 0.002]	-0.040 [-0.111, 0.029]	-0.056* [-0.129, 0.009]
Female*Worked for Female Chief at 13 Yrs						-0.018 [-0.279, 0.369]	-0.064 [-0.290, 0.272]	-0.001 [-0.268, 0.389]
Chief Secretary Controls	NO	NO	NO	NO	NO	NO	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	12778	10072	5167	4384	3884	3284	4113	3284
Adjusted R <sup>2</sup>	0.336	0.355	0.259	0.243	0.241	0.244	0.211	0.245
Root MSE	0.390	0.397	0.391	0.394	0.397	0.401	0.383	0.400

We included State fixed effects in all specifications, and if there were multiple chief secretaries the values were averaged.

Table 4: Results with Clustered Standard Errors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Center	Center	Center	Center	Center	Center	Center	Center
Female Bureaucrat	0.113*** (0.0190)	0.0804*** (0.0151)	0.109*** (0.0210)	0.122*** (0.0180)	0.124*** (0.0183)	0.135*** (0.0298)	0.164*** (0.0332)	0.134*** (0.0291)
Female Chief Secretary	0.219*** (0.0229)	0.148*** (0.0238)	0.132*** (0.0329)	0.129** (0.0357)	0.131** (0.0384)	0.127** (0.0431)	0.219*** (0.0361)	0.132** (0.0446)
Work in Home State		-0.254*** (0.0128)	-0.279*** (0.0184)	-0.290*** (0.0212)	-0.300*** (0.0212)	-0.308*** (0.0243)	-0.263*** (0.0285)	-0.307*** (0.0247)
Education		0.118*** (0.00957)	0.118*** (0.0126)	0.126*** (0.0136)	0.122*** (0.0145)	0.125*** (0.0169)		0.126*** (0.0168)
Worked for Female Chief at 4 Years in Service			-0.00891 (0.0302)	-0.0187 (0.0359)	-0.0114 (0.0376)	0.00770 (0.0507)	0.0151 (0.0468)	-0.00145 (0.0614)
Female*Worked for Female Chief at 4 Yrs			-0.193 (0.0964)	-0.264* (0.106)	-0.352*** (0.0739)	-0.336** (0.0973)	-0.312*** (0.0738)	-0.340*** (0.0912)
Worked for Female Chief at 7 Years in Service				0.0183 (0.0402)	-0.00717 (0.0328)	-0.0125 (0.0363)	-0.0203 (0.0235)	-0.0281 (0.0493)
Female*Worked for Female Chief at 7 Yrs				-0.00948 (0.153)	-0.0531 (0.180)	-0.177 (0.214)	-0.121 (0.162)	-0.167 (0.223)
Worked for Female Chief at 9 Years in Service					-0.0877 (0.0450)	-0.131** (0.0398)	-0.125** (0.0356)	-0.138*** (0.0368)
Female*Worked for Female Chief at 9 Yrs					0.241* (0.0947)	0.329** (0.0925)	0.335** (0.0966)	0.319** (0.0991)
Worked for Female Chief at 13 Years in Service						-0.0420 (0.0238)	-0.0402 (0.0293)	-0.0561 (0.0294)
Female*Worked for Female Chief at 13 Yrs						-0.0184 (0.128)	-0.0641 (0.110)	-0.000585 (0.131)
Chief Secretary Controls	NO	NO	NO	NO	NO	NO	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	12778	10072	5167	4384	3884	3284	4113	3284
Adjusted $R^2$	0.336	0.355	0.259	0.243	0.241	0.244	0.211	0.245

Standard errors in parentheses

We included State fixed effects in all specifications, and if there were multiple chief secretaries the values were averaged.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 5: Impact of Length of Chief's Service

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Center	Center	Center	Center	Center	Center	Center	Center	Center
Female Bureaucrat	0.113*** [0.072, 0.15]	0.080*** [0.049, 0.11]	0.109*** [0.066, 0.15]	0.122*** [0.085, 0.16]	0.124*** [0.087, 0.16]	0.135*** [0.071, 0.20]	0.164*** [0.094, 0.24]	0.134*** [0.072, 0.19]	0.117*** [0.035, 0.20]
Female Chief Secretary	0.219*** [0.17, 0.27]	0.148*** [0.097, 0.21]	0.132*** [0.061, 0.22]	0.129*** [0.048, 0.22]	0.131*** [0.038, 0.23]	0.127*** [0.017, 0.23]	0.219*** [0.13, 0.30]	0.132*** [0.017, 0.24]	0.129*** [0.011, 0.24]
Female*length of Female Chief Tenure									0.007 [-0.0097, 0.023]
Work in Home State		-0.254*** [-0.28, -0.23]	-0.279*** [-0.32, -0.24]	-0.290*** [-0.33, -0.25]	-0.300*** [-0.35, -0.26]	-0.308*** [-0.36, -0.26]	-0.263*** [-0.33, -0.20]	-0.307*** [-0.36, -0.26]	-0.307*** [-0.36, -0.25]
Education		0.118*** [0.097, 0.14]	0.118*** [0.090, 0.14]	0.126*** [0.098, 0.16]	0.122*** [0.093, 0.15]	0.125*** [0.092, 0.16]		0.126*** [0.093, 0.16]	0.126*** [0.094, 0.17]
Worked for Female Chief at 4 Years in Service			-0.009 [-0.074, 0.069]	-0.019 [-0.10, 0.075]	-0.011 [-0.10, 0.089]	0.008 [-0.12, 0.15]	0.015 [-0.097, 0.15]	-0.001 [-0.15, 0.18]	0.001 [-0.15, 0.17]
Female*Worked for Female Chief at 4 Yrs			-0.193 [-0.42, 0.056]	-0.264* [-0.49, 0.0088]	-0.352*** [-0.55, -0.17]	-0.336*** [-0.58, -0.091]	-0.312*** [-0.50, -0.15]	-0.340*** [-0.56, -0.12]	-0.368*** [-0.59, -0.11]
Worked for Female Chief at 7 Years in Service				0.018 [-0.064, 0.14]	-0.007 [-0.077, 0.093]	-0.013 [-0.10, 0.100]	-0.020 [-0.071, 0.040]	-0.028 [-0.16, 0.12]	-0.025 [-0.16, 0.13]
Female*Worked for Female Chief at 7 Yrs				-0.009 [-0.39, 0.37]	-0.053 [-0.43, 0.50]	-0.177 [-0.65, 0.59]	-0.121 [-0.48, 0.56]	-0.167 [-0.68, 0.64]	-0.187 [-0.72, 0.57]
Worked for Female Chief at 9 Years in Service					-0.088* [-0.20, 0.014]	-0.131*** [-0.22, -0.037]	-0.125*** [-0.22, -0.023]	-0.138*** [-0.23, -0.041]	-0.134*** [-0.22, -0.034]
Female*Worked for Female Chief at 9 Yrs					0.241** [0.0029, 0.57]	0.329*** [0.057, 0.62]	0.335*** [0.072, 0.67]	0.319*** [0.040, 0.64]	0.267* [-0.012, 0.63]
Worked for Female Chief at 13 Years in Service						-0.042* [-0.10, 0.0017]	-0.040 [-0.11, 0.029]	-0.056* [-0.13, 0.0087]	-0.053 [-0.12, 0.016]
Female*Worked for Female Chief at 13 Yrs						-0.018 [-0.28, 0.37]	-0.064 [-0.29, 0.27]	-0.001 [-0.27, 0.39]	-0.038 [-0.31, 0.42]
Chief Secretary Controls	NO	NO	NO	NO	NO	NO	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	12778	10072	5167	4384	3884	3284	4113	3284	3284
Adjusted R <sup>2</sup>	0.336	0.355	0.259	0.243	0.241	0.244	0.211	0.245	0.245
Root MSE	0.390	0.397	0.391	0.394	0.397	0.401	0.383	0.400	0.400

We included State fixed effects in all specifications, and if there were multiple chief secretaries the values were averaged.

Table 6: Logit Results with Clustered Standard Errors

	(1) Center
Female Bureaucrat	0.522** (0.174)
Female Chief Secretary	1.001*** (0.167)
Work in Home State	-1.540*** (0.0959)
Education	0.943*** (0.0782)
Worked for Female Chief at 4 Years in Service	-0.363 (0.294)
Female*Worked for Female Chief at 4 Yrs	-15.88 (1088.5)
Worked for Female Chief at 7 Years in Service	-0.501 (0.295)
Female*Worked for Female Chief at 7 Yrs	-1.122 (0.782)
Worked for Female Chief at 9 Years in Service	-1.141*** (0.294)
Female*Worked for Female Chief at 9 Yrs	1.725* (0.788)
Worked for Female Chief at 13 Years in Service	-0.632* (0.251)
Female*Worked for Female Chief at 13 Yrs	-0.0318 (0.602)
Observations	3275
State FE	YES
Cohort FE	YES

Standard errors in parentheses

If there were multiple chief secretaries the values were averaged.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$