Rachel Brulé *is a Core Faculty Member of the Human Capital Initiative at the Boston University Global Development Policy Center and an Assistant Professor of Global Development Policy at the Frederick S. Pardee School of Global Studies at Boston University. Her research interests are broadly in comparative politics, international development, political economy and gender, with a geographical focus on South Asia.*

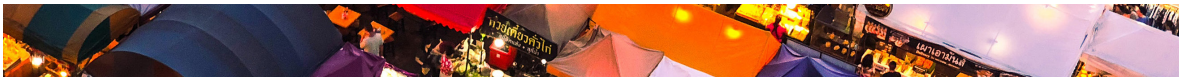
Do Quotas In Two Dimensions Improve Social Equality?

INTERSECTIONAL REPRESENTATION & GROUP RELATIONS

RACHEL BRULÉ AND ALIZ TÓTH

ABSTRACT

Do quotas mandating descriptive representation dismantle social hierarchy? Quotas are typically utilized to resolve a single form of political exclusion. Yet systemic oppression is multi-dimensional. Thus, mandating political inclusion on one identity may strengthen exclusion along others. Can quotas mandating representation on two dimensions of identity help? We posit that two-dimensional quotas disrupt cross-cutting discrimination, improving inter-group relations beyond one-dimensional quota impact. Exploiting their quasi-random allocation, we analyze the causal effect of the world's largest quota system for women, disadvantaged ethnicities (Scheduled Tribes), and women from these ethnic groups in India. Utilizing multiple datasets covering mainland India since quota imposition, we find one-dimensional quotas magnify social barriers to interactions and increase inter-group conflict. In contrast, two-dimensional quotas consistently diminish exclusion, improving inter-group relations in the wake of backlash. Suggestive evidence indicates this relationship travels globally. Our results demonstrate the necessity, and limitations, of using descriptive representation to improve social relations.



Aliz Tóth *is a PhD candidate in the Department of Political Science at Stanford University. Her dissertation project investigates the causes of state-society bargaining failure in the context of land acquisition conflict in India. Her research relies on the use of large-scale administrative datasets, original survey data and in-depth qualitative fieldwork.*

1 Introduction

A large normative literature justifies advancing social equality as crucial for democratic deliberation, building the vibrant network of social interactions required for democracy to flourish (Mansbridge, 1999; Dovi, 2002). Indeed, social norms limit the scope of political engagement, candidacy, and careers (Fox and Lawless, 2014; Bernhard, Shames, and Teele, 2021; Costa, 2021). Quotas mandating descriptive representation for historically marginalized groups open spaces within the tightly woven fabric of social (dis)advantages that typically engender political exclusion (O'Brien and Rickne, 2016; Barnes and Holman, 2020). However, such institutional changes often seek to remedy a single form of exclusion. The challenge for these policies is that systemic oppression is not simple. It often occurs via interlocking processes where exploitation in one domain coexists with and reinforces discrimination in one or more other domains (Weldon, 2006; Hughes, 2011). As a result, gains in descriptive representation in some domains may fail to remedy multi-dimensional discrimination and actually serve to strengthen systemic exploitation in other domains. There is evidence that quotas disproportionately benefit the most advantaged members of quota-receiving groups and can catalyze polarization and backlash that particularly harms the most vulnerable members of these newly-included groups (Brulé, 2020; Suryanarayan and White, 2021). Critical feminist theories of intersectionality make clear that structures of oppression endure despite, and sometimes because of, overly simplistic legal remedies (Crenshaw, 1989; Rao, 2003; Strolovitch, 2006). This prevents the formation of exactly those inter-group connections that stitch together democratic society (de Tocqueville, 1863).

We investigate whether or not equality breeds more equality. Specifically, we advance consideration of quotas that systematically dismantle multiple forms of social hierarchy and ask whether two-dimensional quotas improve support for inter-group relationships relative to one-dimensional mandates. We refer to typical quotas—which mandate descriptive representation based on one characteristic alone—as one-dimensional, and call those mandating representation on two sets of characteristics—such as gender and ethnicity—as two-dimensional.

Specifically, we ask if two-dimensional quotas are better than one-dimensional quotas at improving social relations defined by patriarchal gender and ethnic norms. This matters because policing women's bodies is a core strategy for maintaining hierarchy across multiple domains, including race, ethnicity, and gender (Sanday, 1981; McGhee, 2021). Substantively, we investigate the conditions under which quotas mandating descriptive representation can build bridges across the social divides created by enduring, multi-dimensional exclusion. We study attitudes as the first step in changing what are notoriously sticky social conventions dictating behavior (Helmke and Levitsky, 2004). These include self-reported willingness to expand social connections based on the ease of interaction with members of other ethnic groups in public, and support for an act central to the reproduction of gender and ethnic relations: willingness to marry across group boundaries.

Two competing theories provide analytic leverage. Optimists argue that descriptive representation can equalize power between groups and reduce exclusion (Mansbridge, 1999). Political inclusion may alter perceived social norms about the acceptability of discrimination or redirect material resources toward descriptively represented groups (Burns, Schlozman, and Verba, 1997; Beaman, Duflo, Pande, and Topalova, 2012; Chauchard, 2017; Clayton and Zetterberg, 2018; Brulé, 2020; Gulzar, Haas, and Pasquale, 2020). In the best case, inclusion may increase support for egalitarian norms by improving communication between members of traditionally marginalized and dominant groups (Paluck, Shepherd, and Aronow, 2016; Jensenius, 2017; Barnes and Holman, 2020). Others argue that quotas mandating descriptive representation are unlikely to have an impact as long as parties retain a dominant role in financing and promoting candidates (Dunning and Nilekani, 2013; Jensenius, 2016; Bussell, 2018; Kapur and Vaishnav, 2018; Auerbach and Kruks-Wisner, 2020).

Descriptive representation may even fuel backlash, mobilizing broad-based social coalitions against perceived threats to traditional status (Shayo, 2009; Suryanarayan and White, 2021; Brulé, 2020).

Our theoretical contribution is to explain why, and under what conditions, both of these processes may be at work. We build upon prior theories that emphasize the importance of intersectional oppression (Crenshaw, 1989; Strolovitch, 2006; Morgan-Collins and Natusch, 2021). We expect that one-dimensional quotas, which amplify the salience of a single political identity, will advance partial social equality. Yet, such quotas are unable to address interlocking forms of discrimination. They may even exacerbate inequality in other domains, as collective action to remedy disadvantage in one domain often requires sacrificing priorities in others. As a result, we expect one-dimensional quotas leave hierarchies intact and magnify barriers to inter-group relations. However, two-dimensional quotas that bring members of multiply-marginalized groups into elected office are likely to erase the backlash caused by one-dimensional quotas and further dismantle hierarchy. We hypothesize leaders elected under such quotas have unique incentives and abilities to disrupt systems of oppressive norms. Whether through their symbolic presence as part of government or their distinct strategies of governance, leaders can change the perceived acceptability of discrimination against members of marginalized groups, altering strategic behavior or sincere beliefs.

To test our theory, we consider the world's largest natural experiment for allocating electoral opportunity: quotas for elected heads of local government in India, the world's largest democracy. We focus on a particularly hard case: two-dimensional quotas which simultaneously mandate representation along two axes of enduring political exclusion: gender and ethnicity (Scheduled Tribes or STs).[1] These quotas bring to power members of a group that has faced extreme marginalization: women from Scheduled Tribes.[2] We leverage the as-if random assignment of electoral quotas for women from Scheduled Tribes to estimate the causal impact of representation on our main outcome of interest: citizen willingness to cross enduring social boundaries. Throughout, we study how mandating descriptive representation on two-dimensions compares to representation on a single dimension.

We begin by studying the impact of two-dimensional quotas on individual willingness to dismantle social barriers, relative to that of one-dimensional mandates. We next test whether representation reduces the perceived acceptability of gender and ethnic exclusion. We evaluate the impact of one- and two-dimensional political representation on the community as a whole, by gender, and for ST men and women separately. For analytic traction we focus on ethnic quotas for STs. Yet we also analyze quotas for another marginalized ethnicity: Scheduled Castes (formerly "untouchables").[3] Additional robustness tests confirm results hold with varied coding of the main dependent variable and for alternative specifications.

We find a major contrast in the impact of one- versus two-dimensional quotas. One- dimensional ethnic quotas either perpetuate or amplify existing barriers to inter-group interactions, magnifying inter-group conflict and political exclusion. Although women's quotas partially reduce exclusion in one area (inter-group interactions), this comes at the cost of increased exclusion elsewhere (reducing willingness to marry across castes and women's political participation). However, two-dimensional quotas represent a marked improvement compared to one-dimensional mandates: diminishing and often erasing the backlash created by one-dimensional descriptive representation, with

[1] Scheduled Tribes are defined as groups with: "primitive ways of life and habitation in remote and less accessible areas," tribal origin and "general backwardness in all respects" (Indian Constitutional Scheduled Tribe (ICST) orders of 1950, c.f. Pande (2003, 1138)).

[2] ST women are consistently underrepresented "in education, government and semi-government employment, and the institutions of governance" (Xaxa, 2004, 359). Constitutional safeguards for tribes magnify gender inequality in local government (Kikon, 2017).

[3] SC exclusion was comprehensive, with status defined by criteria including "pollutes a high-caste Hindu by contact or proximity" (ICSC orders of 1950, c.f. Pande (2003, 1138)).

growing support for inter-group relations across multiple domains. We interpret the changes following two-dimensional quotas as reductions in the perceived acceptability of gender and ethnic discrimination, which open the door to easier interactions across groups.[4] This resonates with revolutionary *dalitbahujan* movements in India, which saw gender equality as crucial to overturn the oppressive caste system, with Scheduled Caste and Tribe women at the center of political action (Rao, 2003).

We consider two alternative explanations in addition to changes in exclusionary norms. First, increased redistribution under two-dimensional quotas may improve interactions across groups. We test whether quotas alter access to state resources. Second, backlash may follow quotas if elites anticipate leaders will threaten their entitlements by mobilizing competing political networks. Stereotypes that downplay doubly-marginalized women as mere "proxies" for men may make two-dimensional quotas less threatening, inducing lower backlash than one-dimensional mandates (Suryanarayan and White, 2021). To check, we study the impact of quotas where groups with descriptive representation have high versus low capacity to mobilize (based on local electoral coalitions). Of these channels, we only find consistent evidence for our hypothesized relationship: two-dimensional quotas reduce the perceived permissibility of gender and caste-based exclusion, lowering barriers to inter-group relations.

Our empirical contribution is to advance work by Hughes (2011) to causally identify the downstream effects of representation for multiply marginalized women via quotas. We also test Dovi (2002)'s theory on the importance of including historically dispossessed groups. Finally, we shed light on the mixed empirical results by Teele, Kalla, and Rosenbluth (2018) on women's ability to shift gendered political norms. We generate new insights for the literature on descriptive representation's ability to address interlocking systems of oppression with quotas for politically-salient, socially-ascribed gender and ethnic groups. We find one- dimensional quotas strengthen these interlocking systems, which two-dimensional quotas disrupt. This has important implications for advancing political equality globally.

2 Theory

Can descriptive representation reduce interlocking systems of oppression? If so, does this create opportunities for improved inter-group relations? Mansbridge (1999, 641) warns that when political exclusion overlaps with systemic socio-economic subordination, it "typically breeds inattention, even arrogance, on the part of the dominant group and distrust on the part of the subordinate group." Where domination endures, institutional interventions may disrupt hierarchy and foster inter-group interactions. Quotas are popular policy tools to guarantee descriptive representation: the election of representatives who possess shared life experiences or identities correlated with enduring exclusion (Chattopadhyay and Duflo, 2004; Htun, 2016; O'Brien and Rickne, 2016). Our knowledge of descriptive representation's ability to lessen discrimination is based mainly on studies of quotas mandating representation on one politically-salient identity only, despite widespread consensus that systems of oppression interlock, supporting each other (Sapiro, 1981; Crenshaw, 1989; Chhibber, 1999; Dovi, 2002; Strolovitch, 2006; Mettler, 2011; Michener and Brower, 2017; Bernhard et al., 2021; Morgan- Collins and Natusch, 2021). We know little about policies potentially better suited to alter oppressive systems: mandates for descriptive representation on multiple dimensions.[5]Work on descriptive representation presents conflicting theoretical and empirical results. Optimists argue it can build "new social meanings" where a system of wholesale exclusion exists (Mansbridge, 1999,

[4] We define ethnicity as an ascriptive category such as tribe, caste, language, or religion (Chandra, 2007).
[5] Hughes (2011), Freidenvall, Folke, and Rickne (2015), Jensenius (2016), and Lee and Karekurve-Ramachandra (2020) provide notable exceptions.

650). Political systems tend to replicate the disadvantages individuals experience in other, informal institutional systems (Helmke and Levitsky, 2004; Khan, 2017). This limits engagement between citizens and representatives (Gay, 2001; Anoll, 2018). As quotas bring politically-relevant groups to power with a commitment to advance the substantive interests of traditionally excluded constituents "like them," descriptive representation can reinvigorate citizen-representative engagement (Dovi, 2002). It may also break feedback loops whereby the absence of group members as political representatives reinforces stereotypes that such groups are unfit to rule (Mansbridge, 1999, 649). If so, quotas provide a powerful tool for undercutting systems of dominance (Iversen and Rosenbluth, 2010; O'Brien and Rickne, 2016; Barnes and Holman, 2020; Brulé, 2020).

Descriptive representation may change the shape of inter-group relations in two ways. It may directly alter perceived acceptability of exclusionary social norms or indirectly affect behavior by shifting economic entitlements. Although negative beliefs about subordinate groups are generally sticky, optimists argue that descriptive representation can directly change perceived norms: individual expectations about what others believe. New representatives may do so by creating the perception that it is no longer appropriate to exclude groups guaranteed descriptive representation (Chauchard, 2017). Discrimination may drop if dominant groups strategically work to evade social sanctions or legal punishment (Paluck et al., 2016). Individuals with descriptive representation may also derive "psychic benefits" from in-group members' political power, including an improved sense of self-worth (Tajfel, 1981). Finally, "role model" effects may create new scripts for in-group members to accrue power (Beaman et al., 2012; Holman and Schneider, 2018). Overall, descriptive representatives' presence may change group relations by providing assurances for the welfare of newly-included groups. Quotas mandating descriptive representation of traditionally- excluded castes and genders alter attitudes and behavior in India: elevating self-assertion by in-group members and reducing public discrimination by out-group members (Beaman et al., 2012; Chauchard, 2017; Jensenius, 2017; Girard, 2018).

Alternately, quotas may change economic entitlements for marginalized groups, enabling members to renegotiate systems of power. Brulé (2020) finds female representatives elected under India's gender quotas help women trade monetary dowries controlled by in-laws to secure property inheritance in their name. Women inheritors are more likely to participate politically, negotiate greater mobility, and exert financial autonomy (Ibid). Heller, Harilal, and Chaudhuri (2007) document that where female and SC/ST citizens are the targets of decentralized state programs, women's self help groups, mainly for SC/STs, increase dramatically. Thus, descriptive representation may provide multiply-marginalized groups with economic leverage to contest interlocking systems of oppression—including class, caste, gender, and heteronormative sexuality (Crenshaw, 1989; Rao, 2003; Weldon, 2006; Morgan-Collins and Natusch, 2021). Overall, optimistic theories of descriptive representation predict that one-dimensional quotas challenge exclusionary norms, advancing equitable social relations.

In contrast, quotas may be either ineffective or counterproductive, prompting backlash. Quotas may not change inter-group relations because leaders' capacity to harness the state's strategic resources is limited—by design (Pitkin, 1967; Celis, Erzeel, Mugge, and Damstra, 2014; Htun, 2016; Tripp, 2019). In India, many find access to state-provided goods improves neither for SCs under SC quotas (Dunning and Nilekani, 2013; Jensenius, 2017; Cassan and Vandewalle, 2021) nor for women under gender quotas (Ban and Rao, 2008; Bardhan, Mookherjee, and Parra Torrado, 2010). Given quota-elected representatives' reliance on mainstream political parties, alliances with traditionally-advantaged voters frequently receive priority (Dunning and Nilekani, 2013). Thus, representatives elected under one-dimensional quotas may oppose renegotiation of social hierarchies (Dovi, 2002; Hughes, 2011). In the worst case, quotas may mobilize backlash, increasing social tensions and reifying boundaries (Parthasarathy, 2017; McClendon, 2018). Resistance is most likely where quotas

effectively challenge status hierarchies (Ban and Rao, 2008). Perceived threats can mobilize broad-based coalitions to undercut the advancement of low-status groups (Shayo, 2009; McGhee, 2021). Resistance includes reducing state capacity to implement reform and citizen opportunities to claim new rights (Suryanarayan and White, 2021; Brulé, 2020).

We reconcile the competing findings of optimistic and critical accounts using insights from the study of intersectionality, which acknowledges that social hierarchies are multi- dimensional, with individuals often simultaneously experiencing oppression and privilege (Crenshaw, 1989). Since politicians and citizens embody multiple identities, their interests— and influence—are as likely to compete as align (Sapiro, 1981; Chandra, 2007; Freidenvall et al., 2015). One-dimensional quotas may enable relatively-privileged group members to compete for electoral positions, while discouraging mobilization against discrimination based on identities not explicitly addressed by the quota (Clots-Figueras, 2011; Mattingly, 2016; Lee and Karekurve-Ramachandra, 2020). If so, quotas may reify inequality along other social identities. For example, in the fight for Indian Independence, Gandhi pressured those advocating women's quotas to renounce gendered claims in support of his fast against caste oppression. This had major consequences: it "dramatically broke the demand for [gender quotas] and nominations" (John, 2008, 45). Thus, one-dimensional quotas may enable coordinated resistance to equality on domains where equity is not mandated (Crenshaw, 1989).

Most work on quotas identifies gains or backlash in one dimension. Yet quotas may simultaneously yield positive and negative outcomes across identity groups. Given identities are multidimensional, we expect competing effects when quotas make only one facet of identity politically powerful. We predict that one-dimensional quotas will have null-to- negative effects on inter-group relations. Table 1 summarizes our theoretical contribution.

Table 1: Observable Implications: Quotas' Predicted Impact on Group Relations

Quota Type	Optimistic Theories	Cautionary Theories	Intersectional Theory
Women's Quotas	+	–	0 / –
Ethnic Quotas	+	–	0 / –
Women × Ethnic Quotas	NA	NA	+

Note: The table shows each theory's prediction of quota impact. The symbol "+" indicates a positive predicted marginal impact, "–" if negative, "0" for a null effect, and "NA" for no prediction.

Two-dimensional quotas may erase interlocking patterns of exclusion that one-dimensional quotas reinforce. We consider two politically-salient identities: gender and ethnicity. Absent quotas, we expect that in equilibrium, only individuals from the more advantaged gender and ethnicity (men from "dominant" ethnicities) are elected, excluding disadvantaged genders and ethnicities (men from non-dominant ethnicities and all women). One-dimensional quotas challenge one type of exclusion. For example, women's quotas disrupt gendered exclusion. Yet such quotas amplify restrictive norms on dimensions they do not make salient: here, ethnicity. Since social norms are policed through interlocking patriarchal and ethnic norms, one-dimensional quotas fail to eliminate social barriers to inter-group equality and likely spur new resistance. In contrast, two-dimensional quotas for women from non-dominant ethnicities disrupt exclusionary norm systems. These representatives face discrimination based on two identities and hence have incentives to actively undermine norms that enable oppression on both fronts (Dovi, 2002; Clots-Figueras, 2011; Kikon, 2017). Thus, under two-dimensional quotas we anticipate new leadership diminishes the perceived acceptability of discrimination, opening the door to better inter-group relations compared to one-dimensional quotas.

Two-dimensional quotas can disrupt power because both ethnic and gender hierarchies are enforced by limiting women's agency across much of the contemporary world (Sanday, 1981). In India, Chakravarti (1993, 579) locates control over women at the heart of the country's hierarchical social system: "brahmanical patriarchy."[6] Boundaries between more advantaged castes and outcastes—Scheduled Castes and Tribes—are maintained via physical separation and endogamy (Srinivas, 1962; Girard, 2018). The integrity of the caste system is safeguarded by restricting women's movement: "literally points of entrance into the caste system" (Chakravarti, 1993, 579). Hinduism's central text, the *Bhagavad Gita,* suggests social collapse is likely where female sexual autonomy ruptures the prescribed caste structure of marriages.[7] Such teachings emphasize "the power of non-conformist women, or all women who have the power to non-conform, to break the entire structure of Hindu orthodoxy" (Chakravarti, 1993, 580). Indeed, female legislators from Scheduled Castes and Tribes support "radical" reforms that undercut socio-economic hierarchy at much higher rates than all other groups (Clots-Figueras, 2011).

We reconcile competing predictions about descriptive representation's impact by emphasizing the necessity of analyzing interlocking forms of oppression. One-dimensional quotas are unlikely to reduce the acceptability of discrimination and instead often engender backlash, while two-dimensional quotas erase such backlash and lower barriers to inclusion.

3 Context: India's Intersecting Quotas

We study one mandate to increase descriptive representation: reserved seats that change the identity of elected local government leaders *(Pradhans)*. In 1993, the 73rd amendment to India's constitution devolved many administrative functions to newly-created village governments. It replaced traditional appointed leaders with elected councils (*gram panchayats*), fiscally supported by the central government, and a biannual deliberative forum (*gram sabha*), open to every adult citizen (Pande, 2003; Chattopadhyay and Duflo, 2004; Bhavnani, 2009). An important feature of these local governments is their constitutionally-mandated reserved seats for women and members of marginalized ethnicities. *Gram panchayats* have three main functions: administering targeted government schemes; issuing official records and certificates; and to a lesser extent, building and maintaining public goods (Chauchard, 2017). The 73rd amendment introduced decentralization on a new scale, yet implementation was mandatory for all states and localities independent of quota status.

Quotas for women and marginalized ethnicities have distinct structures (Figure D.5). Women's quotas are randomly allocated within each caste quota group. This allows us to identify the impact of women's quotas. It is more challenging to study the impact of ethnic quotas alone because these are assigned based on population proportion. The proportion of ST/SCs in the subdistrict population determines what proportion of villages receive ST/SC quotas.[8] Once imposed, a given quota is in place for five years, until the next elections.

4 Data and Measurement

We rely on the nationally-representative 2006/9 round of the National Council of Applied Economic Research (NCAER)'s Rural Economic and Demographic Survey (REDS) to test quota effectiveness. It surveys 36,234 individuals from 8,659 households in 241 rural villages across 17 Indian states. Appendix Figures, denoted with letters, here A.1 display the geographic distribution of village-level

[6] Brahmans are the highest status group in the four-tier caste system (Srinivas, 1962).
[7] *Bhagavad Gita* I: 41-44, c.f. Chakravarti (1993, 580).
[8] Villages with higher ST/SC populations are more likely to get a quota in the subdistrict. Yet, villages with lower proportions of ST/SC populations do receive quotas (Figure A.2).

quotas. We also leverage Dunning and Nilekani (2013)'s survey of 6,969 respondents in 508 gram panchayats within four states: Bihar, Jharkhand, Rajasthan, and Karnataka (hereinafter BR-RJ-KN). Both surveys record village quota status: REDS for the past three elections; BR-RJ-KN for the most recent election. Collectively, this is the most comprehensive publicly-available account of quota implementation in rural India. We analyze all adult respondents, including men and women from advantaged and disadvantaged (SC/ST) castes. When possible, we analyze three periods of quotas in REDS, otherwise we use the latest election. Appendix C discusses ethical considerations.

REDS provides our primary measure of inter-group relations: respondents' evaluation of how easy it is for them to engage publicly with members of another caste. Continued enforcement of the physical separation of castes makes such behavior challenging. Traditional norms dictate that interactions with members of subordinate groups pollute others, including walking on the same street. As a result, Scheduled Castes and Tribes often reside in distinct, poorly-resourced areas (Girard, 2018). Thus, caste boundaries are visible, with social norms discouraging respectful interactions across them.

Our main measure of inter-group relationships is a binary indicator of whether or not a respondent evaluates his or her personal interactions across castes as generally respectful. We use individual-level responses to the question: "How easy is it for you to interact with members of other castes from this village in public?" We code responses of "very easy: people maintain healthy respect towards one another in public" or "easy"—better than the mean— as 1. We code as responses that fell below the mean—"moderately easy", "slightly easy" or "not easy at all"—as 0. We delete missing responses. Results are robust to including missing responses coded as 0. We also analyze the variable as an ordered factor as a robustness check.

Overall, this measure captures the texture of public, daily relationships, where caste- based privilege presents major barriers to interactions across outcaste SC/ST groups and more advantaged members of the caste system. However, this does not address deeper relationships, for which we leverage a second measure.

Next, we examine willingness to marry someone from another caste because marriage represents a more enduring relationship, central to the reproduction of caste and gender hierarchies and resistant to change (Ahuja and Ostermann, 2016). We use individual-level responses to the BR-RJ-KN dataset question: "You would feel comfortable marrying someone from a different caste (jati)?"[9] Respondents indicate the degree to which they agree versus disagree with the statement. We code the variable as 1 if the respondent's score is higher than the mean response, and 0 otherwise. Appendix G.9 presents analysis of responses as a factor variable. These two outcomes reveal the topography of attitudes about cross-caste and gender relationships.

Secondary variables measure changes in the perceived acceptability of caste- and gender- based exclusion. We study the prevalence of caste-based conflict respondents report experiencing. We analyze whether respondents indicate at least one caste-based conflict in a given electoral cycle and the number of conflicts. We study gendered political exclusion via political participation in each cycle. To do so, we create an index of voting, attending the local council meeting (*gram sabha*), and *gram sabha* participation. Table A.2 provides details.

[9] Jati refers to the endogamous units that constitute the caste system. It can flexibly refer to caste, tribe, sect, etc. depending on the context (Beteille, 1996).

5 Identifying Quotas' Impact

Each quota type presents distinct challenges for causal inference. While implementation strategies for ST/SC quotas are consistent across states, the number of village quotas depends upon the SC/ST population share (Dunning and Nilekani, 2013). This is problematic because SC/ST population size predicts different development trajectories (Jensenius, 2017). To address this we use nearest neighbor matching of REDS villages and leverage the BR-RJ-KN dataset which selects villages with and without quotas that have similar SC/ST population proportions (see Appendix D for details). Figures A.3-A.4 verify balance across quota status, suggesting these strategies enable us to causally interpret the impact of ST quotas.

For women's quotas, states vary in the mechanism they use to assign villages quotas in a given election. Many, but not all states use random or as-if random assignment of women's quotas within each caste quota. Table A.1 from Brulé (2020) describes state-level quota implementation. Our main analysis studies only states that quasi-randomly assign quotas. We present analysis for the full sample to demonstrate this does not affect our conclusions. As-if random quota assignment allows us to causally identify the impact of women's quotas.

We aim to evaluate two-dimensional quotas: when quotas for women are assigned amongst villages already receiving a quota for a marginalized ethnic group. The quasi-random assignment of women's quotas ensures that among localities reserved for STs, those with and those without women's quotas are, on average, similar. We can thus identify the impact of *two-dimensional quotas* that reserve elected positions for *ST women* compared to *one-dimensional ethnic quotas* for STs, filled nearly-exclusively by ST men.

Data on *Pradhan* gender and caste show near-perfect compliance with women's quotas (Figures D.6a), c); and perfect compliance with ST/SC quotas (Figures D.6b), d)). With slightly imperfect compliance, our primary estimates represent the intention-to-treat (ITT) effect. To test robustness, we use the village's quota status as an instrument for *Pradhan* gender and caste. Instrumenting *Pradhan* identity with quota status allows for identifying the local average treatment effect (LATE): quota's impact in villages complying with their quota assignment. For the instrumental variable analysis to be valid, it must satisfy both the relevance and the exclusion restrictions (Angrist, Imbens, and Rubin, 1996). The first-stage relationship between quotas and *Pradhan* identity is strong: the p-value for the Wald test is below 0.001 in all cases (Table D.4). This demonstrates we meet the relevance condition. For the exclusion restriction to hold, quota status must not impact inter-caste relations through a variable other than *Pradhan* identity. Women's quotas are quasi-randomly implemented and, thus, by construction unrelated to confounding variables. ST quotas are plausibly random after controlling for sub-district trends and village ST proportion. We control for both to ensure that these do not confound our results. We present ITT and LATE results for transparency.

5.1 Empirical Strategy

Given that villages across quota status are, on average, comparable on observable characteristics (Figures A.3-A.4), our focus is causally identifying quasi-randomly allocated quotas' impact on our main outcome: ease of inter-caste interactions. We also investigate willingness to marry across caste lines as a secondary outcome, and political participation and caste-conflict as measures of our mechanisms.

We study exposure to quotas based on whether or not an individual's village is assigned either one- or two-dimensional quotas in a given electoral period. If an individual's village is allocated quotas in a period, we code that person as *"treated"* by the relevant quota. We first estimate the impact of one- and two-dimensional quotas on respondents' ease of inter-caste interactions. For this outcome,

responses adddress the most recent election period only, and thus we include sub-district (*tehsil*) fixed effects to control for differences across administrative units. For all other outcomes, we leverage the panel structure of REDS. We include fixed effects for sub-district, electoral period, and sub-district-election year. These account for time-invariant differences across sub-districts, common election-year specific shocks such as the establishment of gender or caste inclusion commissions, and subdistrict-specific over- time changes such as availability of local resources that may impact our outcomes. The omitted category in all estimations is the set of individuals in villages without any quotas.

Our main specification is the following:

$$y_{isk} = \alpha_s + \beta_k + \gamma_{sk} + \zeta F_{isk} + \eta ST_{isk} + \theta F_{isk} \times ST_{isk} + \xi \mathbf{X}_{isk} + u_{isk}, \quad (1)$$

where α_s is a fixed effect for subdistricts, β_k for electoral periods, and γ_{sk} for sub-district-electoral period. ζ and η capture the impact of living in a village with quotas for women (F_{isk}) or STs (ST_{isk}) on the outcome variable compared to villages without quotas. θ identifies the change in the outcome when quotas for women coincide with those for STs compared to villages with only ST quotas. X_{isk} is a vector of individual-level control variables, including whether the household's landholdings are amongst the top 20%, an individual's grandfather or grandmother has completed secondary education, birth cohorts (pre-1948, 1948-73, and post-1973), and village-level control variables such as exposure to quotas in prior election periods and ST village population proportion.[10] Our estimates, therefore, represent quotas' impact in the given period while controlling for individual- and village-level confounders. We present OLS analysis throughout for ease of interpretation. We include robust standard errors clustered at the village-level.

We focus on the marginal impact of quotas. For one-dimensional quotas, marginal effects represent quotas' impact relative to the baseline of no quotas. These are identified by coefficients ζ and η in Equation 1, respectively. Because of the interaction effects in our model, we interpret ζ, the coefficient on women's quotas, as the change in the outcome when the village *Pradhan* is mandated to be a *non-ST woman* compared to the baseline (no quotas). The interpretation of η, the coefficient on ST quotas, is the change in the outcome when the village *Pradhan* is an *ST man* compared to the baseline. We interpret the interaction coefficient θ, the marginal impact of two-dimensional quotas, as the change in the outcome when the *Pradhan* is mandated to be an *ST woman* compared to cases when the *Pradhan* is an *ST man*.[11]

Our identification strategy enables us to causally identify the marginal impact of two- dimensional (ST women) quotas relative to the impact of one-dimensional ST (men) quotas. For each outcome, we first present results for the full sample of respondents to identify broad changes in perceived social norms. We then discuss outcomes for all women, all men, ST women, and ST men to analyze how more versus less vulnerable groups benefit from quotas.

We conduct five robustness tests. First, we verify that results are not sensitive to the coding or scaling of our main dependent variable (Table 2). We analyze the main dependent variable with missing observations coded as 0 and as an ordered factor (Tables F.8-F.9). Second, we use quota status as an instrument for *Pradhan* identity (Appendices D, E, Tables F6-7, F10-11). Third, we confirm that analysis of SC quotas yields similar findings to our main analysis (Table F.10-F.11). We consider SC

[10] As BR-RJ-KN data is a cross-section we use Equation (1) without election-year fixed effects with all possible controls: age, voting in village elections, ST village population share.

[11] We can also interpret θ as the change in the outcome when the village's president is an ST woman compared to cases where it is a non-ST woman. We also consider the net effects of two-dimensional quotas, which compare their effect to the baseline of no quotas (Appendix Figure F.8).

analysis suggestive since for the given electoral round there is only one case of two-dimensional SC quotas, which precludes us from introducing subdistrict-level fixed effects. This is not the case for ST women's quotas. Fourth, we account for the fact that individuals in our data are nested within villages, subdistricts, and districts using multilevel models (Table F.12). Last, we study quotas' impact in our matched set of villages, balanced on observable characteristics (Table F.10).

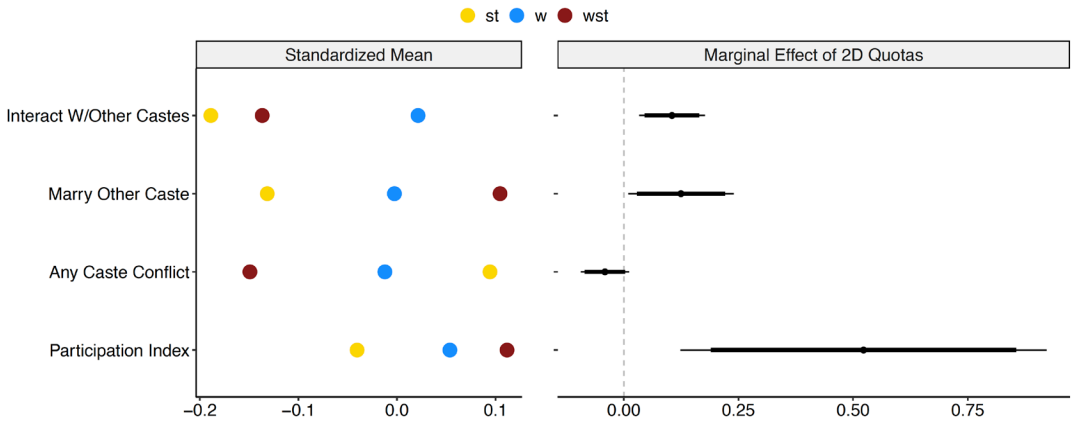
6 Main Results

Our datasets present striking evidence of multi-dimensional exclusion. Only 58 percent of ST women find inter-group interactions easy compared to 81 percent of all men, 76 percent of ST men, and 62 percent of all women (Table B.3). ST women also report lower political participation and experience higher caste-based conflict than the average woman or ST man. As expected, multi-dimensional discrimination influences who is elected: one-dimensional ST quotas elect men; women's quotas elect relatively-advantaged castes. Indeed, women hold just 5 percent of *Pradhan* positions reserved for STs (Figure D.6a); STs hold 6 percent of positions reserved for women (Figure D.6b).

6.1 Do Two-Dimensional Quotas Improve Social Inclusion?

Does the causal impact of two-dimensional quotas diverge from that of one-dimensional mandates? Figure 1's right panel visualizes quota impact across measures of inter-group relations and of the mechanisms of social and political exclusion that we posit explain quota effect: caste conflict and political participation. It presents regression coefficients for the marginal impact of two-dimensional quotas reserving the *Pradhan* position for women who are members of Scheduled Tribes on inter-group relations compared to the effect of one- dimensional quotas for (male) members of Scheduled Tribes only. Figure 1's left panel reports the average level of each measure for villages with quotas for women (w), Scheduled Tribes (st), or both (wst), standardized around the mean for the baseline of villages without quotas. Tables 2 and F.6-F.7 provide comprehensive results for the full sample and subsamples.

Figure 1: Variable Means by Quota & Two-Dimensional Quotas' Marginal Effect



Source: REDS 2006/9. "Standardized Mean" indicates, by quota, (non-ST) women: 'w', ST (men): 'st', and ST women: 'wst', mean levels of: ease of inter-caste interactions, willingness to marry someone from another caste, any caste-based conflict, and participation (index). Each variable is standardized to have a mean of zero in the baseline group (villages with no quotas) and a standard deviation of 1. In the right panel, bars indicate 90 and 95 percent (in bold) confidence intervals for the marginal effect of two-dimensional quotas. These are the interaction term coefficients in Cols.5,8 Table 2; Col.1, Table G.13-G.14.

Table 2: Effect of Quotas on Attitudes Towards Other Castes

	Interacting With Other Castes				Interact (No Missing)	Interact		Marry Other Caste
	REDS	REDS	REDS	RED	REDS	REDS	REDS	BR-RJ-KA
Women's Quotas	0.014 (0.029)	0.007 (0.024)	0.043+ (0.025)	0.051+ (0.026)	0.033+ (0.018)			-0.010 (0.018)
ST Quotas	-0.125* (0.061)	-0.157*** (0.047)	-0.203*** (0.049)	-0.221*** (0.052)	-0.152*** (0.035)			-0.078* (0.037)
W. X ST	-0.048 (0.111)	0.087 (0.056)	0.115* (0.045)	0.119* (0.048)	0.105** (0.036)			0.125* (0.058)
Woman Pradhan						0.046 (0.030)	0.054+ (0.032)	
ST Pradhan						-0.214*** (0.056)	-0.236*** (0.060)	
ST Woman Pradhan						0.195* (0.094)	0.208* (0.100)	
Control Means	0.722	0.722	0.722	0.703	0.474	0.722	0.703	0.234
Adj. R^2	0.008	0.126	0.152	0.145	0.214	0.152	0.144	0.128
Num. obs.	24917	24917	24917	19881	27991	24917	19881	6729
N Clusters	233	233	233	182	182	233	182	506
Model	OLS	OLS	OLS	OLS	OLS	2SLS	2SLS	OLS
Sample	All	All	All	All	All	All	All	All
States	All	All	All	Random Assign. Only	Random Assign. Only	All	Random Assign. Only	BR-RJ-KA
District FE	No	Yes	No	No	No	No	No	Yes
Tehsil FE	No	No	Yes	Yes	Yes	Yes	Yes	No
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, Dunning and Nilekani (2013). Robust standard errors clustered at the village level in parentheses. The dependent variable is a binary indicator of finding inter- caste interactions easy (Col. 1-7) and willingness to marry across caste (Col. 8); more details in Table A.2. Column headings indicate the dataset analyzed. Col. 4-5 and 7 include only areas that implemented women's quotas as-if randomly. Controls for BR-RJ-KA include age, voting in prior panchayat elections. Controls for REDS include familial landholdings, grandparents have education, birth cohorts, and prior quotas. Both datasets include controls for the village-level proportion of Scheduled Tribes. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

As Figure 1's left panel shows, ST quotas reduce the ease of inter-group relations. This holds across all groups (Figure F.7a; p-value <0.05). The coefficient on ST quotas in Table 2 indicates the negative impact of ST male village *Pradhans* on inter-group relations compared to villages without quotas. Women's quotas improve inter-group interactions for some, but have no impact on inter-caste marriage (Tables 2, E.5,F.6,F.7). We interpret the coefficient on women's quotas in Table 2 as the null-to-positive effect of having non-ST women *Pradhans* compared to no quotas. In contrast, two-dimensional quotas for ST women consistently improve group relations at the margin, in line with our proposed theory. The coefficient on the interaction of women's and ethnic quotas shows the change in inter-group relations when there is a quota for an ST woman versus when there is only an ST (man) quota (Table 2). Under two-dimensional quotas, individuals are 10.5-11.9 percentage points more likely to find inter-caste interactions easy (p-value $\leq$ 0.05, Col. 3-5, Table 2), compared

to ST (men) quotas alone.[12] Results are robust to instrumenting *Pradhan* gender and caste with quota status: the effect size becomes larger and remains consistent with ITT results, although standard errors increase (p-value <0.05, Col. 6-7, Table 2). Increases in the effect size indicate that our results are driven by villages that comply with quota assignment. This confirms that changes in inter-caste attitudes are the result of quota-induced changes in *Pradhan* identity, rather than other factors.

Studying our second measure of inter-group relations, we find that two-dimensional quotas improve willingness to marry across caste by 12.5 percentage points at the margin for the full sample (p-value <0.05, Col.8, Table 2). We find two-dimensional quotas have similar levels of impact for most sub-samples (Tables F.6-F.7), erasing the negative effect of one- dimensional ST quotas. Results are not significant only for the subsample of ST women, likely due to the much smaller sample size. Overall, effect sizes on citizen attitudes toward inter-group relations are in line with Beaman et al. (2012), who find quotas reduced the gender gap in aspirations by 20 percent in parents and 32 percent in adolescents in Indian villages assigned a female leader for two election cycles.

Since we study perceived social norms, responses are informative even if social desirability affects individual answers. In addition, social desirability should strongly bias us against finding any results for this outcome given harsh sanctions against inter-caste marriage (Ahuja and Ostermann, 2016). Thus, results in Table 2 are striking.

The results of our main analysis are robust to numerous specifications. First, they are not sensitive to the coding of the dependent variable as a factor variable (Tables F.8, F.9). Second, we use nearest neighbor matching to create a sample balanced across ST quota status. Two-dimensional quotas' impact increases to 21 percentage points and remains significant (p-value <0.01, Table F.10, Col.1). Third, we find a similar pattern in quotas for another historically excluded group: Scheduled Castes. SC (men) quotas increase (or do not erase) barriers to inter-caste interactions, but two-dimensional quotas for SC women make interactions easier (Tables F.10-F.11). Last, we use a hierarchical model to analyze our main outcomes. We find consistent, although somewhat attenuated results (Table F.12).

Qualitative interviews conducted in ST majority villages in the state of Chhattisgarh illuminate why quotas engender backlash. Interviewees have emphasized that relatively more advantaged groups' resentment towards the more egalitarian treatment of ST communities is one reason for conflict. For example, in interviews, members of relatively better-off castes (Other Backward Classes) have expressed frustration with their inability to access government schemes for the least-advantaged that ST *Pradhans* bring to the village. In parallel, quotas and civil society activism have enabled ST women to play a much more active role in resolving conflicts with the community and between communities and the state. In interviews in Korba district, one couple remarked that if there are disputes between families in their village, women will be the ones insisting on community resolution. As an example, villagers discussed a campaign spearheaded by ST women to ban alcohol consumption. Women in the village united to tell their husbands that "If you do not stop drinking, you can take your bottle and glass outside, but … I am not going to feed you." Many respondents credited the ban on alcohol consumption for the current lack of disputes within and across communities in their village. Similarly, a ST female *Pradhan* emphasized her role in helping women negotiate to resolve family disputes. ST women have a unique interest in community-level conflict resolution because of their extreme gendered exposure to these conflicts inside and outside the home. ST women also have distinctive efficacy as mediators because their exclusion from the caste system and economic marginalization necessitates mobility outside the household to accrue material resources and strengthen

[12] Results do not imply that two-dimensional quotas outperform one-dimensional quotas across all measures (Appendix Figure F.8). Rather, we observe backlash to one-dimensional ST quotas drives quota impact for ST men and ST women *Pradhans*. Notably, ST women erase some of the considerable backlash to quotas occupied by ST men, suggesting that they do help improve inter-group relations.

social networks (Prillaman, 2021). Taken together, our quantitative and qualitative evidence suggests that while marginalized ethnic groups often face violent backlash during one-dimensional quota implementation, women from these marginalized communities may be better able than men to mitigate these conflicts as mediators.

6.2 Mechanisms: Norm Change

6.2.1 CHANGES IN CASTE CONFLICT

We hypothesize that one-dimensional quotas will not alter perceived norms about the permissibility of group-based discrimination, but two-dimensional quotas will—lessening discrimination against lower-caste members, reducing caste conflict relative to one-dimensional quotas. We investigate quota impact on caste-based conflict both on the extensive and the intensive margin: Figures 1, F.7b, and Table G.13 show quota impact on the likelihood of any caste-based conflict and the tally of such conflicts (Table G.13 Panel B).

One-dimensional quotas either increase or leave unchanged caste-based conflict. ST quotas, in particular, increase the likelihood of caste-based conflict by 15.8-18.8 percentage points, hinting at backlash (Figure 1 left panel; Table G.13, Panel A, p-value<0.10). We interpret this as the effect of having ST men in power. Considering two-dimensional quotas, we find a 4.1 percentage point reduction in the likelihood of any caste conflict compared to the impact of ST quotas alone for all (Figure 1; p-value <0.12), with an 18.1-21.2 percentage point reduction for members of Scheduled Tribes (Figure F.7b, p-value <0.1). When looking at the impact of two-dimensional quotas on the tally of all caste-based conflicts, two- dimensional quotas reduce the logged number of conflicts by 2.007, which is equivalent to an 87 percent reduction on the number of conflicts (p-value<0.105, Col.1, Table G.13b). Indeed, two-dimensional quotas almost entirely erase the impact of ST quotas on inter-group conflict, with particularly large effects for the most marginalized groups. These are comparable to effect sizes of interventions on inter-group conflict elsewhere (Paluck, 2009).

This fits our hypothesis: where quotas enable systemic reworking of perceived social norms, they open the door to changes in inter-caste relations that lower caste-based conflict. In contrast, one-dimensional quotas exacerbate inter-group conflict, potentially enabling backlash by supporting the idea of identity-based advantage as a one-dimensional, zero-sum game where the advancement of one disadvantaged group such as STs comes at the expense of all non-STs (McGhee, 2021).

6.2.2 CHANGES IN POLITICAL PARTICIPATION

If our theory is correct, two-dimensional quotas should also improve social norms in public space compared to one-dimensional quotas, reducing the perceived acceptability of discrimination against women's political participation. If so, two-dimensional quotas diminish the perceived acceptability of excluding women from the state, enabling participation. Figures 1, F.7c) and Table G.14 summarize results; Table G.15 analyzes each index component.

In line with our hypotheses, one-dimensional quotas do not increase participation for most groups. One-dimensional women's quotas, which capture the impact of non-ST women in power, lead to a 0.111 standard deviation reduction in the participation index for all (Table G.14, Col.1, p-value <0.10), driven by reductions in ST women's participation (p- value <0.001) that confirm backlash. The impact of ST (men's) quotas is similarly negative but insignificant. Compared to one-dimensional quotas, two-dimensional quotas increase participation for the full sample by half a standard deviation (Figure 1; Table G.14, Col.1, p-value <0.05); for women by almost three quarters of a standard deviation (p-value <0.01). This demonstrates the power of female ST representatives to improve the acceptability of women's political participation compared to male ST or female representatives from

more advantaged castes. Two-dimensional quotas improve political participation, especially for the group most frequently excluded from political participation: women (Prillaman, 2021).

6.3 Two-Dimensional Quotas' Long-Term Impact

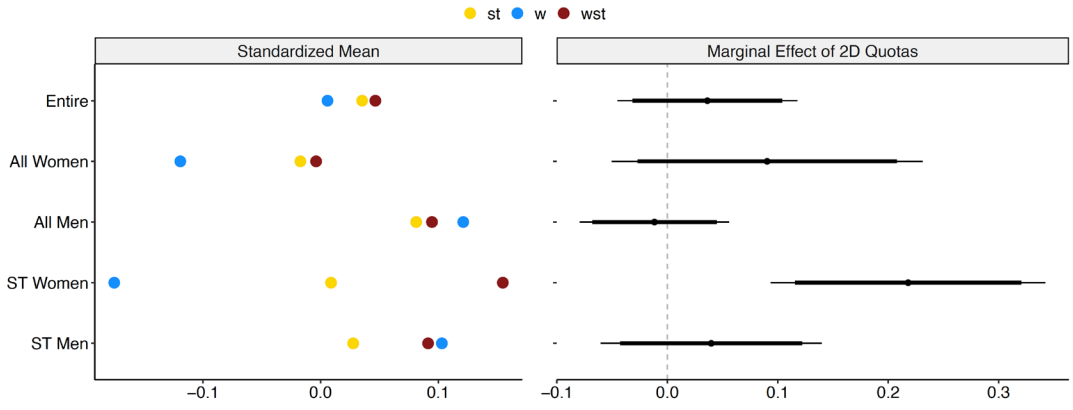
Does the positive impact of two-dimensional representation persist? Figure 2 and Table G.16 map the longer-term impact of quotas on the ease of inter-caste interactions. These study the impact of quotas assigned in the prior two electoral periods on current perceptions of inter-group relations. This captures the impact of descriptive representation five-to-ten years after initial quota assignment (for a five-year period). In general, we find that the impact of quotas is somewhat attenuated. Figure 2's left panel indicates that the positive impact of (non-ST) women's quotas in the electoral period they are assigned (Table 2) diminishes and reverses; ST (men) quotas' impact remains negative-to-null (Table G.16). Figure 2's right panel shows that two-dimensional quotas' marginal impact remains positive but insignificant, with an important exception: ST women are 21.8-36.5 percentage points *more likely* to report easy inter-caste interactions under two- versus one-dimensional quotas. This reflects the capacity of representatives elected via two-dimensional quotas to improve inter-group relations for STs, especially doubly-marginalized ST women (p-value <0.001), where greater sample size and time enable us to identify a positive impact.

In sum, we find that one-dimensional quotas catalyze substantial backlash to group relations. At the margins, representatives elected under two-dimensional quotas are changing the terrain of inter-group relations by reducing the perceived acceptability of exclusion, particularly for the most marginalized groups, but backlash is big, so change is slow.

6.4 Alternative Mechanisms

Can alternative processes better explain the dynamics of inter-group relations compared to norm change? First, ST women may be more effective at redistributing resources to everyone (Brulé, 2020; Gulzar et al., 2020). Increased community-wide access to state benefits might create a more equal footing for interactions and reduce anxiety about loss of status for dominant groups. However, we find no change in redistribution of public benefits in the entire sample, either under one- or two-dimensional quotas (Table H.17), despite large effects on inter-caste attitudes. This mechanism thus

Figure 2: Prior Quotas' Long-Term Impact on Inter-group Relations



Source: REDS 2006/9. NCAER. "Standardized Mean" indicates, by quota, (non-ST) women: 'w', ST (men): 'st', and ST women: 'wst', mean levels of ease of inter-caste interactions. Each variable is standardized to have a mean of zero in the baseline group (villages with no quotas) and a standard deviation of 1 (left panel). Regression coefficients for two-dimensional quota's impact on the ease of inter-caste interactions with 90 and 95 percent confidence intervals (right panel). Y-axis shows sub-sample of analysis. Coefficient estimates are based on Table G.16.

does not explain our results. Yet might two- dimensional quotas increase redistribution for the most marginalized, who employ their new bargaining power to improve inter-group relations? We do not find that ST women *Pradhans* increase redistribution to ST women.[13] Altogether, improvements in inter-group relations under two-dimensional quotas are not consistently explained by changes in redistribution.

What about the perceived ineffectiveness of ST women? This might limit expected threats to power that would drive counter-mobilization by more advantaged groups (Suryanarayan and White, 2021). Much folk wisdom considers "quota women" mere proxies for men, usually husbands (Bardhan et al., 2010; Lee and Karekurve-Ramachandra, 2020). If so, absent explicit political backing, female representatives elected via quotas—particularly disadvantaged STs—may be expected to change nothing (Dunning and Nilekani, 2013). Expectations of ST women should be lowest where caste-based political mobilization is lowest. To check, we examine quota impact by prior ST political mobilization. Figure H.9 maps quota impact alongside vote shares of parties that mobilize Scheduled Tribes. One- dimensional ST (male) quota impact varies with mobilization, validating the relevance of this measure. However, we do not find that ST women's assumed ineffectiveness, absent ST-party mobilization, explains changes in inter-group relations.

6.5 External Validity

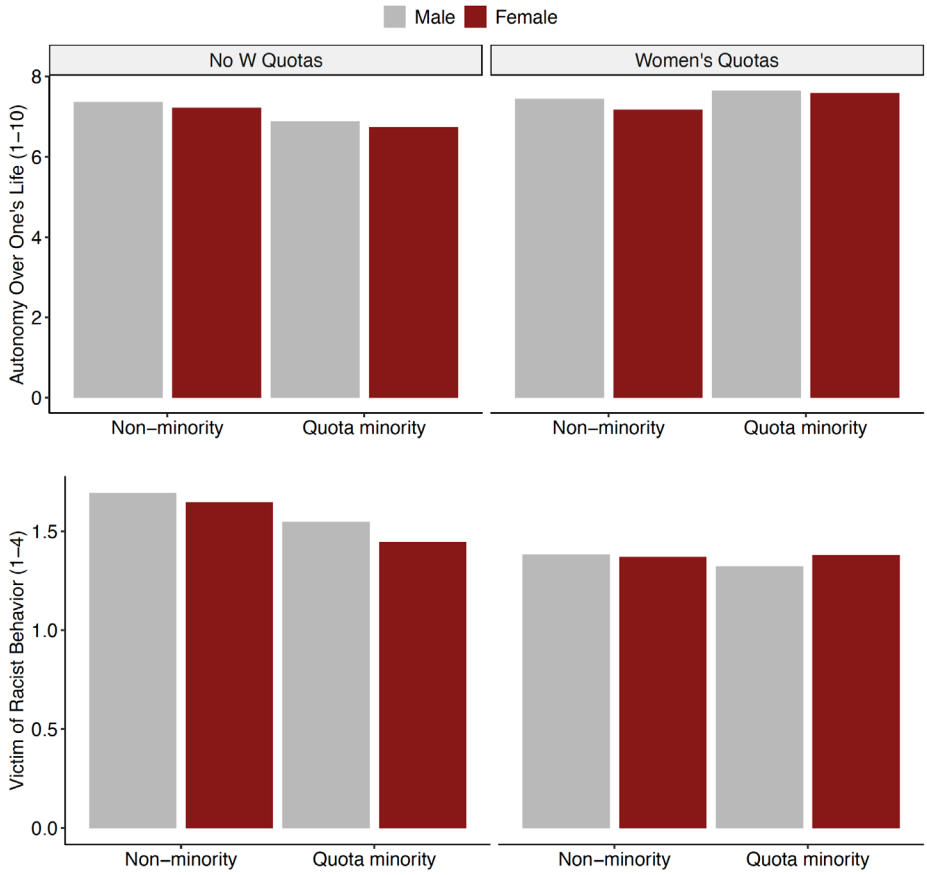
Can our findings apply to other contexts? Yes, however the institutional context of descriptive representation matters. Within India, Auerbach and Kruks-Wisner (2020) find less direct engagement between citizens and urban municipality councilors relative to rural *Pradhans*, suggesting quotas' impact on social relations is likely more muted in urban locales. Substantively, we focus on the intersection of gender and the ethnicity of Scheduled Tribes. Our supplementary analysis of Scheduled Caste quotas demonstrates that our conclusions are relevant for other ethnic identities where gender exclusion reinforces group boundaries. For religious representation, our theory predicts that when religious boundaries are maintained by policing female bodies—as we see in contemporary India, where interfaith (Hindu-Muslim) marriages are being outlawed—female Muslim leaders can effectively disrupt exclusion.

Internationally, India's quotas are representative of top-down mandates around the world (Clayton and Zetterberg, 2018; Tripp, 2019). Although two-dimensional quotas are rare, "tandem" quotas with separate mandates for women and ethnic identities are common (Hughes, 2011). Party gatekeepers often strategically employ mandates to nominate a few minority women who fill multiple quotas (Hughes, 2011; Celis et al., 2014; Jensenius, 2016). Yet these leaders are critical to advancing the substantive interests of the communities they represent (Htun, 2016; Cassan and Vandewalle, 2021). When evaluating their impact, we must account for the substantial backlash initiated by one-dimensional quotas that multiply- marginalized representatives face. In the US, for example, transformational political mobilization is underway by Black women, who "recognize the profound impact social hierarchies have had and continue to have on… national well-being" (McGhee, 2021, 279). This sets the stage for further comparative research on the impact of multi-dimensional representation.

To check whether our argument travels globally, we assemble a cross-national dataset. While only four countries mandate two-dimensional quotas, we study the 21 countries which mandate both women's and ethnic quotas, applied independently. Drawing from the World Values Surveys, the upper panel in Figure 3 finds a positive correlation between personal autonomy for men and women from traditionally-excluded ethnic/religious/linguistic groups (hereafter "minorities") and multiple

[13] Two-dimensional quotas' impact is not different from one-dimensional, except for increased targeting of benefits for ST men. This does not track the breadth of changes in inter-group relations.

Figure 3: Quotas' Global Impact



Source: WVS, 6 and Krook and O'Brien (2010). Bars represent group averages on self- reported personal autonomy and experience with racism. Respondents can be from countries with quotas for minorities only or for both minorities and women, and within each, as members of minorities receiving quotas or not.

quotas (for women and minorities). The lower panel in Figure 3 shows that when these quotas are jointly in place, all genders—from minority and dominant groups—report fewer experiences with racism than otherwise. These findings suggest optimism about the distinctive benefits of multi-dimensional quotas.

7 Conclusion

Can quotas mandating descriptive representation create a more egalitarian, cohesive society? We study a particularly hard case: India, the world's largest democracy with enduring social hierarchy. We find cautionary theories are partially right: there is substantial backlash to quotas mandating one-dimensional representation which worsens inter-group relations (Parthasarathy, 2017; Suryanarayan and White, 2021). But skeptical theories fail to explain why such backlash *diminishes* under two-dimensional quotas. In line with our intersectional theory, we identify the striking impact of two-dimensional quotas in reducing social and political exclusion: increasing women's political participation and reducing caste-based conflict. This follows prior work on the ability of quotas to initiate meaningful social change—under the right conditions (Clots-Figueras, 2011; Beaman et al., 2012; O'Brien and Rickne, 2016; Brulé, 2020). Importantly, this suggests there are ways to reform institutions that can be successful when political exclusion is stark, but fundamental change takes time.

Although our main focus is on the impact of two- versus one-dimensional descriptive representation, our theory can be expanded to conceptualize identity-based representation as n-dimensional. This is more realistic, given that oppression occurs across multiple facets of identity (Htun, 2016; Bernhard et al., 2021). The more of these identities a given form of descriptive representation addresses, the greater we theorize is its potential to mobilize social change. This should hold if more inclusive identity-based coalitions embody more comprehensive understandings of status quo failures, with greater commitment to dismantling hierarchies (Crenshaw, 1989; Dovi, 2002; Carastathis, 2013). For inter-group relations within India, both gender and caste are crucial because they jointly structure enforcement of group boundaries. Other inequalities may require different coalitions to destabilize hierarchy.

Should we create ever-more-specific quotas to rectify the broad sweep of exclusion? We argue the answer is no. The core implication of our findings is not to advocate for ever- narrower political mandates that reify social categories, but rather for policies that place multiply marginalized groups at the center, leveraging the paradoxical advantage of disadvantage: those who bear the brunt of interlocking forms of oppression have the greatest capacity to catalyze social transformation that benefits everyone.

REFERENCES

Ahuja, Amit and Susan Ostermann (2016). Crossing Caste Boundaries in the Modern Indian Marriage Market. *Studies in Comparative International Development 51* (3), 365–387.

Angrist, Joshua D , Guido W Imbens, and Donald B Rubin (1996). Identification of causal effects using instrumental variables. *Journal of Am. Statistical Assoc. 91* (434), 444–455.

Anoll, Allison (2018). What Makes a Good Neighbor? Race, Place, and Norms of Political Participation. *American Political Science Review 112* (3), 494–508.

Auerbach, Adam and Gabrielle Kruks-Wisner (2020). The Geography of Citizenship Practice. *Perspectives on Politics 18* (4), 1118–1134.

Ban, Radu and Vijayendra Rao (2008). Tokenism or Agency? The Impact of Women's Reservations on Village Democracies in South India. *Economic Development and Cultural Change 56* (3), 501–530.

Bardhan, Pranab , Dilip Mookherjee, and Monica Parra Torrado (2010). Impact of Political Reservations in West Bengal Local Governments on Anti-Poverty Targeting. *Journal of Globalization and Development 1* (1), 1–38.

Barnes, Tiffany and Mirya Holman (2020). Gender Quotas, Women's Representation, and Legislative Diversity. *Journal of Politics 82* (4), 1271–1286.

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

Bernhard, Rachel , Shauna Shames, and Dawn Teele (2021). To Emerge? Breadwinner Status and Women's Decisions to Run for Office. *American Political Science Review* .

Beteille, Andre (1996). Varna and jati. *Sociological Bulletin 45* (1), 15–27.

Bhavnani, Rikhil (2009). Do Electoral Quotas Work After They Are Withdrawn? Evidence from a Natural Experiment in India. *American Political Science Review 103* (1), 23–35.

Brulé, Rachel (2020). *Women, Power and Property: The Paradox of Gender Equality Laws in India*. Cambridge: Cambridge University Press.

Burns, Nancy , Kay Schlozman, and Sidney Verba (1997). The Public Consequences of Private Inequality: Family Life and Citizen Participation. *APSR 91* (2), 373–389.

Bussell, Jennifer (2018). Whose Money, Whose Influence. In D. Kapur and M. Vaishnav (Eds.), *Costs of Democracy: Political Finance in India*. Oxford: Oxford University Press.

Carastathis, Anna (2013). Identity Categories as Potential Coalitions. *Signs 38* (4), 941–965.

Cassan, Guilhem and Lore Vandewalle (2021). Identities and Public Policies: Unexpected effects of political reservations for women in India. *World Development 143*, 105408.

Celis, Karen , Silvia Erzeel, Liza Mugge, and Alyt Damstra (2014). Quotas and Intersectionality: Ethnicity and Gender in Candidate Selection. *IPSR 35* (1), 41–54.

Chakravarti, Uma (1993). Conceptualising Brahmanical Patriarchy in Early India: Gender, Caste, Class and State. *Economic and Political Weekly 28* (14).

Chandra, Kanchan (2007). *Why Ethnic Parties Succeed: Patronage and Ethnic Head Counts in India*. Cambridge: Cambridge University Press.

Chattopadhyay, Raghabendra and Esther Duflo (2004). Women as Policy Makers: Evidence from a Randomized Policy Experiment in India. *Econometrica 72* (5), 1409–1443.

Chauchard, Simon (2017). *Why Representation Matters*. Cambridge: CUP.

Chhibber, Pradeep (1999). *Democracy without Associations: Transformation of the Party System and Social Cleavages in India*. Ann Arbor: University of Michigan Press.

Clayton, Amanda and P¨ar Zetterberg (2018). Quota Shocks: Electoral Gender Quotas and Government Spending Priorities Worldwide. *The Journal of Politics 80* (3), 916–932.

Clots-Figueras, Irma (2011). Women in Politics: Evidence from the Indian States. *Journal of Public Economics 95* (7), 664–690.

Costa, Mia (2021). He Said, She Said: The Gender Double Bind in Legislator–Constituent Communication. *Politics & Gender 17* (4), 528–551.

Crenshaw, Kimberle (1989). Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. *The University of Chicago Legal Forum 140*, 139–167.

de Tocqueville, Alexis (1863). *Democracy in America*. Cambridge, MA: Server and Francis.

Dovi, Suzanne (2002). Preferable Descriptive Representatives: Will Just Any Women, Black, or Latino Do? *The American Political Science Review 96* (4), 729–743.

Dunning, Thad and Janhavi Nilekani (2013). Ethnic Quotas and Political Mobilization: Caste, Parties, and Distribution in Indian Village Councils. *American Political Science Review 107* (1), 35–56.

Fox, Richard and Jennifer Lawless (2014). Uncovering the Origins of the Gender Gap in Political Ambition. *American Political Science Review 108* (3), 499–519.

Freidenvall, Lenita , Olle Folke, and Johanna Rickne (2015). Gender Quotas and Ethnic Minority Representation: Swedish Evidence from a Longitudinal Mixed Methods Study. *Gender and Politics 11* (2), 345–381.

Gay, Claudine (2001). The Effect of Black Congressional Representation on Political Participation. *American Political Science Review 95* (3), 589–602.

Girard, Victoire (2018). Don't Touch My Road. Evidence from India on Affirmative Action and Everyday Discrimination. *World Development 103*, 1–13.

Gulzar, Saad , Nicholas Haas, and Benjamin Pasquale (2020). Does Political Affirmative Action Work, and for Whom? Theory and Evidence from India's Scheduled Areas. *American Political Science Review 114* (4), 1230–1246.

Heller, Patrick , K.N. Harilal, and S. Chaudhuri (2007). Building Local Democracy: Evaluating the Impact of Decentralization in Kerala, India. *World Development 35* (4), 626–648.

Helmke, Gretchen and Steven Levitsky (2004). Informal Institutions and Comparative Politics: A Research Agenda. *Perspectives on Politics 2* (4), 725–740.

Holman, Mirya and Monica Schneider (2018). Gender, Race, and Political Ambition: How Intersectionality and Frames Influence Interest in Political Office. *Politics, Groups, and Identities 6* (2), 264–280.

Htun, Mala (2016). *Inclusion without Representation in Latin America: Gender Quotas and Ethnic Reservations*. Cambridge: Cambridge University Press.

Hughes, Melanie (2011). Intersectionality, Quotas, and Minority Women's Political Representation Worldwide. *American Political Science Review 105* (3), 604–620.

Iversen, Torben and Frances Rosenbluth (2010). *Women, Work, and Politics: The Political Economy of Gender Inequality*. New Haven: Yale University Press.

Jensenius, Francesca (2016). Competing Inequalities? On the Intersection of Gender and Ethnicity in Candidate Nominations in Indian Elections. *Government and Opposition 51* (3), 440–463.

Jensenius, Francesca (2017). *Social Justice through Inclusion: The Consequences of Electoral Quotas in India*. Oxford: Oxford University Press.

John, Mary (2008). *Reservations and the Women's Movement in Twentieth Century India*. New Delhi: Women Unlimited, Kali for Women.

Kapur, Devesh and Milan Vaishnav (Eds.) (2018). *Costs of Democracy: Political Finance in India*. Oxford: Oxford University Press.

Khan, Sarah (2017). What Women Want: Gender Gaps in Political Preferences. In M. Golder and S. Golder (Eds.), *Symposium: Women/Gender and CP*, Volume 27, pp. 42–49.

Kikon, Dolly (2017). Gender Justice in Naga Society: Naga Feminist Reflections. *Raiot.in*.

Krook, Mona Lena and Diana Z O'Brien (2010). The Politics of Group Representation: Quotas for Women and Minorities Worldwide. *Comparative Politics 42* (3), 253–272.

Lee, Alexander and Varun Karekurve-Ramachandra (2020). Do Gender Quotas Hurt Less Privileged Groups? Evidence from India. *AJPS 64* (4), 757–772.

Mansbridge, Jane (1999). Should Blacks Represent Blacks and Women Represent Women? A Contingent "Yes". *The Journal of Politics 61* (3), 628–657.

Mattingly, Daniel (2016). Elite Capture. *World Politics 68* (3), 383—412.

McClendon, Gwyneth (2018). *Envy in Politics*. Princeton, NY: Princeton University Press. McGhee, Heather (2021). *The Sum of Us: What Racism Costs Everyone and How We Can Prosper Together*. New York: One World.

Mettler, Suzanne (2011). *The Submerged State: How Invisible Government Policies Undermine American Democracy*. Chicago: The University of Chicago Press.

Michener, Jamila and Margaret Brower (2017). What's Policy Got to Do with It? Race, Gender and Economic Inequality in the United States. *Daedalus 13*, 541–568.

Morgan-Collins, Mona and Grace Natusch (2021). At the Intersection of Gender and Class: How Were Newly Enfranchised Women Voters Mobilized in Sweden? *Comp. Pol. Studies*.

O'Brien, Diana Z and Johanna Rickne (2016). Gender Quotas and Women's Political Leadership. *American Political Science Review 110* (1), 112–126.

Paluck, Elizabeth (2009). Reducing intergroup prejudice and conflict using the media: a field experiment in Rwanda. *Journal of personality and social psychology 96* (3), 574.

Paluck, Elizabeth , Hana Shepherd, and Peter Aronow (2016). Changing Climates of Conflict: A Social Network Experiment in 56 Schools. *PNAS 113* (3), 566–571.

Pande, Rohini (2003). Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India. *The American Economic Review 93* (4), 1132–1151.

Parthasarathy, Ramya (2017). Ethnic Quotas as Term-Limits: Caste and Distributive Politics in South India. *Comparative Political Studies 50* (13), 1735–1767.

Pitkin, Hanna (1967). *The Concept of Representation*. Berkeley: University of California.

Prillaman, Soledad Artiz (2021). Strength in Numbers: How Women's Groups Close India's Political Gender Gap. *American Journal of Political Science*.

Rao, Anupama (2003). *Gender and Caste*. New Delhi, India: Kali for Women. Sanday, Peggy (1981). *Female Power and Male Dominance*. Cambridge: CUP.

Sapiro, Virginia (1981). When Are Interests Interesting? The Problem of Political Representation of Women. *American Political Science Review 75* (3), 701–716.

Shayo, Moses (2009). A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution. *American Political Science Review 103* (2), 147–174.

Srinivas, Mysore Narasimhachar (1962). *Caste in Modern India*. Bombay: APH.

Strolovitch, Dara (2006). Do Interest Groups Represent the Disadvantaged? Advocacy at the Intersections of Race, Class, and Gender. *Journal of Politics 68* (4), 894–910.

Suryanarayan, Pavithra and Steven White (2021). Slavery, Reconstruction, and Bureaucratic Capacity in the American South. *American Political Science Review* .

Tajfel, H. (1981). *Human Groups and Social Categories*. Cambridge: CUP.

Teele, Dawn , Joshua Kalla, and Frances Rosenbluth (2018). The Ties That Double Bind: Social Roles and Women's Underrepresentation in Politics. *APSR 112* (3), 525–541.

Tripp, Aili Mari (2019). *Seeking Legitimacy*. Cambridge: Cambridge University Press.

Weldon, S. Laurel (2006). The Structure of Intersectionality: A Comparative Politics of Gender. *Politics & Gender 2* (2), 235–248.

Xaxa, Virginius (2004). Women and Gender in the Study of Tribes in India. *Indian Journal of Gender Studies 11* (3), 345–367.

FOR ONLINE PUBLICATION: APPENDIX

A Descriptive Statistics and Figures

A.1 Treatment Assignment

Figure A.1: Map of Villages Included in the Dataset, Sample: All India

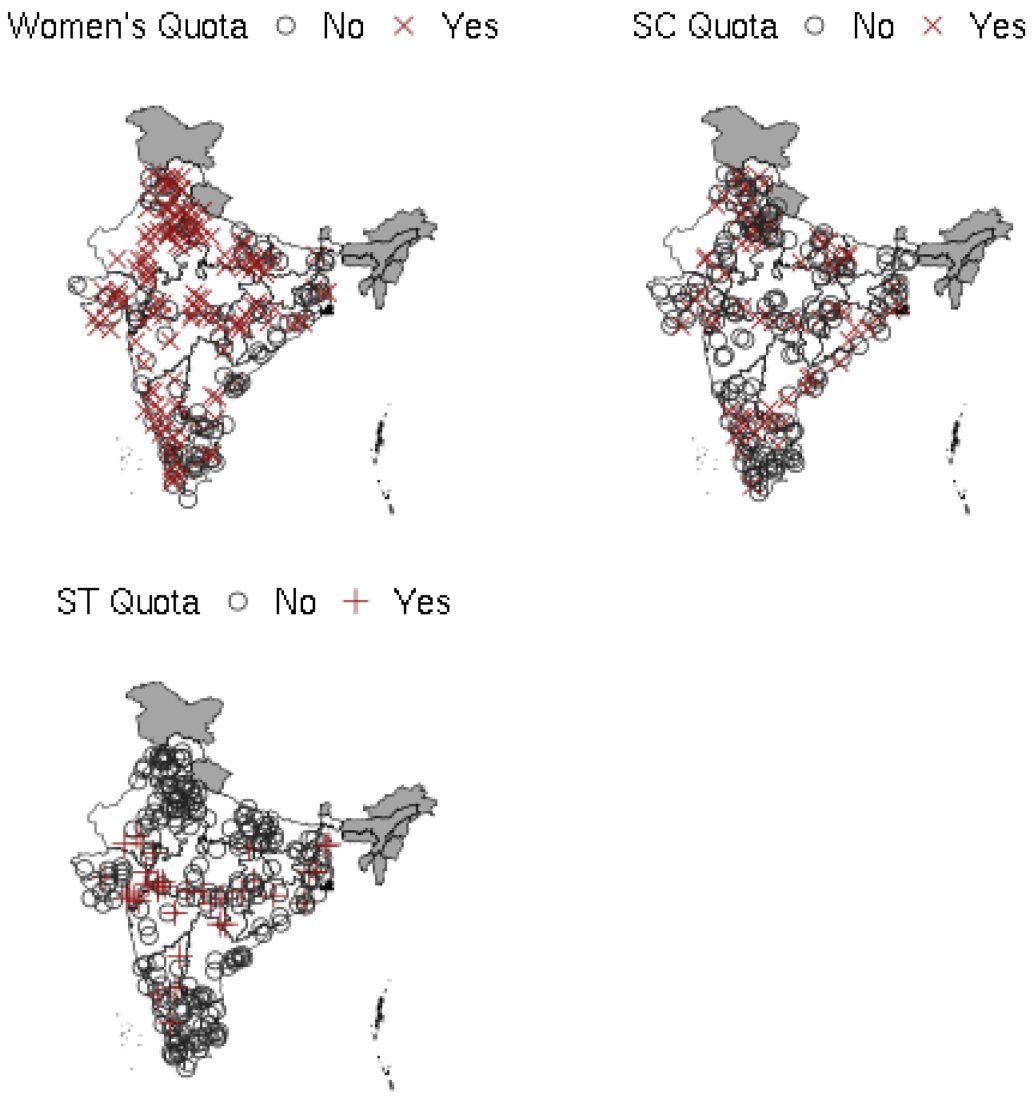
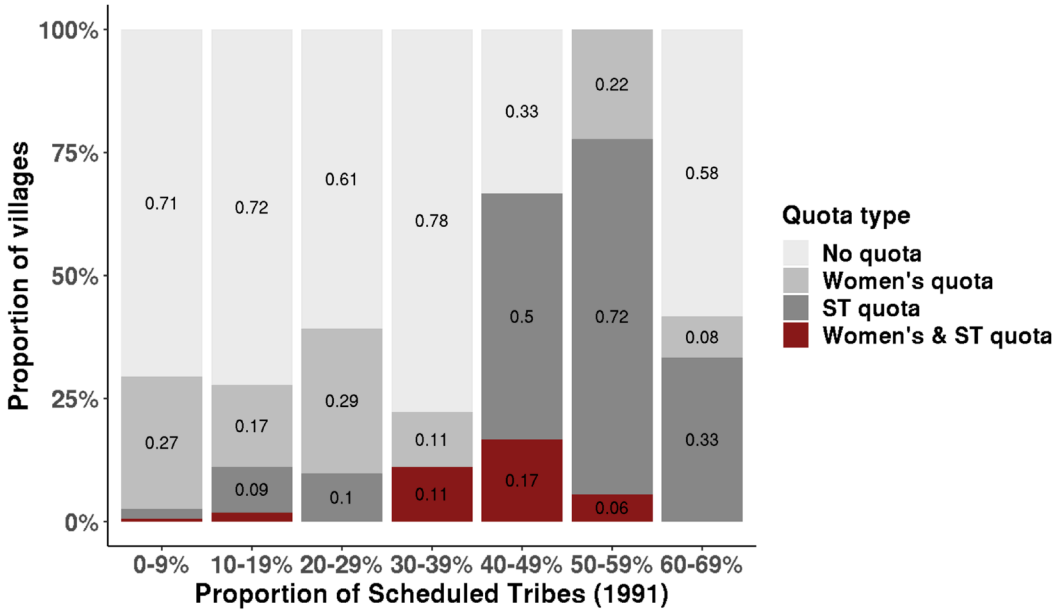


Figure A.2: Distribution of Villages with Different Quota Status



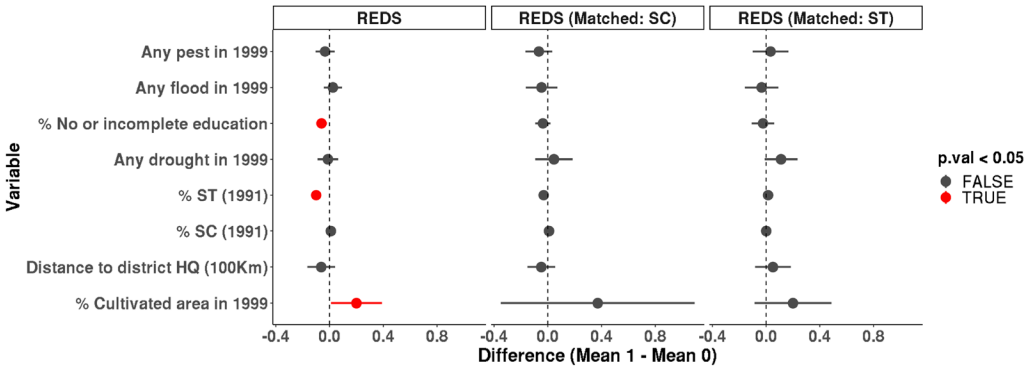
Source: REDS 2006/9. NCAER. The figure represents the proportion of villages assigned to different types of quotas (over the three electoral periods) by the proportion of Scheduled Tribes in 1991 in the sub-district that the village belongs. Each village is counted three times (one for each period), therefore, if a village is reserved for STs in one period, but not in another, it is included for both the "non-reserved" and the "reserved for STs" groups. Hence the figure shows the total variation in our data as opposed to the distribution of quota in any particular period. Overall, 69 gram panchayats do not have any type of quotas for all three election periods. For women's quotas, there are 121 villages with one round of quotas, 27 with two rounds, and 3 with three rounds. For Scheduled Tribe quotas, there are 24 villages with one round of quotas, 8 with two rounds, and 4 with three rounds. For two-dimensional quotas, there are 6 villages with one round of quotas and 1 village that has multidimensional quotas twice. Therefore, it is possible that villages take on one-dimensional quotas multiple times during the study period. For two-dimensional quotas, however, we are detecting the impact of the first experience with mandated representation for Scheduled Tribe women on villages' social relations. Note that REDS 2006/9 provides information on the temporal distribution of quotas, including which gram panchayats are assigned to gender, ST, or two-dimensional quotas multiple times in the three electoral periods. We exclude villages for which we do not have information on quota status across election periods (8 out of 241 villages).

Table A.1: Women's Quotas' Timing, Selection, and Rotation by Indian State

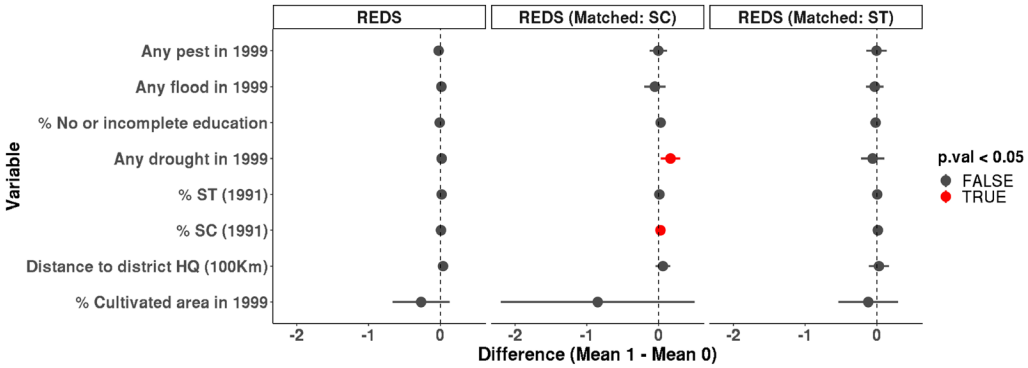
State	Panchayat Act (Year)	First Election	Random	Selection Method	Rotation	Increase to 50% Quota
Andhra Pradesh	1994	1995	Not Random	Sex ratio	Unknown	2011
Bihar	1993	2006	As-if Random	Population Size	Without replacement, every 10 years	2006
Delhi	1993	1997	As-if Random	Serial order (every 3rd, separately for SC & non-SC wards)	Every 5 years	2012
Chhattisgarh	1994	1995	Random	Draw of lots	Without replacement, every 5 years	2008
Gujarat	1994	1995	Unknown	Unknown	Unknown	2009
Haryana	1994	1994	Random	Draw of lots	Unknown	No
Himachal Pradesh	1994	1995	Not Random	Proportion of women in population	Without replacement, every 5 years	2010
Jharkhand	2001	2010	Unknown	Unknown	Unknown	2005
Karnataka	1993	1993	As-if Random	Population size: panchayat seats	No two consecutive reservations	2010
Kerala	1994	1995	Not Random	Proportion of women in population	No two consecutive reservations	2010
Madhya Pradesh	1994	1994	Random	Draw of lots	Without replacement, every 5 years	2009
Maharashtra	1994	1995	Random	Draw of lots	Without replacement, every 5 years	2011
Orissa	1994	1997	Random	Alphabetical order (every 3rd)	Without replacement, every 5 years	2011
Punjab	1994	1998	Unknown	Unknown	Every 10 years	2017
Rajasthan	1994	1995	Random	Draw of lots	Without replacement, every 5 years	2008
Tamil Nadu	1994	1996	Not Random	Proportion of women in population	Without replacement, every 10 years	2016
Uttar Pradesh	1994	1995	As-if Random	Population size	No two consecutive reservations	No
West Bengal	1994	1998	Random	Legislative Assembly numbers (every 3rd, ascending)	Without replacement, random number table	2012

Main Sources: Panchayat Raj Acts; Election Rules; Department of Rural Development and Panchayat Raj.

Figure A.3: Balance Figures for Quotas, Sample: REDS



(a) SC/ST Quota



(b) Women's Quota

Source: REDS 2006/9. NCAER. The figure presents differences across means between places that have a quota in the local council for either SC or ST Pradhan. The figure also includes 95 percent confidence intervals based on two-tailed t-tests. The first part of the panel uses the entire REDS sample, the second one uses only the matched sample across SC quotas, and the third one presents results from the matched sample across ST quotas.

Figure A.4: Balance Figures for Women's and SC/ST Quotas, Sample: BR-RJ- KN

Source: REDS 2006/9. The figure presents differences across means between places that have a quota in the local council for either SC or ST Pradhan in the first column and differences across villages with and without women's quotas. The figure also includes 95 percent confidence intervals based on two-tailed t-tests.

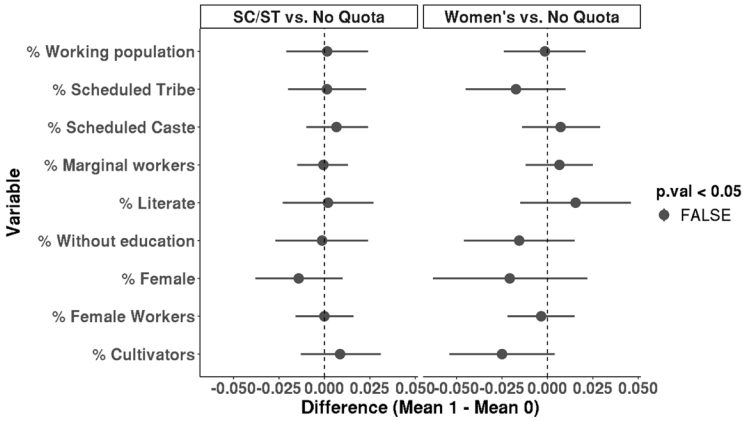


Table A.2: Coding of Main Outcomes

	Variable	Dataset	Question	Coding
1)	Interacting With Other Castes	REDS	"How easy is it for you to interact with members of other castes from this village in public?" (Codes: 5 - Very easy (People maintain healthy respect towards one another in public; 4 - Easy; 3 - Moderately easy; 2 - Slightly easy; 1 - Not easy at all)	If the response value is higher than the mean (3.41), the variable takes 1 and 0 otherwise. We create two versions of this variable: one with missing responses deleted and another with missing responses coded as 0.
2)	*Vot*ed for Pradhan	REDS	"Did you vote?"	If "yes", then the variable is coded 1 and 0 if the response is "no".
3)	Attend Gram Sabha	REDS	"How many Gram Sabha meetings did you attend?"	If the respondent indicates that (s)he has attended at least one meeting, the variable takes 1 and 0 otherwise.
4)	Participate at GS	REDS	"When you attend Gram Sabha meetings, do you participate actively by presenting issues, raising questions, and voicing your opinion?"	If "yes", the variable is coded 1 and 0 otherwise.
5)	Participation Index	REDS		The variable takes the mean of 2)-3)-4). Then the variable is transformed so that villages untreated with reservations have a mean of zero and that the variable has a standard deviation of one.
6)	Log(Sum Caste-Based Conflict)	REDS	Respondents are first asked if they have observed any conflict. The question has eleven different categories of conflict: labor conflict; conflict around sharing drinking water, sharing irrigation water, rent collection, encroachment on public land, inter-family disputes; political conflicts; conflicts with dacoities, Naxalites (Maoists); and conflicts between large farmers and small farmers; and farmers and workers. Next, respondents are asked if it the conflict was caste-based.	We sum all the counts of caste-based conflicts and take the log of it.
7)	Any Caste-Based Conflict	REDS	Based on the sum of caste-based conflicts, we code whether there is at least one caste-based conflict reported. If so, the variable takes 1 and 0 otherwise.	
8)	Marry Other Caste	BR-RJ-KN (Bihar & Rajasthan)	On a scale of 1-7, where 7 means "completely agree" and 1 means "completely disagree," how much do you agree with this statement: "You would feel comfortable marrying someone from a different caste (jati)?"	If the value is higher than the mean (1.58), we code it as 1 and 0 otherwise.
9)	Marry Other Caste	BR-RJ-KN (Karnataka)	"Would you feel comfortable marrying someone from a different caste (jati)?" (Codes: 1-Not at all comfortable; 2-Not very comfortable; 3-Neither comfortable nor uncomfortable; 4-Quite comfortable; 5-Extremely comfortable)	If the value is higher than the mean (2.42), we code it as a 1 and 0 otherwise.

B Summary Statistics

Table B.3: Summary Statistics for Both Datasets

	Entire Sample		ST Women		ST Men		All Women		All Men	
Variable Names	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Panel A: All India (REDS) Data										
Easy to interact with other castes (0/1)	0.72	0.45	0.58	0.49	0.76	0.43	0.62	0.49	0.81	0.39
Interacting with other castes: Not easy (0/1)	0.02	0.12	0.02	0.15	0.01	0.12	0.02	0.14	0.01	0.10
Interacting with other castes: Slightly easy (0/1)	0.06	0.25	0.09	0.29	0.05	0.23	0.09	0.28	0.04	0.20
Interacting with other castes: Moderately easy (0/1)	0.20	0.40	0.30	0.46	0.17	0.38	0.28	0.45	0.14	0.34
Interacting with other castes: Easy (0/1)	0.42	0.49	0.43	0.49	0.41	0.49	0.43	0.49	0.42	0.49
Interacting with other castes: Very easy (0/1)	0.29	0.46	0.15	0.36	0.35	0.48	0.19	0.39	0.39	0.49
Top 20% landholder (0/1)	0.21	0.41	0.23	0.42	0.06	0.24	0.21	0.41	0.21	0.41
Grandparent has high education (0/1)	0.01	0.10	0.00	0.04	0.00	0.04	0.01	0.10	0.01	0.10
Mother has high education (0/1)	0.06	0.24	0.01	0.12	0.04	0.19	0.06	0.24	0.06	0.24
Born post-1973 (0/1)	0.38	0.48	0.42	0.49	0.36	0.48	0.39	0.49	0.36	0.48
Born in 1948-1973 (0/1)	0.38	0.48	0.37	0.48	0.38	0.49	0.37	0.48	0.38	0.48
Born pre-1948 (0/1)	0.25	0.43	0.20	0.40	0.26	0.44	0.23	0.42	0.26	0.44
% ST in village today	0.07	0.19	0.02	0.08	0.06	0.15	0.08	0.19	0.07	0.18
% SC in village today	0.05	0.10	0.01	0.06	0.06	0.11	0.05	0.10	0.05	0.10
Women's Quotas (0/1)	0.28	0.45	0.21	0.41	0.27	0.45	0.28	0.45	0.28	0.45
SC Quotas (0/1)	0.12	0.32	0.04	0.18	0.17	0.38	0.12	0.32	0.12	0.32
ST Quotas (0/1)	0.08	0.26	0.50	0.50	0.04	0.19	0.08	0.27	0.07	0.26
Women's and SC Quotas (0/1)	0.02	0.13	0.01	0.08	0.03	0.16	0.02	0.13	0.02	0.13
Women's and ST Quotas (0/1)	0.03	0.18	0.16	0.37	0.02	0.13	0.03	0.18	0.03	0.18
Voted for pradhan (0/1)	0.70	0.46	0.72	0.45	0.76	0.43	0.69	0.46	0.71	0.45
Attended any gram sabha (0/1)	0.69	0.47	0.28	0.45	0.76	0.42	0.45	0.50	0.81	0.39
Participated at GS (0/1)	0.60	0.49	0.30	0.46	0.67	0.47	0.35	0.48	0.67	0.47
Total Caste-based Conflict	0.24	0.67	0.31	0.83	0.24	0.63	0.23	0.65	0.25	0.69
Any Caste Based (0/1)	0.05	0.21	0.05	0.21	0.04	0.19	0.04	0.20	0.05	0.21
Receive benefits (0/1)	0.45	0.50	0.45	0.50	0.47	0.50	0.46	0.50	0.45	0.50
% ST in subdistrict (1991)	0.08	0.14	0.34	0.23	0.04	0.09	0.08	0.14	0.08	0.14
ST Party Vote Share in Vidhan Sabha	10.21	16.55	5.95	12.85	11.84	18.00	10.40	16.69	10.02	16.40

	Entire Sample		ST Women		ST Men		All Women		All Men	
Variable Names	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Panel B: BR-RJ-KN Data										
Marry Other Caste (0/1)	0.23	0.42	0.28	0.45	0.36	0.48	0.19	0.39	0.26	0.44
Marry Other Caste - KN (1-5)	2.42	1.30	2.35	1.45	2.49	1.23	2.47	1.32	2.40	1.29
Marry Other Caste - KN (0/1)	0.44	0.50	0.37	0.48	0.49	0.50	0.45	0.50	0.43	0.50
Marry Other Caste - Raj-Bih (1-7)	1.59	1.59	1.79	1.74	1.44	1.33	1.50	1.43	1.67	1.73
Marry Other Caste - Raj-Bih (0/1)	0.15	0.36	0.23	0.42	0.13	0.33	0.15	0.35	0.16	0.36
Women's Quotas (0/1)	0.36	0.48	0.50	0.50	0.47	0.50	0.37	0.48	0.36	0.48
SC Quotas (0/1)	0.39	0.49	0.33	0.47	0.33	0.47	0.40	0.49	0.38	0.49
ST Quotas (0/1)	0.11	0.31	0.20	0.40	0.17	0.38	0.10	0.30	0.11	0.32
Age	38.40	13.38	35.08	11.88	38.82	13.30	36.61	12.45	39.63	13.83
Voted in last panchayat election (0/1)	0.86	0.35	0.86	0.35	0.84	0.37	0.85	0.35	0.86	0.34
Women's and SC Reservations (0/1)	0.10	0.30	0.15	0.36	0.15	0.35	0.10	0.30	0.11	0.31
Women's and ST Reservations (0/1)	0.05	0.22	0.12	0.33	0.10	0.30	0.05	0.21	0.05	0.22
% ST in village	0.08	0.14	0.27	0.32	0.19	0.27	0.07	0.15	0.08	0.13

C Ethics

Institutional Approval Both datasets that we analyze in this project were collected by others. The National Council for Applied Economic Research conducted the Rural Economic and Demographic Survey between 2006-2009, exclusively with adult respondents, each of whom were interviewed after providing voluntary consent. Surveys contained no deception. In case of the BR-RJ-KN dataset, we draw on replication material by Dunning and Nilekani (2013). Analysis of REDS was conducted following all applicable laws and was approved by [University Name Redacted] Institutional Review Board (IRB) protocol 18558 and [University Name Redacted] IRB protocol 114-2016. The publicly accessible BR-RJ-KN dataset was anonymized, and neither required IRB approval to access nor to analyze. Qualitative interviews cited in this paper were approved under [University Name Redacted] IRB protocol 63931.

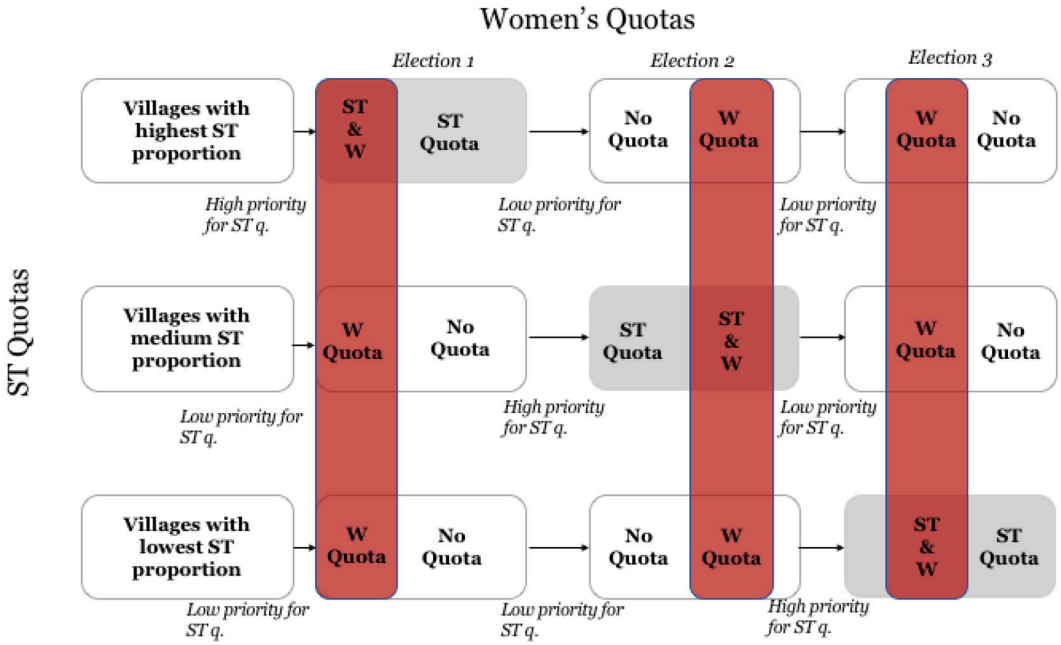
Risk to participants This research was, in large part, developed during the Covid-19 pandemic. In order to minimize risk to potential respondents and enumerators, we committed not to conduct any in-person survey. Instead, we aimed to utilize to the fullest extent already existing datasets to conduct this research. Once in-person fieldwork became available and approved by []University Name Redacted] IRB, one-on-one in-person interviews were conducted following Stanford University Field Research Safety protocols.

D Identifying Quota's Impact

Our focus is identifying the causal impact of two-dimensional quotas on social barriers to intergroup interactions by leveraging as-if random assignment of women's quotas in most states. We use Table A.1 from Brulé (2020) to code whether or not states implement as-if random assignment of women's quotas. For most of our analysis, we use this restricted set of states that quasi-randomly assign quotas. For transparency, we also show analysis for the full sample.

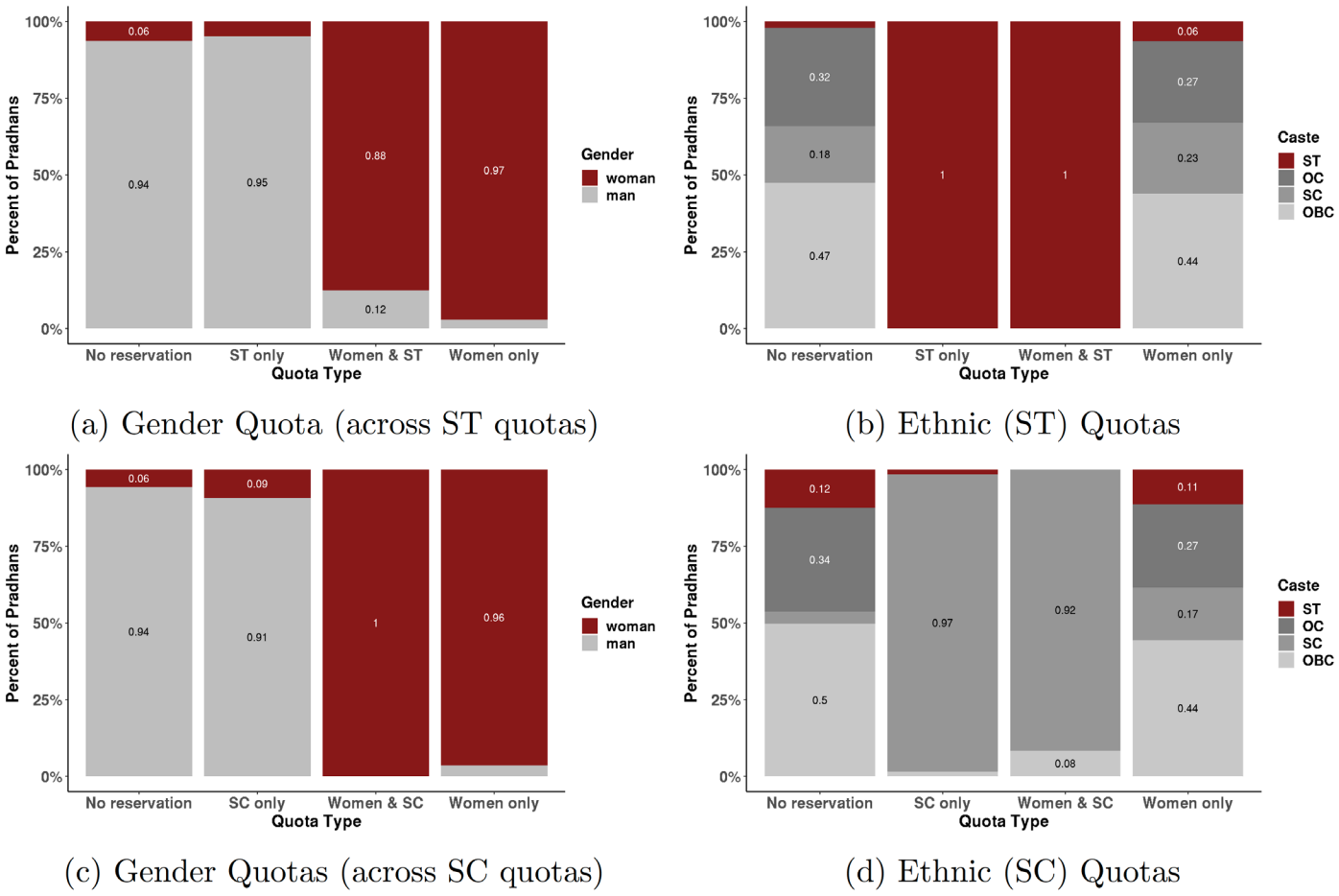
Identifying Ethnic Quotas Quotas for members of STs and SCs create a different hurdle for causal identification. While implementation strategies are consistent across states, the number of gram panchayats a given subdistrict reserves for quotas depends upon the proportion of STs or SCs (Dunning and Nilekani, 2013). This is problematic because the size of the SC/ST population predicts different development trajectories (Jensenius, 2017). To address this, we use two different strategies. First, we leverage the survey sampling design by Dunning and Nilekani (2013). The dataset uses a quasi-regression discontinuity design, surveying those villages that are either just above or just below the threshold for ST quota assignment, to balance villages with and without ethnic quotas by their proportion of ST and SC members. See Dunning and Nilekani (2013) for more details. This means that villages that are reserved and those that are not are, on average, comparable by design. This allows for identifying the impact of ST quotas. Second, for our all-India dataset (REDS), we have tried different versions of nearest neighbor matching and genetic matching and we chose the one that gave us the best balance. Thus, we chose a nearest neighbor matching with a 0.8 caliper, without replacement, and with each treated village being matched to one control village. We use the proportion of STs and SCs in 1991 in the subdistrict, ST/SC proportion when the survey was conducted in the village, and the proportion of Other Backward Classes in the village at the time of survey completion as the variables for matching. We chose these variables since they are the main determinants of quotas as Figure D.5 shows. We empirically verify balance across quotas in Figures

Figure D.5: Assignment to Scheduled Tribe and Women's Quotas



Note: Village probability of assignment to ST quotas depends on the ST proportion in the subdistrict and village. This figure assumes a subdistrict has 33.3% STs, so 33.3% of village heads are reserved for STs. At least 33.3% of villages are assigned women's quotas in each election.

Figure D.6: Compliance with Quotas



(a) Gender Quota (across ST quotas)

(b) Ethnic (ST) Quotas

(c) Gender Quotas (across SC quotas)

(d) Ethnic (SC) Quotas

Source: REDS 2006/9. Columns display the percentage of Pradhans elected under a given quota (none, Ethnic-only, Women+Ethnic, Women-only) by identity: gender in Figures a) and c); caste in Figures b) and d), by: general category (OC), Other Backward Castes (OBC), Scheduled Castes (SC), Scheduled Tribe (ST). Percentages sum to 1.

A.3-A.4. For the all-India sample, there are significant differences across villages reserved and unreserved for SC/STs, but not for women's quotas. However, differences disappear nearly entirely when we match on ST proportion for ST quota. For the more restricted BR-RJ-KN dataset, there are no observable differences for ST/SC reserved and unreserved villages. We use a set of controls and fixed effects to correct for imbalance in proportion of cultivators.

Instrumental Variable Analysis Finally, we address issues of non-compliance by instrumenting Pradhan identity with quota assignment. As Figure D.6 shows, compliance with ethnic quotas is perfect and compliance is close to perfect with women's quotas. Why might compliance with women's quotas be lower? There are a number of possible scenarios that may explain the 3-12 percent non-compliance rate with women's quotas. First, some states have imposed additional requirements for *Pradhan* positions such as literacy in the North Indian state of Rajasthan, and the two-child norm adopted by some states for contesting elections.[14] Given the combination of women's generally-lower levels of education, societal pressures for motherhood, and the high pressure to leave school early that to financial constraints exert, which especially burdens female SC/STs, these laws limit the potential number of female candidates, particularly those from SC/ST groups. Additionally,

[14] Karat, Brinda (2015). "Panchayat undemocracy." *The Indian Express* (26 December).

numbers of SC/ST communities vary widely in localities across India. When ethnic quotas intersect with women's quotas, the number of potential candidates are thus exponentially reduced. This may explain why we see higher non-compliance with two-dimensional quotas on the gender dimension than for one-dimensional women's quotas. For the later, numbers of potential candidates may be higher given the eligibility of more advantaged members of forward castes, who are more likely to meet the additional criteria for candidacy that some states impose. Second, some states such as Tamil Nadu give district officials power to remove the *Pradhan* from office, if they have concerns about governance (Tamil Nadu Panchayats Act 1994, Section 205). Although, research on this is scarce, district collectors have been known to use this law as a tool to remove female *Pradhans* from office, again potentially limiting compliance with gender quotas.

We instrument for quota status following Angrist et al. (1996):

$$\mathbf{y} = \alpha + \beta + \gamma + \zeta\mathbf{D} + \xi\mathbf{X} + \mathrm{u} \tag{2}$$

where Equation 2 has the same terms as in Equation 1 in the main paper, but includes an $N \times 3$ matrix of Pradhan identites—woman, ST, and ST woman—instead of quotas. We model the first- stage equation with Pradhan identity as a function of quotas:

$$\mathbf{D} = \alpha + \beta + \mathbf{Z}\pi + \xi\mathbf{X} + \mathbf{v}, \tag{3}$$

where $\mathbf{Z}$ is an $N \times 3$ matrix of quota assignments as instruments and π is a vector of coefficients. Lastly, $\mathbf{X}$, α, β, and γ are the same as in Equation 1 and 2. Table D.4 presents results of the first-stage regressions.

Table D.4: First-stage Results of Instrumental Variable Regressions

	Woman Pradhan	Woman Pradhan	ST Pradhan	ST Pradhan	Woman ST Pradhan	Woman ST Pradhan
Women's Quotas	0.929*** (0.030)	0.932*** (0.031)	0.082* (0.033)	0.082* (0.035)	0.094** (0.032)	0.097** (0.034)
ST Quotas	-0.096** (0.035)	-0.102** (0.037)	0.751*** (0.102)	0.725*** (0.110)	-0.192* (0.095)	-0.213* (0.102)
W. X ST Q.	-0.169 (0.166)	-0.167 (0.165)	0.106 (0.078)	0.123 (0.086)	0.745*** (0.191)	0.756*** (0.192)
Sample	All	All	All	All	All	All
States	All	Random Assign.	All	Random Assign.	All	Random Assign.
Tehsil FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.0.945	0.945	0.911	0.907	0.72	0.721
Num. obs.	24917	19881	24917	19881	24917	19881
N Clusters	233	182	233	182	233	182
Wald test p-value	0.000	0.000	0.000	0.000	0.000	0.000

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level are in parentheses. The dependent variable is a binary indicator of whether or not the Pradhan is a woman (Columns 1-2), Pradhan is a Scheduled Tribe (Columns 3-4), and is a Scheduled Tribe woman (Columns 5-6). Column headings indicate the data set for the analysis. Columns 2, 4, and 6 include only areas where women's quotas were implemented as-if randomly. Controls include familial landholdings, grandparents' education, birth cohorts, prior quotas, and the proportion of Scheduled Tribes in the village. $^{+}$p<0.1; *p<0.05; **p<0.01; ***p<0.001.

E One-Dimensional Quotas' Impact

Table E.5: Effect of Quotas on Inter-Group Relations: One-Dimensional Quotas

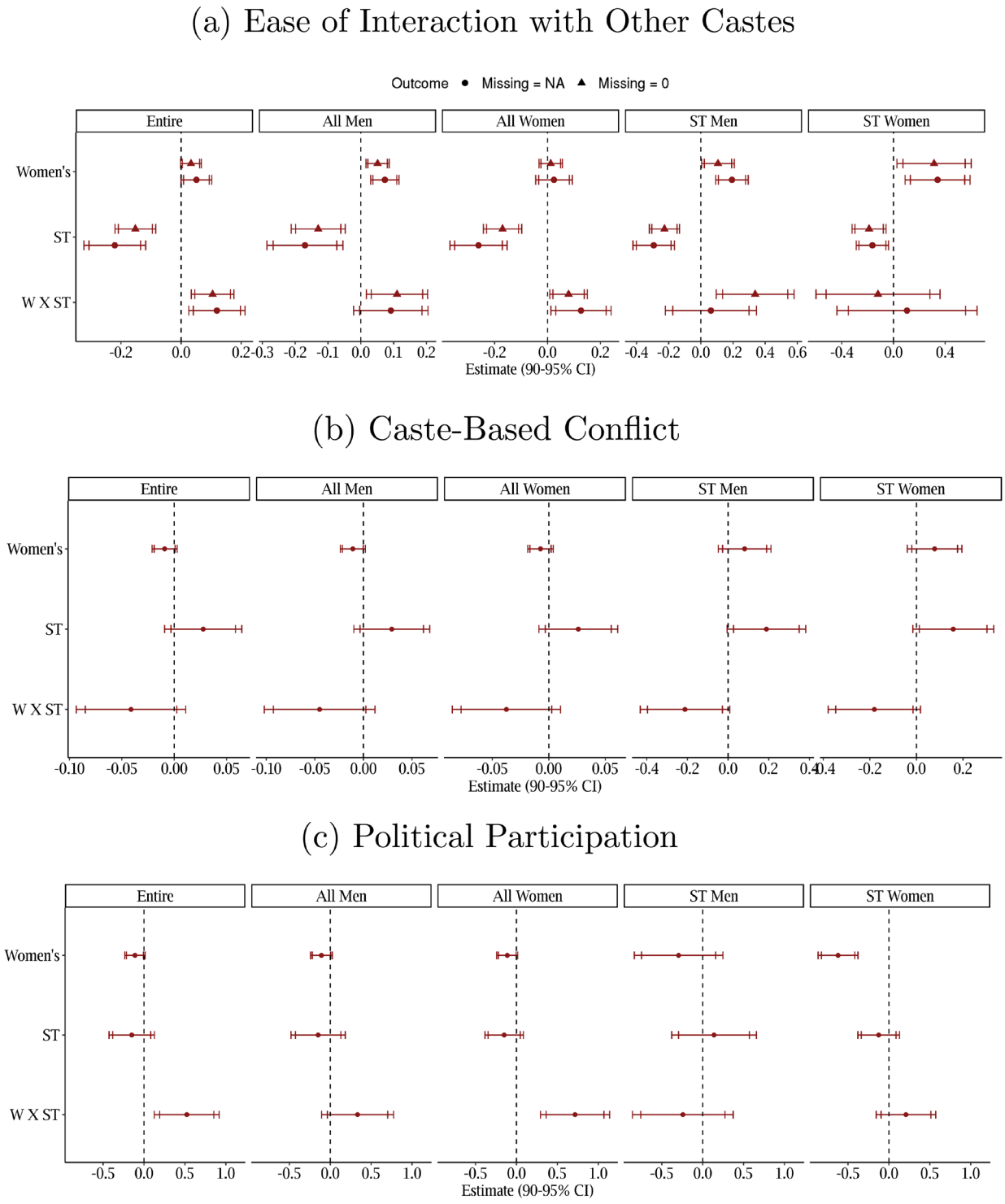
	Interacting With Other Castes				Interact (No Missing)	Interact		Marry Other Caste
	REDS	REDS	REDS	REDS	REDS	REDS	REDS	BR-RJ-KA
Panel A: ST Quotas								
Female Quotas	0.014 (0.029)	0.007 (0.024)	0.044⁺ (0.025)	0.052⁺ (0.026)	0.033⁺ (0.018)			−0.008 (0.018)
ST Quotas	−0.125* (0.061)	−0.158** (0.049)	−0.213*** (0.053)	−0.233*** (0.057)	−0.162*** (0.037)			−0.078* (0.037)
Woman Pradhan						0.072* (0.029)	0.085** (0.031)	
ST Pradhan						−0.283*** (0.070)	−0.321*** (0.076)	
Control Means	0.722	0.722	0.722	0.703	0.474	0.722	0.703	0.234
Adj. R2	0.006	0.125	0.152	0.145	0.216	0.150	0.142	0.134
Num. obs.	24587	24587	24587	19551	27545	24587	19551	6386
N Clusters	230	230	230	179	179	230	179	481
Panel B: SC Quotas								
Female Quotas	0.025 (0.030)	0.005 (0.024)	0.066** (0.024)	0.078** (0.024)	0.055** (0.017)			0.017 (0.021)
SC Quotas	0.019 (0.036)	−0.046 (0.029)	−0.010 (0.030)	−0.004 (0.033)	0.002 (0.021)			0.030 (0.019)
Woman Pradhan						0.075* (0.033)	0.085* (0.034)	
SC Pradhan						0.003 (0.038)	0.026 (0.045)	
Control Means	0.704	0.704	0.704	0.672	0.453	0.704	0.672	0.231
Adj. R2	0.001	0.124	0.150	0.141	0.212	0.141	0.132	0.129
Num. obs.	24845	24845	24845	19809	27895	24845	19809	5960
N Clusters	232	232	232	181	181	232	181	448
Model	OLS	OLS	OLS	OLS	OLS	2SLS	2SLS	OLS
Sample	All	All	All	All	All	All	All	All
States	All	All	All	Random Assign. Only	Random Assign. Only	All	Random Assign. Only	BR-RJ-KA
District FE	No	Yes	No	No	No	No	No	Yes
Tehsil FE	No	No	Yes	Yes	Yes	Yes	Yes	No
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level are in parentheses. The dependent variable is a binary indicator of the ease of inter-caste interactions and willingness to marry across caste and the ease. For more detail see Table A.2. Column headings indicate the data set for the analysis. Columns 4-5, and 7 include only areas where women's quotas were implemented as-if randomly. Controls for BR-RJ-KA include age, voting in prior panchayat elections. Controls for REDS include familial landholdings, grandparents' education, birth cohorts, and prior reservations. Both datasets include controls for the proportion of Scheduled Tribes in the village. ⁺p<0.1; *p<0.05; **p<0.01; ***p<0.001.

F Analysis of Two-Dimensional Quotas Impact

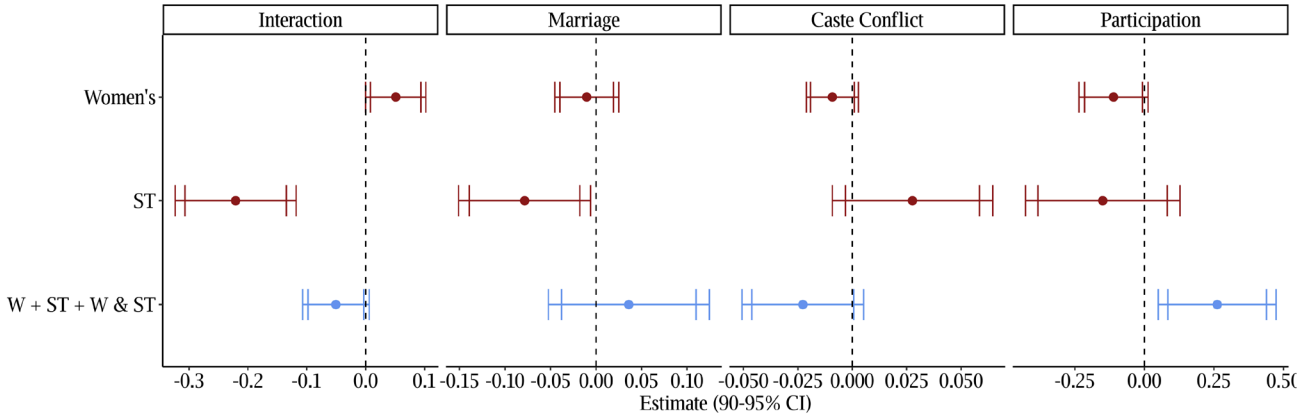
F.1 Sub-sample Analysis

Figure F.7: Quotas' Marginal Impact



Source: REDS 2006/9. Dots indicate regression coefficients for quota-types (women's, ST, or both: "WxST" is the interaction (simultaneous mandate) of women's and ST quotas) on: (a) ease of inter-caste interactions, (b) any caste-based conflict, and (c) the participation index. Bars indicate 90 and 95 percent confidence intervals. Panels indicate subsample of analysis. Coefficients from Col.4, 8, Table 2, Col.4-5, F.6-F.7; Col.1-5, Tables G.13.A-G.14.

Figure F.8: Quotas' Impact Relative to Villages Without Quotas



Source: REDS 2006/9, Dunning and Nilekani (2013). Dots indicate the net effect of quotas for women, STs, and both ("W+ST+W & ST") on four outcomes: ease of inter-caste interaction, willingness to marry another caste, experience of any caste-based conflict, and our index of political participation. Bars indicate 90 and 95 percent confidence intervals. For one-dimensional (Women's, ST) quotas, regression coefficients are from: Columns 4, 8, Table 2; Column 1, Tables G.14-G.13 Panel A. For two-dimensional quotas, "W+ST+W & ST" sums the regression coefficients for women's quotas, ST quotas, and their interaction. We do so using multcomp package in R.

Table F.6: Effect of Quotas on Attitude Towards Other Castes: Men and Women

	Interacting With Other Castes				Interact (No Missing)	Interact		Marry Other Caste
	REDS	REDS	REDS	REDS	REDS	REDS	REDS	BR-RJ-KA
Panel A: All Men								
Women's Quotas	0.027 (0.029)	0.017 (0.023)	0.067** (0.021)	0.073** (0.022)	0.051** (0.018)			-0.007 (0.023)
ST Quotas	-0.112+ (0.061)	-0.132** (0.049)	-0.157** (0.055)	-0.170** (0.059)	-0.130** (0.042)			-0.084+ (0.050)
W. X ST Q.	-0.099 (0.126)	0.099 (0.066)	0.090 (0.055)	0.092 (0.058)	0.110* (0.048)			0.122+ (0.071)
Woman Pradhan						0.070** (0.026)	0.077** (0.028)	
ST Pradhan						-0.160** (0.058)	-0.176** (0.062)	
ST Woman Pradhan						0.161+ (0.094)	0.169+ (0.099)	
Control Means	0.810	0.810	0.810	0.798	0.529	0.810	0.798	0.265
Adj. R^2	0.010	0.157	0.194	0.183	0.280	0.193	0.182	0.119
Num. obs.	12748	12748	12748	10241	14576	12748	10241	3971
N Clusters	233	233	233	182	182	233	182	506
Panel B: All Women								
Women's Quotas	-0.001 (0.035)	-0.006 (0.028)	0.016 (0.033)	0.024 (0.035)	0.012 (0.023)			-0.014 (0.022)
ST Quotas	-0.139* (0.068)	-0.174*** (0.050)	-0.239*** (0.052)	-0.261*** (0.055)	-0.170*** (0.037)			-0.061+ (0.032)
W. X ST Q.	0.003 (0.142)	0.055 (0.073)	0.120* (0.056)	0.127* (0.058)	0.080* (0.036)			0.124+ (0.075)
Woman Pradhan						0.020 (0.040)	0.029 (0.043)	
ST Pradhan						-0.262*** (0.065)	-0.290*** (0.070)	
ST Woman Pradhan						0.200+ (0.109)	0.218+ (0.114)	
Control Means	0.631	0.631	0.631	0.603	0.415	0.631	0.603	0.188
Adj. R^2	0.006	0.145	0.172	0.158	0.175	0.171	0.157	0.135
Num. obs.	12169	12169	12169	9640	13415	12169	9640	2742
N Clusters	233	233	233	182	182	233	182	449
Model	OLS	OLS	OLS	OLS	OLS	2SLS	2SLS	OLS
States	All	All	All	Random Assign. Only	Random Assign. Only	All	Random Assign. Only	BR-RJ-KA
District FE	No	Yes	No	No	No	No	No	Yes
Tehsil FE	No	No	Yes	Yes	Yes	Yes	Yes	No
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level are in parentheses. The dependent variable is a binary indicator of willingness to marry across caste and the ease of inter-caste interactions. For more detail see Table A.2. Column headings indicate the data set for the analysis. Columns 4-5 and 7 include only areas where women's quotas were implemented as-if randomly. Controls for BR-RJ-KA include age, voting in prior panchayat elections. Controls for REDS include familial landholdings, grandparents' education, birth cohorts, and prior quotas. Both datasets include controls for the proportion of Scheduled Tribes in the village. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table F.7: Effect of Quotas on Attitude Towards Other Castes: Scheduled Tribes

	Interacting With Other Castes				Interact (No Missing)	Interact		Marry Other Caste
	REDS	REDS	REDS	REDS	REDS	REDS	REDS	BR-RJ-KA
Panel A: ST Men								
Women's Quotas	0.112 (0.091)	-0.079 (0.098)	0.194*** (0.052)	0.193*** (0.052)	0.107* (0.052)			-0.029 (0.066)
ST Quotas	-0.051 (0.093)	-0.194+ (0.099)	-0.292*** (0.066)	-0.293*** (0.066)	-0.226*** (0.048)			-0.166 (0.109)
W. X ST Q.	0.018 (0.167)	0.313 (0.193)	0.065 (0.145)	0.063 (0.145)	0.338** (0.123)			0.216 (0.142)
Woman Pradhan						0.662 (0.620)	0.667 (0.620)	
ST Pradhan						-0.223* (0.108)	-0.224* (0.109)	
ST Woman Pradhan						-0.382 (0.690)	-0.390 (0.690)	
Control Means	0.754	0.754	0.754	0.738	0.493	0.754	0.738	0.398
Adj. R^2	0.012	0.163	0.230	0.230	0.276	0.209	0.208	0.155
Num. obs.	926	926	926	895	1329	926	895	391
N Clusters	73	73	73	65	66	73	65	202
Panel B: ST Women								
Women's Quotas	0.124 (0.111)	0.026 (0.117)	0.341* (0.129)	0.342** (0.128)	0.314* (0.147)			-0.041 (0.092)
ST Quotas	-0.048 (0.106)	-0.189+ (0.107)	-0.162* (0.064)	-0.163* (0.064)	-0.188** (0.067)			-0.082 (0.134)
W. X ST Q.	-0.045 (0.326)	0.282 (0.173)	0.107 (0.278)	0.105 (0.277)	-0.120 (0.245)			-0.103 (0.162)
Woman Pradhan						0.396 (0.486)	0.401 (0.484)	
ST Pradhan						-0.060 (0.079)	-0.061 (0.079)	
ST Woman Pradhan						0.038 (0.561)	0.032 (0.558)	
Control Means	0.585	0.585	0.585	0.574	0.386	0.585	0.574	0.371
Adj. R^2	0.009	0.165	0.247	0.245	0.195	0.248	0.246	0.051
Num. obs.	860	860	860	835	1158	860	835	224
N Clusters	72	72	72	63	64	72	63	116
Model	OLS	OLS	OLS	OLS	OLS	2SLS	2SLS	OLS
States	All	All	All	Random Assign. Only	Random Assign. Only	All	Random Assign. Only	BR-RJ-KA
District FE	No	Yes	No	No	No	No	No	Yes
Tehsil FE	No	No	Yes	Yes	Yes	Yes	Yes	No
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level are in parentheses. The dependent variable is a binary indicator of willingness to marry across caste and the ease of inter-caste interactions. For more detail see Table A.2. Column headings indicate the data set for the analysis. Columns 4-5 and 7 include only areas where women's quotas were implemented as-if randomly. Controls for BR-RJ-KA include age, voting in prior panchayat elections. Controls for REDS include familial landholdings, grandparents' education, birth cohorts, and prior quotas. Both datasets include controls for the proportion of Scheduled Tribes in the village. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table F.8: Impact of Quotas on Inter-Group Relations, Ordinal Logit Models

	Dependent variable:									
	Interacting with Other Castes in Public is Easy					Interacting (No Missing)				
	REDS	REDS	REDS	REDS	REDS	REDS	REDS	REDS	REDS	REDS
Women's Quotas	1.163 [t = 4.963]	1.228 [t = 4.792]	1.101 [t = 2.191]	1.579 [t = 2.043]	1.163 [t = 0.655]	0.966 [t = −1.833]	0.964 [t = −1.402]	0.965 [t = −1.317]	1.228 [t = 1.490]	1.018 [t = 0.123]
ST Quotas	0.502 [t = −13.418]	0.503 [t = −9.486]	0.469 [t = −10.278]	0.683 [t = −2.272]	0.648 [t = −2.557]	0.904 [t = −3.130]	0.895 [t = −2.473]	0.908 [t = −2.095]	1.070 [t = 0.659]	1.011 [t = 0.106]
W × ST Q.	0.735 [t = −2.851]	0.543 [t = −4.044]	0.977 [t = −0.151]	1.318 [t = 0.479]	1.208 [t = 0.352]	1.172 [t = 2.233]	1.178 [t = 1.668]	1.168 [t = 1.498]	0.863 [t = −0.403]	0.889 [t = −0.337]
Num. obs.	19,881	10,241	9,640	895	835	83,879	41,976	41,903	3,678	3,615
Model	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit
Sample	Entire	All Men	All Women	ST Men	ST Women	Entire	All Men	All Women	ST Men	ST Women
States	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign
District FE	No	No	No	No	No	No	No	No	No	No
Tehsil FE	No	No	No	No	No	No	No	No	No	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. The table shows analysis with the re-coded dependent variable: interacting with other castes in public is easy. Dependent variable captures the response to the following question: "How easy is it for you to interact with members of other castes from this village in public?". If the respondent answered "very easy", we code it as 5, if "easy" 4, if "moderately easy", then 3, if "slightly easy" 2, and if "not easy at all', then 1. We use an ordinal logit model to analyze the results as an ordered factor instead of a binary variable. We have to omit fixed effects for this. The table shows odds-ratios obtained from ordinal logit regressions. In brackets t-statistics are included.

Table F.9: Impact of Quotas on Inter-Group Relations, Ordinal Logit Model, BR- RJ-KN Dataset

	Dependent variable:									
	Marry Other Caste									
	Bihar-Rajasthan	B-R	B-R	B-R	B-R	Karnataka	KN	KN	KN	KN
Women's Quotas	1.019 [t = 0.204]	1.021 [t = 0.164]	1.016 [t = 0.118]	0.316 [t = -1.741]	0.467 [t = -1.578]	1.067 [t = 0.705]	1.160 [t = 1.428]	0.841 [t = -0.833]	1.337 [t = 1.180]	0.636 [t = -0.984]
ST Quotas	0.406 [t = -3.499]	0.421 [t = -2.436]	0.397 [t = -2.460]	0.00000 [t = -39.526]	0.146 [t = -1.749]	0.618 [t = -3.093]	0.621 [t = -2.721]	0.693 [t = -1.051]	0.479 [t = -1.738]	0.673 [t = -0.486]
W. X ST Q.	4.049 [t = 4.586]	4.083 [t = 3.298]	4.070 [t = 3.196]	35,444,649.000 [t = 42.747]	5.096 [t = 1.282]	1.097 [t = 0.347]	1.017 [t = 0.057]	1.521 [t = 0.656]	1.626 [t = 0.665]	0.720 [t = -0.213]
Num. obs.	4,829	2,461	2,360	138	144	1,900	1,510	382	253	80
Model	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit	Ordinal Logit
Sample	Entire	All Men	All Women	ST Men	ST Women	Entire	All Men	All Women	ST Men	ST Women
District FE	No	No	No	No	No	No	No	No	No	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Dunning and Nilekani (2013). The table shows analysis with the ordered dependent variable: willing to marry someone from another caste. Dependent variable captures the response to the following question for Bihar and Rajasthan: On a scale of 1-7, where 7 means "completely agree" and 1 means "completely disagree," how much do you agree with this statement: "You would feel comfortable marrying someone from a different caste (jati)?". For Karnataka, the question is the following: "Would you feel comfortable marrying someone from a different caste (jati)?" (Codes: 1-Not at all comfortable; 2-Not very comfortable; 3-Neither comfortable nor uncomfortable; 4-Quite comfortable; 5-Extremely comfortable). We use an ordinal logit model to analyze the results as an ordered factor instead of a binary variable. We have to omit fixed effects for this. The table shows odds-ratios obtained from ordinal logit regressions. In brackets t-statistics are included. For the BR-RJ-KN dataset, we analyze responses separately for Bihar-Rajasthan and Karnataka, since responses are on a different scale for these states. The direction and the significance of quota types remains consistent with our main results.

Table F.10: Effect of Quotas on Interactions Between Castes, Matched Sample

	Interacting with Other Castes in Public is Easy			
	REDS	REDS	REDS	REDS
Women's Quotas	-0.003 (0.074)		-0.196* (0.095)	
ST Quotas	-0.196*** (0.030)			
W. X ST Q.	0.210** (0.069)			
Woman Pradhan		-0.053 (0.076)		-0.214+ (0.111)
ST Pradhan		-0.094+ (0.047)		
ST Woman Pradhan		-0.477* (0.212)		
SC Quotas			-0.289** (0.091)	
W. X SC Q.			0.519** (0.183)	
SC Pradhan				-0.276** (0.094)
SC Woman Pradhan				0.524* (0.201)
Control Means	0.639	0.639	0.756	0.756
Adj. R^2	0.178	0.174	0.123	0.122
Num. obs.	4093	4093	6087	6087
N Clusters	40	40	56	56
Model	OLS	2SLS	OLS	2SLS
Group	All	All	All	All
States	All	All	All	All
District FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level in parentheses. Table A.2 explains the coding of the dependent variable. For columns 1 and 2 nearest neighbor matching was used to balance villages with Scheduled Tribe quotas and those without (See Appendix Appendix D for more detail). For columns 3 and 4, the same procedure was used to balance villages with and without Scheduled Caste quotas. The sample includes all respondents in those villages that were matched using nearest neighbour matching. Controls include familial landholdings, grandparents' education, birth cohorts, prior quotas, and the proportion of Scheduled Tribes (or Scheduled Castes for SC quotas) in the village. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table F.11: Effect of Quotas on Attitude Towards Other Castes: SC Quotas

	Interacting With Other Castes				Interact (No Missing)	Interact		Marry Other Caste
	REDS	REDS	REDS	REDS	REDS	REDS	REDS	BR-RJ-KA
Women's Quotas	0.025 (0.030)	0.013 (0.025)	0.069** (0.024)	0.084*** (0.025)	0.059** (0.018)			0.018 (0.021)
SC Quotas	0.019 (0.036)	-0.047 (0.030)	-0.003 (0.031)	0.006 (0.034)	0.010 (0.021)			0.031 (0.019)
W. X SC Q.	-0.039 (0.044)	0.138* (0.060)						-0.046 (0.037)
Woman Pradhan						0.076** (0.025)	0.092*** (0.026)	
SC Pradhan						-0.010 (0.031)	-0.005 (0.034)	
SC Woman Pradhan								
Control Means	0.704	0.704	0.704	0.672	0.453	0.704	0.672	0.231
Adj. R^2	0.001	0.123	0.150	0.141	0.212	0.150	0.142	0.128
Num. obs.	24917	24917	24917	19881	27991	24917	19881	6634
N Clusters	233	233	233	182	182	233	182	502
Model	OLS	OLS	OLS	OLS	OLS	2SLS	2SLS	OLS
Sample	All	All	All	All	All	All	All	All
States	All	All	All	Random Assign. Only	Random Assign. Only	All	Random Assign. Only	BR-RJ-KA
District FE	No	Yes	No	No	No	No	No	Yes
Tehsil FE	No	No	Yes	Yes	Yes	Yes	Yes	No
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level are in parentheses. The dependent variable is a binary indicator of willingness to marry across caste and the ease of inter-caste interactions. For more detail see Table A.2. Column headings indicate the data set for the analysis. Columns 4-5 and 7 include only areas where women's quotas were implemented as-if randomly. Controls for BR-RJ-KA include age, voting in prior panchayat elections. Controls for REDS include familial landholdings, grandparents' education, birth cohorts, and prior quotas. Both datasets include controls for the proportion of Scheduled Tribes in the village. $^{+}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$.

Table F.12: Effect of Quotas on Inter-group Relations: Multilevel Models

	Interacting With Other Castes								Marry Other Caste
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Women's Quotas	0.039*** (0.010)	0.049*** (0.011)	0.015 (0.023)	0.039 (0.024)	0.056* (0.024)	0.018 (0.031)	0.076 (0.102)	0.050 (0.120)	-0.008 (0.020)
ST Quotas	-0.197*** (0.019)	-0.211*** (0.020)	-0.147*** (0.041)	-0.158*** (0.040)	-0.129** (0.039)	-0.174*** (0.050)	-0.037 (0.087)	-0.098 (0.104)	-0.085* (0.037)
W. ST Q.	0.096* (0.038)	0.096* (0.039)	0.037 (0.094)	0.035 (0.087)	0.034 (0.086)	0.081 (0.114)	-0.033 (0.216)	-0.130 (0.250)	0.122* (0.056)
Num. obs.	24917	19881	24917	19881	10241	9640	895	835	6729
Sample	All	All	All	All	All Men	All Women	ST Men	ST Women	All
States	All	Randomly. Assigned	All	Randomly. Assigned	Randomly. Assigned	Randomly. Assigned	andomly. Assigned	Randomly. Assigned	BR-RJ-KN
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. groups: subdistrict	156	114	156	114	114	114	48	45	--
Num. groups: district	101	77	101	77	77	77	33	31	29
Num. groups: village	--	--	233	182	182	182	65	63	506

Source: REDS 2006/9, NCAER and Dunning and Nilekani (2013). Standard errors are included in parentheses. The dependent variable is a binary indicator of willingness to marry across caste and the ease of inter-caste interactions. For more detail see Table A.2. Column headings indicate the data set for the analysis. Each column indicates a different sample. For each sample, we model the outcome with a multilevel model using the lmer function in R. We include a separate intercept for each village, sub-district, and district to account for the clustered nature of the data. Controls for REDS include familial landholdings, grandparents' has education, birth cohorts, and prior quotas. Both datasets include controls for the proportion of Scheduled Tribes in the village. Controls for BR-RJ-KA include age, voting in prior panchayat elections. $^{+}$p<0.1; *p<0.05; **p<0.01; ***p<0.001.

G Mechanisms

Table G.13: Effect of Quotas on Caste-Based Conflict

	Caste-based Conflict				
	REDS	REDS	REDS	REDS	REDS
Panel A: Any Caste-Based Conflict					
Women's Quotas	-0.009 (0.006)	-0.011+ (0.007)	-0.007 (0.006)	0.081 (0.066)	0.078 (0.060)
ST Quotas	0.028 (0.019)	0.029 (0.020)	0.026 (0.018)	0.188+ (0.098)	0.158+ (0.088)
W. X ST Q.	-0.041 (0.027)	-0.045 (0.029)	-0.037 (0.024)	-0.212+ (0.112)	-0.181+ (0.101)
Control Mean	0.042	0.044	0.040	0.028	0.033
Adj. R^2	0.296	0.307	0.283	0.292	0.286
Num. obs.	249035	124657	124378	10995	10806
N Clusters	182	182	182	77	73
Panel B: Log(Sum of Caste-Based Conflict)					
Women's Quotas	0.313 (0.506)	0.341 (0.519)	0.283 (0.495)	1.358 (1.064)	1.233 (0.941)
ST Quotas	0.620 (0.510)	0.629 (0.525)	0.613 (0.500)	2.918+ (1.512)	2.235 (1.413)
W. X ST Q.	-2.007 (1.235)	-2.269+ (1.295)	-1.748 (1.183)	-1.920 (1.850)	-1.121 (1.718)
Control Mean	-11.508	-11.459	-11.556	-11.726	-11.675
Adj. R^2	0.328	0.340	0.316	0.363	0.359
Num. obs.	249035	124657	124378	10995	10806
N Clusters	182	182	182	77	73
Model	OLS	OLS	OLS	OLS	OLS
Sample	All	All Men	All Women	ST Men	ST Women
States	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only
Tehsil FE	Yes	Yes	Yes	Yes	Yes
Period FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level in parentheses. We explain the coding of both dependent variables in Table A.2. The sample includes only states where women's quotas were implemented as-if randomly. Controls include familial landholdings, grandparents' education, birth cohorts, prior quotas, and the proportion of Scheduled Tribes in villages. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table G.14: Effect of Quotas on Political Participation

	Participation Index				
	REDS	REDS	REDS	REDS	REDS
Women's Quotas	-0.111+ (0.063)	-0.108 (0.068)	-0.112+ (0.065)	-0.295 (0.276)	-0.622*** (0.124)
ST Quotas	-0.150 (0.142)	-0.148 (0.169)	-0.150 (0.120)	0.139 (0.264)	-0.125 (0.129)
W. X ST Q.	0.523* (0.202)	0.334 (0.225)	0.716** (0.216)	-0.242 (0.314)	0.208 (0.186)
Control Mean	-0.000	0.055	-0.062	-0.034	-0.174
Adj. R^2	0.343	0.322	0.398	0.293	0.352
Num. obs.	46897	24837	22060	2186	1932
N Clusters	182	182	182	58	48
Model	OLS	OLS	OLS	OLS	OLS
Sample	All	All Men	All Women	ST Men	ST Women
States	Rand.Assign	Rand.Assign	Rand.Assign	Rand.Assign	Rand.Assign
Tehsil FE	Yes	Yes	Yes	Yes	Yes
Period FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level in parentheses. We explain the coding of both dependent variables in Table A.2. The sample includes only states where women's quotas were implemented as-if randomly. Controls include familial landholdings, grandparents' education, birth cohorts, prior quotas, and the proportion of Scheduled Tribes in villages. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table G.15: Quotas' Effect on Political Participation (Index Components)

	Participation Index					
	Voted	Attend GS	Participate GS	Voted	Attend GS	Participate GS
Women's Quotas	-0.043 (0.029)	-0.000 (0.042)	-0.003 (0.037)	-0.051+ (0.028)	-0.329*** (0.047)	0.291** (0.097)
ST Quotas	0.077 (0.057)	-0.246** (0.084)	0.065 (0.114)	0.051+ (0.027)	-0.716*** (0.154)	-0.153 (0.244)
W. X ST Q.	-0.011 (0.062)	0.445*** (0.120)	-0.355** (0.133)	0.012 (0.033)	0.735*** (0.160)	
Control Mean	0.723	0.703	0.545	0.662	0.517	0.250
Adj. R^2	0.413	0.372	0.282	0.346	0.630	0.085
Num. obs.	42984	12649	8525	1718	510	133
N Clusters	171	174	173	43	26	19
Model	OLS	OLS	OLS	OLS	OLS	OLS
Sample	All	All	All	ST Women	ST Women	ST Women
States	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only
Tehsil FE	Yes	Yes	Yes	Yes	Yes	Yes
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level in parentheses. The outcome is explained in Table A.2. The sample includes all respondents as well as female ST respondents separately. The sample includes only states where women's reservations were implemented as-if randomly. Controls include familial landholdings, grandparents' education, birth cohorts, prior quotas, and the proportion of Scheduled Tribes in villages. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Table G.16: Long-term Effect of Reservations on Inter-Group Relations

	Interacting With Other Castes					Interact (No Missing)				
	REDS	REDS	REDS	REDS	REDS	REDS	REDS	REDS	REDS	REDS
Prior Women's Quotas	-0.035 (0.022)	-0.032 (0.020)	-0.035 (0.027)	-0.117 (0.089)	-0.353** (0.111)	-0.032* (0.015)	-0.037* (0.017)	-0.023 (0.017)	-0.075 (0.086)	-0.282** (0.084)
Prior ST Quotas	-0.069* (0.033)	-0.135*** (0.031)	-0.002 (0.041)	-0.360** (0.113)	-0.450** (0.156)	-0.012 (0.023)	-0.063* (0.027)	0.042 (0.026)	-0.285** (0.086)	-0.198 (0.128)
Prior W. X ST Q.	0.082 (0.066)	0.027 (0.042)	0.156 (0.104)	0.133** (0.041)	0.365*** (0.062)	0.036 (0.042)	-0.012 (0.034)	0.090 (0.073)	0.040 (0.050)	0.218*** (0.062)
Control Means	0.705	0.816	0.590	0.759	0.546	0.468	0.537	0.394	0.501	0.375
Adj. R^2	0.136	0.175	0.148	0.218	0.224	0.213	0.281	0.172	0.281	0.190
Num. obs.	20385	10483	9902	982	911	28752	14951	13801	1467	1276
N Clusters	187	187	187	68	66	187	187	187	69	67
Model	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Sample	All	All Men	All Women	ST Men	ST Women	All	All Men	All Women	ST Men	ST Women
States	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign.	Random Assign.
Tehsil FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level are in parentheses. The dependent variable is a binary indicator of willingness to marry across caste and the ease of inter-caste interactions. For more detail see Table A.2. Column headings indicate the data set for the analysis. Columns 4-5 and 7 include only areas where women's quotas were implemented as-if randomly. Controls include familial landholdings, grandparents' education, birth cohorts, and the proportion of Scheduled Tribes in the village. $^{+}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$.

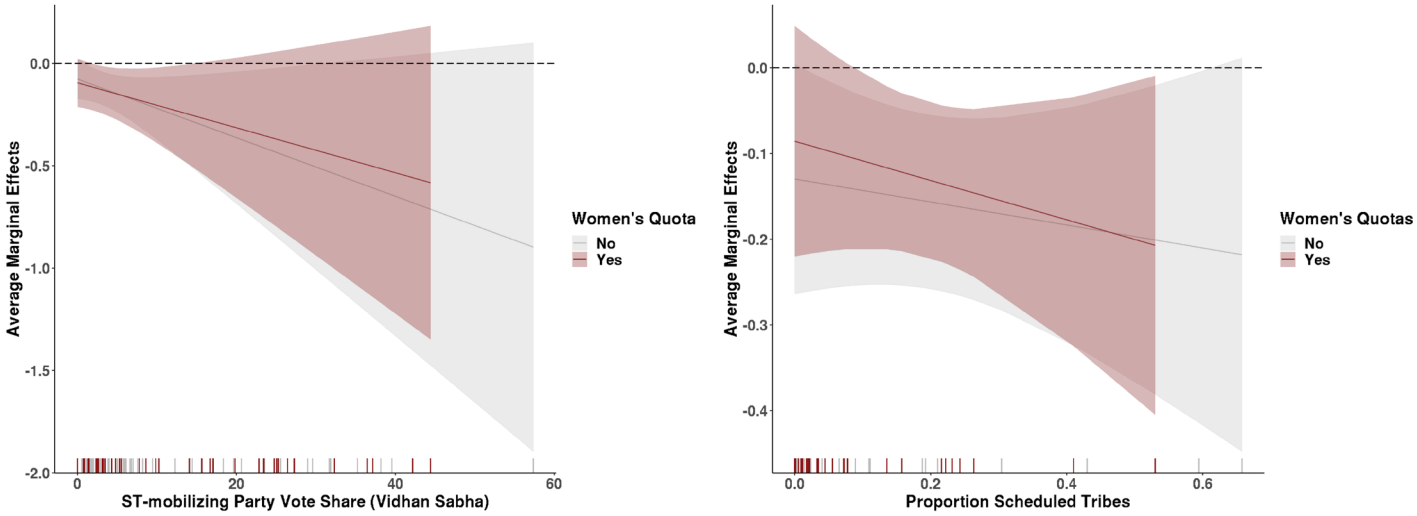
H Alternative Explanations

Table H.17: Effect of Quotas on Receiving Benefits

	Receives Benefits?				
	REDS	REDS	REDS	REDS	REDS
Women's Quotas	0.004 (0.014)	0.005 (0.018)	0.008 (0.016)	-0.070 (0.076)	-0.047 (0.169)
ST Quotas	0.043 (0.029)	0.039 (0.041)	0.049 (0.032)	0.010 (0.089)	-0.003 (0.125)
W. X ST Q.	0.032 (0.045)	0.059 (0.058)	-0.006 (0.056)	0.214** (0.076)	0.047 (0.220)
Model	OLS	OLS	OLS	OLS	OLS
Sample	All	All Men	All Women	ST Men	ST Women
States	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only	Random Assign. Only
Tehsil FE	Yes	Yes	Yes	Yes	Yes
Period FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Control Mean	0.424	0.430	0.418	0.497	0.430
Adj. R^2	0.398	0.384	0.411	0.445	0.453
Num. obs.	18231	9780	8451	768	666
N Clusters	176	176	173	43	39

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level in parentheses. We explain the coding of both dependent variables in Table A.2. The sample includes only states where women's quotas were implemented as-if randomly. Controls include familial landholdings, grandparents' education, birth cohorts, prior quotas, and the proportion of Scheduled Tribes in villages. +p<0.1; *p<0.05; **p<0.01; ***p<0.001.

Figure H.9: Group Relations Conditional on ST Party Vote Share and % STs



Source: REDS 2006/9. NCAER. The gure shows the average marginal impact of ST and ST and Women's quotas on the probability that respondents rate interactions with members of other castes as easy conditional on the proportion of Scheduled Tribes in the village. The shaded areas around the lines represent 95 percent con dence intervals. Estimates are reported in Column 1 of Table H.18.

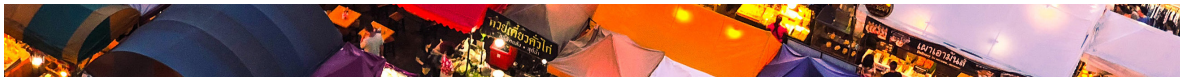


Table H.18: Effect of Quotas Conditional on Political Mobilization

	Interacting With Other Castes in Public is Easy	
	REDS	REDS
ST Quotas	−0.130⁺ (0.069)	−0.080 (0.051)
Women's Quotas	0.036 (0.025)	0.047 (0.029)
ST Proportion		
W. X ST Q.	0.044 (0.098)	−0.018 (0.078)
ST Q. X ST prop.	−0.134 (0.228)	
W. Q. X ST prop.	0.017 (0.195)	
W X ST Q. X ST prop.	−0.095 (0.297)	
ST party VS		0.003 (0.001)
ST Q. X ST party VS.		−0.015 (0.009)
W Q. X ST party VS.		−0.001 (0.001)
W X ST Q. X ST party. VS		0.002 (0.003)
Model	OLS	OLS
Sample	All	All
States	Random Assign. Only	Random Assign. Only
District FE	Yes	Yes
Period FE	No	No
Controls	Yes	Yes
Control Mean	0.703	0.703
R^2	0.128	0.130
Adj. R^2	0.125	0.126
Num. obs.	19881	19791
N Clusters	182	181

Source: REDS 2006/9, NCAER. Robust standard errors clustered at the village level in parentheses. Dependent variable is ease of interactions across castes. Proportion of ST- mobilizing parties is the sum of the BSP, CPI, CPI-Marxist, and JMM parties in the state assembly (vidhan sabha). ST-mobilizing parties defined as those that explicitly mention the cause of STs in their manifesto and reach at least 5% vote share in national elections. The sample includes all respondents. States are included that implement women's reservations as-if randomly. Controls include familial landholding, grandparents' education, individual birth cohorts, prior quotas, and the proportion of Scheduled Castes in the village. ⁺p<0.1; *p<0.05; **p<0.01; ***p<0.001.

BU Global Development Policy Center

Boston University
53 Bay State Road
Boston, MA 02215

gdp@bu.edu
@GDP_Center
bu.edu/gdp

HUMAN CAPITAL INITIATIVE

The Human Capital Initiative (HCI) is a research initiative at Boston University Global Development Policy Center. The GDP Center is a University wide center in partnership with the Frederick S. Pardee School for Global Studies. The Center's mission is to advance policy-oriented research for financial stability, human wellbeing, and environmental sustainability.

www.bu.edu/gdp