Exclusion Before Elections: How Faulty Voter Lists Disenfranchise Women in India

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Abstract

Faulty voter lists raise concerns about the health of democracy: incomplete lists effectively disenfranchise eligible adults, while inaccurate lists containing errors and deadwood potentially open the door to voter fraud. Yet we know little about the quality of voter registers outside of the U.S. Using two full village censuses and voter list annotations, I investigate the completeness and accuracy of voter list in India, the world's largest democracy. I find that voter lists simultaneously exhibit under-enrollment of eligible adults as well as deadwood. Women and young adults were the most likely to be unenrolled. By contrast, income, religion, and caste identity were uncorrelated with voter registration. I show that the perverse incentives faced by street-level bureaucrats in charge of maintaining voter lists are likely to blame for growing deadwood on the register and, as a consequence, for rising under-enrollment. In addition, I provide evidence that patri-local marriage norms, together with the hyper-local nature of voter lists, can explain at least some of the gender gap in enrollment.

1 Introduction

Voter lists form the backbone of election administration. Faulty voter lists, consequently, raise concerns about the integrity of democratic elections. On the one hand, the absence of eligible adults from the voter list prevents them from casting a ballot on election day,

therefore raising the specter of disenfranchisement (Piven and Cloward, 1989; Bentele and O'Brien, 2013; Fraga et al., 2023).[1] On the other hand, the presence of faulty entries, or "deadwood," on the voter list may give rise to fears of voter fraud, in the form of unauthorized individuals casting a vote (Ansolabehere et al., 2008; Stewart et al., 2016). Indeed, in recent years a common strategy of election losers around the world – from Donald Trump in the U.S. to the Congress Party in India to the military junta in Myanmar – has become to assail the quality of elections in order to justify their loss (or, in the extreme case of Myanmar, their coup d'etat), often claiming either widespread disenfranchisement of supporters or ubiquitous voter fraud by the winning side.[2] In turn, trust in elections worldwide is low, with less than half of all respondents to the most recent round of the World Values Survey expressing confidence in elections (Kerr et al., 2024).

Accurate voter lists, therefore, should be both normatively and practically desirable for any democracy. But while the question of who is (un)registered has generated considerable research in the U.S. (see, for example, Rosenstone and Wolfinger, 1978; Piven and Cloward, 1989; Rosenstone and Hansen, 1993; Ansolabehere and Hersh, 2012; Nickerson, 2015; Pryor et al., 2019), we know relatively little about the extent of voter registration and the quality of voter lists in other countries.[3]. That is despite the fact that like the U.S., most countries worldwide rely on active voter registration, meaning the onus of registering is on the individual (Schumacher and Connaughton, 2020), opening up the possibility of under-enrollment.[4]

[1] This is particularly the case if registered adults are systematically different from unregistered adults (Rosenstone and Wolfinger, 1978; Piven and Cloward, 1989). Systematic difference could be either driven by political elites who purposefully want to exclude non-supporters (Piven and Cloward, 1989; Bentele and O'Brien, 2013; Fraga et al., 2023) or by differences in resources such as time, knowledge, or transportation that are often necessary for registration (Alvarez et al., 2007; Rugeley and Jackson, 2009; Braconnier et al., 2017).

[2] See, for example, "Trump falsely claims 'millions of people who voted illegally' cost him popular vote" (CNN, November 11, 2016); "Rigging of polls claim: Congress to launch 'voter awareness' processions in Maharashtra" (The Hindu, June 7, 2025); "Myanmar election: No evidence fraud in 2020 vote, observers say" (BBC, May 17, 2021).

[3] Notable exceptions include Rosenblatt et al. (2012) and Braconnier et al. (2017)

[4] Active enrollment stands in contrast to passive, or automatic or compulsory registration, where the administration is in charge of enrolling newly eligible or newly settled voters based on information collected for population registers. Under-enrollment here means that (at least some) individuals who are eligible to vote under the law are not registered on the voter list.

This article extends research on the quality of voter lists to India. India's elections are regularly lauded as the largest democratic exercise in the world, but while politician conduct and voter turnout receive intense scrutiny during and after elections, we know relatively little about the extent of voter registration in the country. I investigate the quality of voter lists in Uttar Pradesh, India's most populous state which is home to almost 250 million people. I rely on unique data collected just after the 2022 state elections that enumerates the entire adult population of two villages in Uttar Pradesh and annotates the official voter lists – called electoral rolls in India – for both locations. The village censuses allow me to establish the extent of (under-)enrollment among eligible adults, while the voter list annotation reveals the amount of deadwood on the lists.

I find that both villages simultaneously exhibited considerable under-enrollment of eligible adults as well as deadwood on the voter list. More than one quarter of adult residents was not registered to vote across both locations, despite being legally eligible. At the same time, more than 9 percent of entries on the electoral rolls were confirmed to be deadwood, either because the person had migrated or was deceased, or because of administrative errors. Another 17 percent of names on the list could not be verified. Using data from a larger voter survey that sampled from the official voter lists across 128 villages and towns in Uttar Pradesh, I also find evidence that this extent of deadwood is comparable across other locations in the state. A closer analysis reveals that women and the young are the most likely to be unenrolled; and female names on the voter list are more likely to be obsolete. By contrast, education has a limited association with registration status, while income and ethnic identity are uncorrelated with enrollment. I trace the reason for the low quality of voter lists to the perverse incentives that street-level bureaucrats in charge of maintaining voter rolls face. In addition, I show that the gendered nature of under-enrollment and deadwood likely stems from patri-local marriage norms common across much of India.

Importantly, I draw attention to a previously overlooked phenomenon: deadwood on the voter lists masks – and in fact, encourages – under-enrollment of eligible adults in India.

Observers and researchers (as well as election administrators and politicians) regularly assess the extent of voter enrollment by comparing the total number of names on the electoral rolls to population estimates of eligible adults (see, for example, Retnakumar, 2009; Roy, 2019; Retnakumar and Kurup, 2021). However, if voter lists contain considerable deadwood, as my findings suggest, then any analysis that evaluates aggregate population estimates against total enrollment numbers will *underestimate* the extent of under-enrollment. Critically, monitoring mechanisms meant to ensure the quality of the of voter lists in India are almost entirely based on such aggregate analyses. When the voter registration process breaks down, these mechanisms are ill-equipped to catch errors, and in fact set perverse incentives for the grassroots officers in charge of verifying the list.

This article makes several important contributions. First, it contributes to both the literatures on electoral administration and political participation by extending the investigation of voter registration to India. The study of voter registration processes and the potential for disenfranchisement have received relatively little attention outside of the U.S. context.[5]

Second, by highlighting high levels of under-enrollment of eligible adults, this article raises important questions about the inclusiveness and health of Indian democracy. While journalists and scholars have posited that the country's democracy is backsliding, based on instances of crackdowns on the media, threats to freedom of speech, and discrimination against minorities (Alizada et al., 2021; House, 2023; Tudor, 2023), high rates of voter turnout and relatively free and fair elections have been touted as signs of democratic resilience (Mitra, 2016; Verma, 2023; but see Das, 2024). Yet, arguably, faulty voter lists are a challenge both to the integrity of elections as well as participation rates.

Third, this article provides the first-of-its-kind micro-level data that enumerates two entire villages, and compares their actual populations to the names listed in the electoral roll. In doing so, the data reveals the pitfalls of relying on aggregate numbers to evaluate the completeness and accuracy of electoral rolls.

[5] Notable exceptions include Rosenblatt et al. (2012) and Braconnier et al. (2017).

The remainder of this article is structured as follows. Section 2 reviews existing research on the quality of voter lists. Section 3 provides an overview on voter registration in India. Section 4 introduces the data used in the analysis, while section 5 shows results related to both the completeness and accuracy of electoral rolls. Section 6 traces the origins of low-quality lists and their gendered nature. Section 7 concludes.

2 Why the Quality of Voter Lists Matters

Voting is the most fundamental act of political participation in a democracy, as well as the main mechanism for holding officials accountable (Aldrich, 1993; Lijphart, 1997; Przeworski, 1999). But only *registered voters* get to participate in elections. Voter lists – that is, the official list of those who are registered to vote – therefore, form the backbone of election administration. In many ways, they can be an indicator of the health and inclusiveness of democracy.

There are two distinct dimensions of the quality of voter lists that may affect our evaluation of democratic quality: their completeness and their accuracy (James and Garnett, 2024). Problems with completeness mean that some eligible adults are excluded from the voter list (type II error, or false negative); problems with accuracy mean that faulty entries are contained in the register (type I error, or false positive).

In order to be *complete*, voter lists need to contain the names of all eligible adults to ensure that no one is deprived of their right to vote (James and Garnett, 2024). Those who are not registered are effectively disenfranchised, meaning they cannot cast a ballot on election day (Piven and Cloward, 1989; Fraga et al., 2023). Any disenfranchisement of eligible adults runs counter to the democratic ideal (Piven and Cloward, 1989; Keyssar, 2000). In addition, low levels of registration also necessarily lead to low turnout, where turnout is measured as the share of eligible adults casting voting on election day (Rosenstone and Wolfinger, 1978; Rosenstone and Hansen, 1993; Highton and Wolfinger, 1998; Highton, 2004). In as much

as high levels of popular participation are a sign of a healthy democracy, incomplete voter registers that lower participation therefore impede democracy (Blais et al., 2004; Diamond and Morlino, 2004; Blais, 2010).

In addition, a complete voter list should also be equitable: who is (and is not) included should not depend social identities such as class, education, income, gender, race, religion, etc. (James and Garnett, 2024). Vote equality – that is, the principle of "one person, one vote" – is essential to most modern understandings of democracy (Dahl, 1956, e.g.,). If some groups are systematically excluded from registering, therefore, this undermines democracy (Piven and Cloward, 1989; Bentele and O'Brien, 2013; Fraga and Miller, 2022; Fraga et al., 2023). In addition to raising normative concerns, systematic exclusion from voting also has the potential to change the outcome of elections – if those who are excluded would have voted differently than those who did participate – and, therefore, to make democracy less representative (Piven and Cloward, 1989).[6]

Finally, while completeness tells us who is (or is not) included in the voter list, *accuracy* reflects "the extent to which entries have no false, erroneous or missing data on the electoral register" (James and Garnett, 2024, p. 281). A highly accurate register, therefore, contains no faulty entries, or "deadwood" (Ansolabehere and Hersh, 2010). The main reason why voter lists may contain deadwood is incomplete information on part of the administration regarding voters who have died or moved away, while administrative errors or outright fraud seem to account for a much smaller faction of faulty entries (Ansolabehere and Hersh, 2010; James and Garnett, 2024; Pettigrew and Stewart, 2024). Inaccurate voter lists hinder the identification of eligible voters at the polls, potentially disenfranchising individuals (Ansolabehere and Hersh, 2010; Merivaki, 2020; Huber et al., 2021). They also open the door to voter fraud – or at least are perceived to do just that (Ansolabehere et al., 2008; Ansolabehere, 2009; Stewart et al., 2016). For example, if voters are registered in more than one location, they might end up trying to cast two ballots on election day; or ineligible

[6] But even if allowing the unregistered to vote would not change the outcome, participation in and of itself should be normatively desirable (Przeworski, 2003).

individuals might attempt to vote under the name of obsolete entries on the list.

Completeness and accuracy are potentially independent dimensions of voter list quality: A voter list can be complete, that is, include the names of all eligible individuals; but be highly inaccurate, in that all entries contain errors, or the register includes large amounts of deadwood. Conversely, a voter list may be very incomplete, excluding huge shares of eligible voters; but contain highly accurate information about the voters that are registered (and no deadwood).

Completeness and accuracy are sometimes portrayed as two conflicting goals. Those concerned with voter list accuracy worry that a focus on completeness in registration will allow ineligible adults to register; will increasingly accumulate deadwood on the voter lists (if lists are not purged regularly); and therefore will incentivize voter fraud (Ansolabehere et al., 2008; Bentele and O'Brien, 2013; Stewart et al., 2016). In turn, those concerned with voter list completeness fear that stringent accuracy requirements and regular purges of the voter list will disenfranchise eligible adults (Bentele and O'Brien, 2013; Huber et al., 2021). Balancing access with accuracy, therefore, is the main trade-off electoral management bodies face (Merivaki, 2020).

2.1 The Crux of Complete Voter Registration

Scholars distinguish two archetypes of voter registration systems, namely passive and active enrollment. Under passive enrollment regimes, eligible adults are registered by the state in the voter list when they reach voting age (or move to a new jurisdiction). Countries usually draw on civil registers and other data sources to automatically enroll voters in this fashion, without individuals having to spring into action. Examples of passive registration states include Argentina, Australia, Germany, or Sweden (Rosenberg and Chen, 2009; James and Garnett, 2024). For example, in Germany, eligible adults are automatically added to the voter register in their current municipality based on their official residential address listed in municipal registers.

By contrast, active voter registration requires eligible adults to take action to have their name added to the voter list. At the very least, this will involve filling out a form; most likely it will also require a proof of identity, proof of address, proof of eligibility, or other documentation (Rosenberg and Chen, 2009; Bentele and O'Brien, 2013). The U.S. is perhaps the best-researched case of active voter registration (e.g., Rosenstone and Wolfinger, 1978; Fleury, 1992; Highton, 2004; Nickerson, 2015). However, most countries worldwide put the onus of registration on citizens (Schumacher and Connaughton, 2020; James and Garnett, 2024).

Passive enrollment tends to produce higher registration rates than active enrollment (Rosenberg and Chen, 2009; James and Garnett, 2024). The reason is thought to be the costs active enrollment imposes on eligible adults: individuals have to locate information, fill out forms, provide documentation, travel to government offices, and so on. "Indeed, registration is often more difficult than voting" (Rosenstone and Wolfinger, 1978, p. 22). Because returns to voting – and by extension, to registering – are generally low, even small costs will have large deterrent effects, at least to some voters (Aldrich, 1993; Highton, 2004; Alvarez et al., 2007; Nickerson, 2015).

Registration costs can take many different forms. At the very least, registration requires a minimal amount of time and effort on part of the individual who has to spring into action, locate information, and fill out a form. Costs might extend beyond this, by requiring eligible adults to travel to far-away locations, sometimes well ahead of the actual election day. Research shows that earlier closing dates are associated with lower registration rates, since elections (and therefore registration requirements) are less salient weeks before election day. Early registration closing dates, therefore, impose higher costs (Rosenstone and Wolfinger, 1978; Fleury, 1992; Highton, 2004; Braconnier et al., 2017). Having to travel long distances in order to register also drives up enrollment costs (Rosenstone and Wolfinger, 1978; Brady and McNulty, 2011; Braconnier et al., 2017). By contrast, registration systems that allow individuals to enroll at their doorstep, online, or while performing other routine tasks, such

as getting a driver's license, lower the costs associated with getting on the voter list and improve registration rates (Highton and Wolfinger, 1998; Nickerson, 2015; Braconnier et al., 2017). Registration might require documentation, such as proof of identity and/or proof of residence; if individuals do not already possess such documents, these requirements add more costs (Highton, 2017; Fraga and Miller, 2022). In the past, perhaps the most notorious costs associated with registration were "poll taxes," i.e., payments required to enroll, and literacy tests implemented in the U.S. South after the Civil War, which have since been eliminated (Rosenstone and Hansen, 1993; Keyssar, 2000; Highton, 2004; Bentele and O'Brien, 2013).

Not all individuals are equally affected by registration costs and, therefore, not everyone is equally likely to enroll. The young are less likely to be on the voter list, often simply because they have had fewer opportunities to register in their lives (Highton, 2004; Ansolabehere et al., 2012). Similarly, those who move frequently are less likely to be registered because in many countries, including the U.S., individuals have to update their registration when they move to a new jurisdiction. A recent move simply means the individual has had fewer opportunities to register at their new place of residence (Highton, 2004; Ansolabehere et al., 2012; Braconnier et al., 2017; Huber et al., 2021).

Besides age and mobility, there are other potential differential effects of registration costs. Education might help individuals navigate the bureaucratic process of registering to vote, as well as impart them with political interest to want to register in the first place (Rosenstone and Wolfinger, 1978; Jr, 1986; Piven and Cloward, 1989; Alvarez et al., 2007; Braconnier et al., 2017; but see Nagler, 1991; Highton, 1997). Especially if registering requires traveling long distances and/or applying during regular office hours, the poor might be less likely to enroll because they cannot afford the journey or to miss working hours (Rosenstone and Wolfinger, 1978; Brady and McNulty, 2011; Braconnier et al., 2017; Harris, 2021; Fraga and Miller, 2022). Finally, racial minorities have been shown to be disproportionately affected by registration costs. Historically, many outright costs associated with enrollment in the U.S., such as poll taxes and literacy tests, were explicitly aimed at disenfranchising Black (and

poor white) citizens (Piven and Cloward, 1989; Keyssar, 2000). More recently, scholars have shown that racial minorities are more exposed to higher registration costs in the U.S., in the form of earlier closing dates, more stringent residency requirements, or stricter ID demands (Huber et al., 2021; Fraga and Miller, 2022; Fraga et al., 2023).

Estimating the extent of voter registration is difficult for several reasons. On the one hand, pinpointing the universe of all eligible adults–the denominator in any calculation of registration rates–is impossible in the absence of perfectly complete and publicly available civil registers (McDonald and Popkin, 2001; Nyhan et al., 2017). On the other hand, the number of correctly registered adults–the enumerator–is difficult to gauge in the absence of comprehensive information on enrollment numbers and on the accuracy of voter lists. In the U.S., for example, voter lists are maintained at the state level, and no national voter file exists; in addition, it is difficult to verify register accuracy (see, for example, Ansolabehere and Hersh, 2010). In the absence of definitive voter registration information, scholars have used survey data to estimate enrollment rates. However, ample research shows that survey respondents over-report turnout (see, for example, Ansolabehere and Hersh, 2012), and there is evidence that respondents may overstate registration rates as well (see, for example, Bratton, 1999). Surveys might suffer from selection bias as well (McDonald, 2007); for example, the unregistered may be more likely to refuse partaking. Others have relied on comparing aggregate numbers of registered voters to population estimates to gauge enrollment rates (see, for example, Rosenberg and Chen, 2009; Roy and Sopariwala, 2019). However, as I will discuss in more detail later, any inaccuracies in voter lists will necessarily distort such estimates.

In the U.S., perhaps the most-used source of information on registration rates is the U.S. Census Bureau, which estimates enrollment based on the Current Population Survey (CPS).[7] According to the CPS, at least 73.6 percent of eligible adults were registered to vote

[7] The Census Bureau relies on self-reports of registration in the Current Population Survey's Voting and Registration Supplement, which is administered to all adults 18 years or older across approximately 54,000 households in November of every second year. See Current Population Survey, November 2024 Voting Supplement File.

in the 2024 presidential election (Bureau, 2025).[8] Other studies arrive at similar estimates. A verification exercise that matched the 2012 American National Election Studies (ANES) face-to-face survey with commercially available voter files found that 78 percent of the sample was registered correctly (Jackman and Spahn, 2021). Ansolabehere and Hersh (2010)'s verification exercise of commercially available voter files found that in 2010, about 169.3 million entries were likely correct across all U.S. states.[9]

According to the CPS, Black and Hispanic citizens were considerably less likely to be registered in 2024, at 70.1 percent and 61.5 percent, than were whites (75.1 percent). Other studies corroborate this racial bias in voter enrollment. Cross-referencing ANES data with voter files, Jackman and Spahn (2021) found that 75 percent of white respondents, but only 58 percent of Black respondents and 53 percent of Hispanic respondents were registered correctly. Another 10 percent of white, 18 percent of Black, and 20 percent of Hispanic respondents were listed at an incorrect address. In addition, research shows that both Blacks and Hispanics are more likely to live in states with high registration costs (Bentele and O'Brien, 2013; Fraga et al., 2023), and that racial minorities are more likely to be flagged as movers–and therefore, as ineligible to vote–than whites (Huber et al., 2021).

Education is positively correlated with voter registration in the U.S. According to the CPS, 82.9 percent of those with a college degree were enrolled in 2024, but only 63.4 percent of citizens with a high school degree were (see also Alvarez et al., 2007). Age, too, is associated with enrollment status. Only 58.3 percent of 18- to 24-year-olds were registered, but 68.4 percent of those between 25 and 34 years were, based on CPS data. Registration rates were even higher for cohorts between 35 an 44 years (73 percent), 45 and 64 years (77.2 percent), or those 65 year and older (80.3 percent) (see also Highton, 2004; Ansolabehere et al., 2012; Jackman and Spahn, 2021). In a reversal of earlier trends (Verba et al., 1978;

[8] In 2024, 73.6 percent of eligible adults said they were registered to vote, while 14.5 percent either were not asked if they were enrolled or did not answer the question. In the same survey, 11.9 percent of eligible adults indicated they were definitely not on the voter list.

[9] Calculating a registration rate from this enrollment number is not entirely straightforward, as it requires constructing a denominator that excludes from census figures on the adult population all ineligible individuals (such as non-citizens and felons) (McDonald, 2007).

Burns et al., 2001), women have been both more likely to register as well as more likely to vote than men, with 74.9 percent of women enrolled compared to 72.2 percent of men, according to the CPS.

In the U.K., where registration is also active but assisted by an annual canvass, the election commission conducts accuracy and completeness studies of the electoral register.[10] As of December 2022, the commission estimates that about 86 percent of eligible adults in Great Britain were included in the voter list, translating to "potentially as many as 8 million people [who] are not correctly registered at their current address" (Commission, 2023). According to the commission, registration rates have been rising slightly, up from 85 percent in 2014 and 82 percent in 2011. As in the U.S., the young were less likely to be registered, with only 67 percent of 20- to 24-year-olds enrolled, but 84 percent of those between 35 and 44 years, and 96 percent of those 65 years or older. Residential mobility,too, was associated with lower registration rates in the U.K., where only 39 percent of those who moved within the past year were enrolled, but 72 percent of those with residential tenure between and and two years, and more than 91 percent of those who had lived at their address for at least 5 years. Racial minorities were significantly less likely to be registered, with 80 percent of Asians and 72 percent of Blacks enrolled compared to 87 percent of whites. As of 2022, registration rates for women were marginally higher than for men for the first time (Commission, 2023).

In France, where the state enrolls those who newly turn 18 but where anyone who moves has to update their registration, about 93 percent of adults were thought to be enrolled in 2012 (Braconnier et al., 2017, p. 586), although less than 88 percent of those were registered correctly while the rest was registered at an old address (Braconnier et al., 2016). In a large-scale registration drive across 10 French cities, Braconnier et al. (2017) detected inequality in registration, with younger, male, immigrant, and non-French speaking citizens less likely to be registered.

[10] See U.K. electoral commission website, "Electoral Registration Research".

In developing democracies, where state capacity is often lower and population registers and other data sources on citizens are frequently less complete, information on voter registration numbers is difficult to come by. The costs of voter registration are likely even *higher* in developing countries because poverty and poor infrastructure make traveling even short distances difficult (Harris et al., 2021). In addition, complex registration procedures and a lack of voter education may hinder enrollment in developing democracies (Pallister, 2017). Registration in many developing democracies is active Schumacher and Connaughton (2020), and enrollment rates are thought to be both low and unequal in places as diverse as Kenya (Harris et al., 2021), Zambia (Bratton, 1999), Guatemala, and El Salvador (Pallister, 2017).

2.2 The Crux of Voter List Accuracy

Accurate voter lists contain no erroneous entries. Consequently, the extent of a list's accuracy is measured as the share of fully correct entries on the list (Commission, 2023; James and Garnett, 2024).

There are two distinct types of inaccuracies in voter lists we might worry about, namely errors in legitimate entries and deadwood. On the one hand, legitimate entries might contain errors in some data fields, such as "errors in names (such as misspelling), incorrect dates of birth, nationality, eligibility flags, address or registration dates" (James and Garnett, 2024, p. 281).[11] A registered voter whose entry contains errors might be subject to additional scrutiny at the polls; be turned away by officials on election day; or have their registration deleted entirely (Merivaki, 2020; Huber et al., 2021). Faulty entries, therefore, may disenfranchise eligible adults; in the extreme, they may translate into non-enrollment. Errors in legitimate entries may stem from individuals filling out forms incorrectly (Shino et al., 2020); from mistakes made during data entry and processing (Kim et al., 2020; Shino et al., 2020); or from faulty data matching procedures with outside data (Huber et al., 2021). State capacity may play a role in voter list accuracy, with smaller and less professionalized

[11] The exact data contained in a voter's registration will vary by country and, within the U.S., by state.

bureaucracies struggling more to keep lists accurate (Merivaki, 2020; Morse, 2023).

The second type of inaccuracy a voter list may contain is deadwood, that is, obsolete entries that do not correspond to a person living in the jurisdiction (Ansolabehere and Hersh, 2010). How does deadwood get on the voter lists? The most likely reason for obsolete entries is residential mobility (Stewart, 2019; Pettigrew and Stewart, 2024). In a decentralized, active voter registration system – such as the U.S., France, or India – an individual has to *re-register* every time she moves. If a registered voter moves out of a jurisdiction without alerting authorities, the entry becomes obsolete, creating deadwood. At constant mobility rates, deadwood in any given jurisdiction will accumulate over time (Ansolabehere et al., 2012). A second source of deadwood are voters who pass away. In active registration systems that are not linked to death registers, authorities have no way of determining which voters may have died and should therefore be deleted from the lists (Pettigrew and Stewart, 2024). A third potential source of deadwood are administrative errors, with data entry or merging errors potentially creating obsolete or duplicate entries (Kim et al., 2020). Finally, outright fraud might be another reason for deadwood. However, the evidence for both administrative errors and fraud is limited (Kim et al., 2020).

Deadwood is often said to open the door to voter fraud: "Duplicate and obsolete records allow for the possibility that people vote multiple times in several places" (Ansolabehere and Hersh, 2010, p. 3) or that ineligible adults cast a ballot by impersonating a now-deceased person (Levitt, 2007). Even though rigorous evidence of actual voter fraud is exceedingly rare (Levitsky, 2007; Eggers et al., 2021), the mere specter of rigging has led to heated ideological debates and the implementation of stringent ID requirements (Ansolabehere et al., 2008; Bentele and O'Brien, 2013; Stewart et al., 2016). Bentele and O'Brien (2013) document a significant rise in restrictive voter provisions between 2006 and 2011, driven mostly by Republicans and justified as preserving election integrity. Since then, even more states have tightened ID requirements (Fraga et al., 2023). Courts largely supported these measures, based on the assumption that the mere *fear* of voter fraud will negatively impact democracy:

"Voter fraud drives honest citizens out of the democratic process and breeds distrust of our government. Voters who fear their legitimate votes will be outweighed by fraudulent ones will feel disenfranchised" (*Purcell v. Gonzalez*, 127 S. Ct. 5, 7 (2006), cited in Ansolabehere et al. (2008)).

There are two main challenges in maintaining accurate voter lists, namely decentralization of registers and a lack of data for verification purposes. For one, where voter lists are highly decentralized – such as in the U.S., France, or India – no one "master list" is maintained; instead, many local-level lists exist in parallel. Accordingly, election officials lack the ability to effectively track voters who move from one jurisdiction to another (Ansolabehere and Hersh, 2010; Merivaki, 2020; Huber et al., 2021; Pettigrew and Stewart, 2024). Different U.S. states have made efforts to connect their state-wide lists to outside data sources, such as Department of Motor Vehicle (DMV) or United States Postal Service (USPS) records, but a national list remains elusive (Shaw et al., 2015; Huber et al., 2021; Pettigrew and Stewart, 2024). Second, many countries – including the U.S., but also most developing democracies – lack a definitive civil register that could serve as a source of data verification for voter enrollment purposes (Bratton, 1999; Ansolabehere and Hersh, 2010; Pallister, 2017; Harris et al., 2021; Huber et al., 2021). By contrast, countries such as Germany, which base their voter lists on civil registries, tend to have cleaner voter lists as they are better able to track residential moves and deaths (Rosenberg and Chen, 2009; Officer, 2025).

There are few studies that evaluate the accuracy of voter lists, mostly because this kind of verification exercise is difficult to do. In perhaps the most extensive such study to date, Ansolabehere and Hersh (2010) evaluated the data offered by a commercial vendor which collects state-level voting registers and matches them with other public records, such as the National Change of Address database maintained by the post office and the Social Security Death Index, producing the closest to a national voter file for the U.S. They find that less than 4 percent of names on the voter list are likely or probably deadwood;[12] that about 1

[12] Likely or probable deadwood on the voter list consists of registrants who have not voted in a very long time, have moved elsewhere and re-registered, or are thought to be deceased.

percent of all voters on the register are likely deceased; and that on average, 1.5 percent of all names on a state's voter list likely are duplicates (p. 8). Comparing reported numbers of registration removals to independent measures of death and migration rates, Pettigrew and Stewart (2024) showed that counties are better at removing deceased voters from the list than those who move away, likely because officials can draw on better data to confirm who has died than to confirm who migrated. Huber et al. (2021) evaluated the quality of Wisconsin voter lists, specifically whether the lists correctly identified registered voters who had moved away. Wisconsin was assisted by the nonprofit Electronic Registration Information Center (ERIC) in its voter list maintenance. In October 2017, ERIC flagged nearly 260,000 voters on the Wisconsin register as potential movers, based on matching voter list data with DVM and USPS data–the first step in a process that may eventually lead to the deletion of the flagged entry. The authors collected voter file data on more than 60,000 of those flagged entries after Winsonsin's 2018 elections, and estimated that at least 3.5 percent of these voters were incorrectly suspected of having moved; and that racial minorities were disproportionately more likely than whites to be flagged as potential movers.

In the U.K., the election commission reported that voter lists were 88 percent accurate as of 2022, up from 85 percent in 2011 (Commission, 2023). That translated to an estimated 5.3 million to 6.2 million inaccurate entries on the register in 2022. An earlier report found that in 2011, the accuracy of register entries was higher for whites (98 percent) than racial minorities (95 percent); for those with longer tenures at their current address (96 to 98 percent) than those who moved within the past year (94 percent); for adults aged 20 or older (98 percent) compared to those under 20 (88 percent) (Rosenblatt et al., 2012).

3 Voter Registration in India

In India, voter registration is active, meaning only those individuals whose name is contained in the voter list – called *electoral roll* in India – are allowed to cast a ballot on election day.[13] Voter registration and list maintenance for all national and state elections are the purview of the Election Commission of India (ECI).[14] Voter lists are decentralized in India: electoral rolls are maintained for each Assembly Constituency (AC), that is, the electoral constituency for state elections.[15] However, the electoral roll for an Assembly Constituency is *prepared* at the local level, more specifically, at the level of the polling station. A polling station is the physical location where all voters residing in a clearly defined catchment area will cast their vote on election day, usually a government school.[16] Together, the voter lists for all polling stations contained in an Assembly Constituency make up the electoral roll for the AC. Between 2016 and 2022, the average Indian Assembly Constituency contained over 260 polling stations, meaning that its electoral roll was made up of more than 260 parts.[17] As in the U.S., Indian voters have to re-register when they move; because voter lists are prepared at the polling-station-level, individuals have to update their registration when they move

[13] The legal provisions for voter eligibility are laid out in Article 326 of the Indian Constitution, which prescribes universal adult suffrage. Accordingly, any individual who is both a legal citizen of India and 18 years old as of the qualifying date and not legally disqualified from voting is eligible to register as a voter at her usual place of residence. Currently, there are four qualifying dates per year, namely January 1, April 1, July 1, and October 1 (see (of India, 2023, p. 46)). Those who may be precluded from voting include incarcerated individuals as well as persons found to be "not of sound mind." The voting age was originally 21; the 61st Amendment to the Indian Constitution reduced the voting age to 18 in 1989.

[14] By contrast, local-level elections, for village councils (*panchayats*) and municipal councils, are managed by the State Election Commission (SEC) for each state. Some SECs rely on the ECI's voter lists, while others create their own.

[15] *Assembly Constituencies* (ACs) are the electoral districts from which exactly one representative is elected to the state parliament, called *Legislative Assembly* or *Vidhan Sabha* in India. By contrast, Parliamentary Constituencies (PCs) are the electoral districts from which exactly one representative is elected to the national parliament, called *Lok Sabha* in India. India has a total of 4,120 ACs and 543 PCs, with Assembly Constituencies nesting neatly into Parliamentary Constituencies. Accordingly, the voter list for a PC is made up of the voter lists of the contained ACs.

[16] As per directions of the ECI, any one polling station should not have more than 1,500 voters registered in its electoral roll, although the limit under the law is 2,000 voters (of India, 2023, p. 51). The ECI also aims to locate polling stations in a manner that does not require any voter to walk farther than 2 kilometers to the locations.

[17] The number ranged from an average of 19 booths per constituency in Sikkim in the North East to an average of 437 polling stations per constituency in Bihar in the Indian heartland.

from one polling station catchment area to another, even if both locations are within the same village or town.

While it ultimately falls on voters to register themselves, the ECI has over the years taken an increasingly active role in voter enrollment (Singh and Roy, 2019; Quraishi, 2019, p. 133-134). The ECI conducts regular revisions of the voter lists, during which new applicants are added, those who are deceased or have moved away are deleted, and any other necessary changes to the roll are made. Revisions are made at least once a year, and additional revisions are performed before elections (of India, 2023, chapter 9). In order to help to facilitate enrollment, the ECI has introduced "Booth-Level Officers" (BLOs) – low-level government employees in charge of maintaining the voter list of one specific polling station. Each polling booth (and therefore, each voter list) has one Booth-Level Officer permanently assigned to it; ideally, the BLO resides herself in the catchment area of that polling station (of India, 2023, p. 6-7; Quraishi, 2019, p. 71). The BLO is expected to make regular field visits to the area during which she conducts door-to-door canvasses, assists eligible adults in filling out the necessary paperwork to get on the rolls, and updates information on those who moved away or passed away.

According to the ECI, India's electoral rolls ahead of the 2024 national elections contained almost 969 million names, making it by far the largest election in the world.[18] As in the U.S., active enrollment requirements and the decentralized nature of voter lists make it difficult to assess their quality. A limited number of studies have tried to evaluate the *completeness* of Indian voter lists, with varying results. Joshi et al. (2023) used survey data from 13 polling stations across 4 North Indian states and found that 91 percent of households across locations had at least one member enrolled in the voter list, largely independent of the household's ethnic identity or class. However, the study did *not* investigate the registration rate of individuals within households, nor look at individual predictors of registration. A 2015 report prepared by the NGO Janaagraha suggested that of around 3,200 adults surveyed

[18] See ECI, February 09, 2024, "Largest electorate for General Elections - over 96.88 crore electors registered across the country".

across 8 constituencies in Delhi, only 51 percent were registered to vote at their local polling station (while an additional 27.7 percent were registered at other polling stations in Delhi) (Pyle and Nair, 2015, p. 48). Voter registration might not be equitable in India across different demographic groups. By comparing the sex ratio of registered voters to that in the overall population, and assuming that all men were registered correctly, Roy and Sopariwala (2019) estimated that 21 million women were missing from the electoral rolls ahead of the 2019 national elections. Shariff and Saifullah (2018) found that the number single-voter-households on the electoral rolls of the state of Karnataka far outpaced the number of single-adult-households in the census. They posited that many of the single-voter-households probably have other, unregistered adults living at the home, concluding that "[i]t is likely that over 15 percent of all adults are either left out or excluded from voting lists in India," and that this share is likely much higher among Muslims than non-Muslims (p. 3). Finally, Das (2024) showed that the number of registered voters grew considerably less between the 2014 and 2019 general elections in constituencies with high shares of Muslim voters, consistent with the strategic deletion (or strategic under-enrollment) of Muslims.

There is little data on the *accuracy* of electoral rolls in India, either. Some comparisons of aggregate population estimates and voter numbers suggest that electoral rolls might be inflated. For example, Retnakumar (2009) compared census data on the adult population with registration numbers for all national elections from 1962 to 2004 and found over-enrollment for each election, with almost 21 million more voters enrolled in the voter lists in 2004 than eligible adults counted in the population (p. 144). A similar analysis for the state of Kerala concluded that in some years, the number of registered voters lagged behind the population estimates, while in others, it exceeded population estimates (Retnakumar and Kurup, 2021). Verma et al. (2019) used data from the 2009 National Election Study (NES), a nationally representative survey with more than 36,000 participants which sampled respondents from the official voter lists, to show that 15 percent of registered voters sampled had permanently

migrated away, and that a full 5 percent had died.[19] At least 20 percent of the sampled names of the voter lists, then, were deadwood. In its report, the NGO Janaagraha also tried to interview around 3,000 voters sampled from the Delhi voter lists, and found 32 percent of the entries to be deadwood, including 21 percent who had permanently migrated away and 11 percent whose address could not be tracked down on the ground (p. 38).[20]

Research also points out that migrants might be particularly likely to be omitted from the electoral rolls in India, because voter registration is location-bound and those moving to a new place might not want to or be able to register there (Kumar and Banerjee, 2017; Thachil, 2017; Gaikwad and Nellis, 2021; Verma et al., 2019). While anecdotal evidence claims that migrants – particularly those semi-permanent migrants who move for work but stay connected to their regions of origin, sometimes even leaving their immediate family behind there (Tumbe, 2018) – regularly travel home in order to vote,[21] current research suggests otherwise. Gaikwad and Nellis (2021) found that across migrant settlements in Delhi and Lucknow, migrants were less likely to be enrolled to vote in their hometown and to actually travel back to cast a ballot the further the hometown was from their new place of residence, and the longer they had lived in their new city. Verma et al. (2019) looked at Banda, a rural district in Uttar Pradesh with very high labor out-migration, in the wake of the 2019 election. They showed that polling stations where more labor migrants that normally reside elsewhere in the country were registered to vote recorded lower turnout than others, and noted that "some migrants did return to vote, but their numbers were minuscule compared to the total number of migrants." High costs of traveling home to vote, the loss of income associated with this travel, and the specter of losing one's job because of the absence are frequently cited as reasons why migrants do not go home to vote;[22] bureaucratic hurdles

[19] By comparison, only 6 percent of sampled subjects outright refused to participate in the survey.

[20] The report also noted errors in 7 percent of the legitimate entries on the list, including spelling mistakes in names or the wrong age (p. 39).

[21] See, for example, *The Hindu*, April 19, 2024, "Construction sector impacted in Bengaluru as immigrant workers travel to vote"; *The Hindu*, October 28, 2015, "The Bihari versus the bahari"

[22] See, for example, *The Indian Express*, April 24, 2024, "Work or vote? It's a choice no citizen should have to make", *BBC*, May 8, 2014, "Why India's migrants are unable to vote."

also often prevent them from registering to vote in their new place of residence (Gaikwad and Nellis, 2021; Kumar and Banerjee, 2017).

4 The Data

I empirically investigate the quality of electoral rolls in Uttar Pradesh, India's largest state. To do so, I collected innovative and unique data that enables me to evaluate both the completeness and the accuracy of voter lists. I conducted two full village censuses that enumerated every adult maintaining a homestead – and therefore being eligible to register – within the catchment area of the polling station and verified enrollment status using the official voter lists. This allows me to calculate registration rates and therefore the *completeness* of voter registration. I also annotated the entire voter list for both locations, determining the share of deadwood on the voter lists. I supplement this with administrative data from a larger survey across 128 polling stations in Uttar Pradesh that sampled from official voter lists to generate insights into the *accuracy* of voter lists in the state. Finally, I draw on interviews with a range of officials involved in the voter registration process, from a former Chief Electoral Officer of a North Indian state down to Booth-Level Officers in charge of the voter list for a single polling station, as well as on interviews with eligible adult residents of Uttar Pradesh to explain patterns of under-enrollment and deadwood.

4.1 Village Censuses

Home to an estimated 250 million people, the state of Uttar Pradesh has the largest number of registered voters in the country (around 154 million as of 2024[23]); it also sends the largest number of Members of Parliament (MPs) to the Lok Sabha of any state (80 out of 543) and is generally considered a bellwether for Indian national elections. To evaluate the completeness of voter registration in the state, I conducted two full villages censuses. During the census,

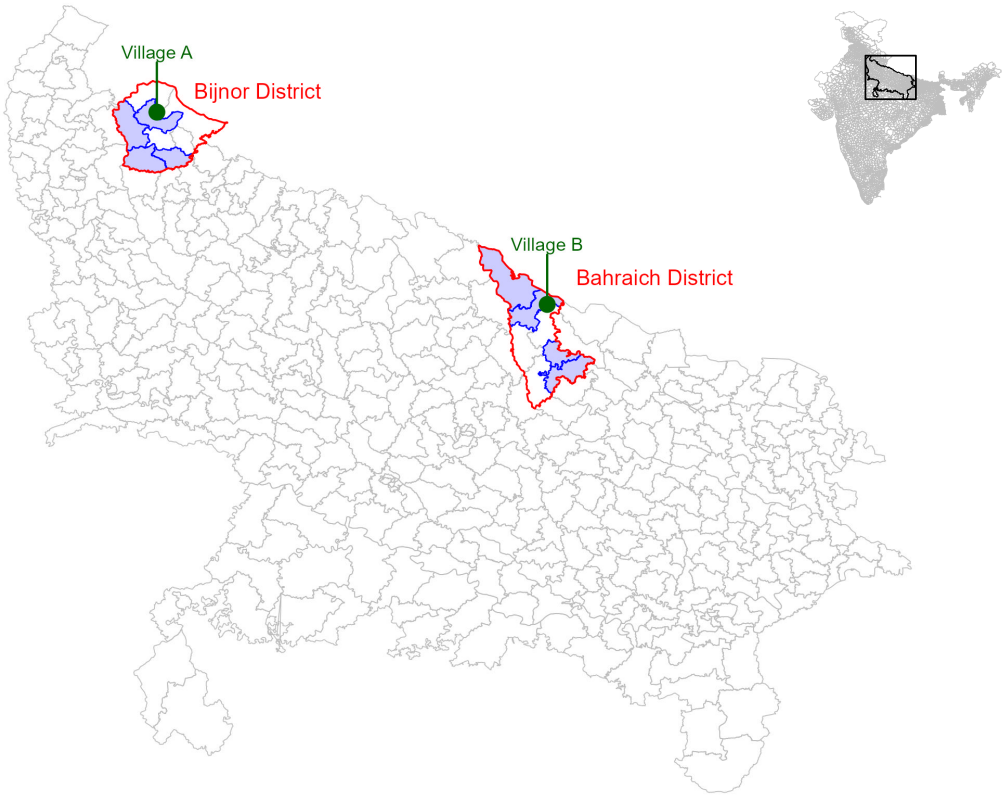
[23] See *Times of India*, June 3, 2024, "Final Figures: UP Records 6.92 percent Voter Turnout"

surveyors enumerated all adults 18 years or older that normally reside in the respective villages.[24] Because the voter survey that is used as a secondary data source in this paper was conducted in Bijnor and Bahraich district, I opted to survey one village each in these districts. I followed a multi-stage randomization process, where in each district, I randomly selected one of the four Assembly Constituencies in which the other survey had been conducted; and within that AC randomly chose one polling station. The catchment area for the selected polling stations formed the field sites for the census. Figure 1 shows the location of the two study villages on a map. Village A, is located in Nagina Assembly Constituency in Bijnor district; Village B is located in Nanpara Assembly Constituency in Bahraich District.

The survey was conducted in March 2022, just after the 2022 state elections had concluded in both districts. In each village, enumerators approached every household contained within the boundaries of the village and interviewed at least one respondent from within that household. From this interlocutor, enumerators collected information on the household, including religion, caste, and income; as well as information on each adult aged 18 years or older of the household, such as gender, age, marital status, and education. For each adult, investigators validated whether the individual was registered to vote by checking the person's information against the official electoral roll. If any adult within the household was not registered to vote, the team collected information on the reasons for non-enrollment as well. If no one was home at any particular house, enumerators tried again a few days later, or alternatively collected contact information for the residents from neighbors or the *pradhan* (village council president). Some families that stay away from the village for extended periods of time but still maintain a homestead in the location that they regularly visit were interviewed either at their second residence in a nearby town or by phone. In this fashion, enumerators tried to speak with at least one informant from every single house that is physically located within the village boundaries.

[24] I define any adult that "normally resides" within the area as those who maintain a physical homestead within the catchment area, independent of how many days they spend there per year. Because registration is location-specific in India, any individual who has a physical address within the catchment area is eligible to register to vote there.

Figure 1: Study Sites for Village Censuses and Voter Survey



4.2 Voter List Annotation

In each location, enumerators collected information on all names contained in the electoral roll. Indian voter lists contain the voter's name; their husband's or father's name; their age; their gender; a house(hold) number;[25] and their voter ID number. Using this information, interviewers tried to track down all persons listed in the roll. For individuals who were not encountered during the village census, we tried collecting information from family members; members of the village council; and/or notables within the village who are most likely to have information about others, including the village teacher and health worker.

[25] Indian voter lists contain a "house(hold) number," which not so much represents a physical address as it represents membership in a shared family or household. In reality, we found shared numbers to not very accurately indicate actual co-residence, but oftentimes to correspond to some type of (distant) familial relation.

Entries on the voter list were then classified into one of 3 categories. I marked those who were enumerated as part of the census as "correct entries." Among the remaining names, I distinguish between "definite deadwood" and "likely deadwood." *Definite deadwood* includes entries that have been identified as a) clerical errors, b) deceased individuals, or c) permanent migrants. Clerical errors usually took the form of duplicate entries, i.e., the same person being listed twice in the electoral roll for a location.[26] Individuals that were identified as having died by members of their family during the village census were also marked as confirmed deadwood. Finally, marriage norms across most of India prescribe both patri-locality as well as village exogamy for women, meaning that women marry outside of their native village and leave their natal home permanently to join their husband's family upon marriage (see, for example, Dube, 1997; Jejeebhoy and Halli, 2005; Brulé, 2020). Accordingly, women who migrated for marriage relocated permanently and should not be listed that their natal family's address anymore. I therefore marked all female entries on the list that were identified by members of their families as having migrated for marriage as permanent deadwood as well.

All remaining entries were classified as *likely deadwood*. This category consists of two types of entries, namely migrants with unclear ties to the location and entries for which no information was available. Some individuals listed on the electoral roll were identified as migrants by family members. However, while marriage migration usually means that women permanently relocate to the husband's household, the migration of men – with or without their wives and children – might be less permanent. Semi-permanent labor migration, that is, able-bodied men spending much, if not most, of the year in another location in order to earn money while at least parts of their families stay back (and receive remittances) is common in India (Tumbe, 2018). Even when nuclear families migrate, they might purposefully maintain a homestead and social ties at their place of origin; sometimes, they also purposefully stay registered to vote in their hometown (Gaikwad and Nellis, 2021). The survey did not follow

[26] If a person was listed twice, I counted the first entry as correct and the second entry as confirmed deadwood.

up with each individual who was identified as a migrant by their family; I can therefore not say with certainty whether these migrants meant to maintain their voter registration in the village, or whether they have enrolled to vote somewhere else. At the very least, however, I can say that these migrants were *not* claimed as members of the family usually residing in the village by respondents during the census; and did *not* maintain their own individual homestead within the catchment area either. I therefore classify all migration that is not marriage migration as likely deadwood. Finally, for some names on the voter list, we were not able to track down any information. That means we were unable to locate family members, or gather information from village council members, the *pradhan*, or local notables such as the village teacher or health worker about the individual. If, after consulting all these informants, enumerators were not able to generate information about a name on the list, it was marked "undetermined" and classified as likely deadwood.[27]

4.3 Sample Statistics

Village Populations

In 2022, Village A counted two polling stations within its boundaries. I only enumerated electors who are registered to vote in the local primary school (as opposed to those registered to vote in the local middle school). Because assignment to polling stations is based on physical location, that meant I surveyed the northern part of the village (see Appendix Figure A.1). The survey team enumerated a total of 1,175 adults across 319 distinct households in Village A for an average household size of 3.7 adults (see Table 1). Just over 50 percent of enumerated residents were female. The average age of residents was a little over 40 years. Village A was a Muslim majority village, with almost 95 percent of residents identifying as Muslim and only 5 percent as Hindu. All of the Muslim residents identified as belonging to the Other Backward Classes (OBCs), while all of the Hindu residents identified as belonging

[27] Potential sources for these "undetermined" entries include long-ago migration or death that are not remembered by informants; clerical errors; or outright fraud. However, in speaking with village notables, no indications or suspicions of fraud came up.

to the Scheduled Castes (SCs). On average, adults in this location had 5.5 years of formal schooling. The average monthly household income in Village A was close to 11,400 INR ($\approx$ \$136).

Table 1: Village Population Descriptives

	Village A	Village B
N Adults	1175	708
% Female	50.47	47.18
Avg Age	40.37	41.26
% Hindu	5.11	93.93
% Muslim	94.89	6.07
% General	0.00	28.81
% OBC	94.89	53.39
% SC	5.11	17.80
Avg Years Schooling	5.54	3.91
Avg HH Income	11377	6345
N HHs	319	239
N Adults/HH	3.68	2.96

By contrast, in Village B the survey team enumerated 708 adults across 239 households, for an average household size of close to 3 adults. Only 47 percent of adult residents were female; the average age for an enumerated adult was 41.2 years. Village B was a Hindu majority village, with almost 94 percent of residents identifying as Hindu and only 6 percent as Muslim. All Muslim residents identified as belonging to the OBCs. Of the Hindu respondents, around 30 percent said they belong to the general caste category; around half identified as OBC; and close to 19 percent said they belong to the Scheduled Castes. Education levels were relatively low, at less than 4 years of formal schooling, on average. The average monthly household income in Village B was a little over 6,300 INR ($\approx$ \$76).

Voter Lists

Voter lists in Uttar Pradesh had most recently been updated before the February-March 2022 state elections. I downloaded voter lists for the two census villages from the Chief Electoral

Officers website in March 2022. The voter list for Village A contained 1,072 entries, 513 of which were marked "female" and 559 "male." The voter list for Village B contained 825 names, 384 of which were marked "female" and 441 "male."

5 Analysis

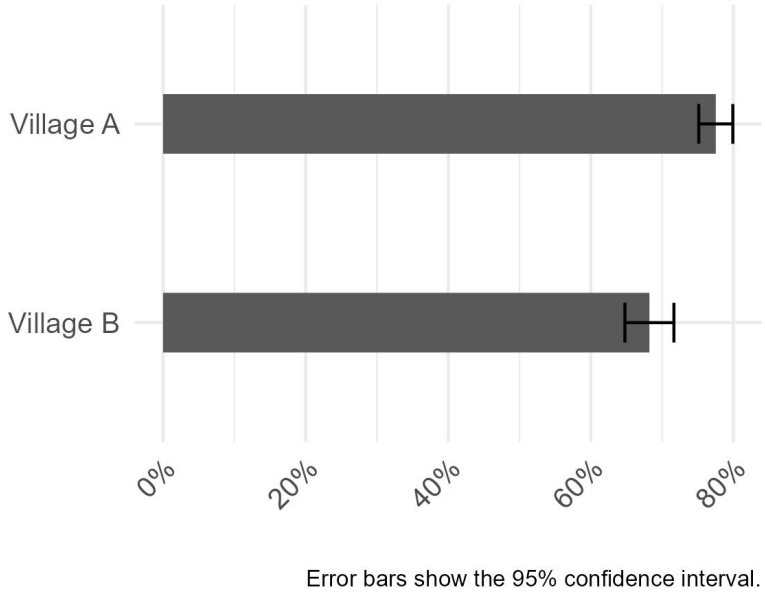
The analysis of the village census data shows that in both study sites, two facts were true at the same time, namely that a) a considerable share of villagers were not registered as voters (incomplete voter lists) and that b) the voter list contained a sizable number of obsolete entries (deadwood). While this section presents descriptive findings on the completeness and accuracy of voter lists, the next section explains the origins and implications of these findings.

5.1 Completeness of Voter Lists

Voter lists exhibited considerable under-enrollment. Figure 2 visualizes registration rates by village, that is, the share of eligible adults that are registered to vote. In Village A, of 1,175 resident adults enumerated only 911 (77.5 percent) were enrolled in the voter list. The other 264 individuals (22.5 percent) were not registered to vote, despite being eligible by law. In Village B, only 483 out of 708 adult residents (68.2 percent) were enrolled, while 225 (31.8 percent) remained unregistered.

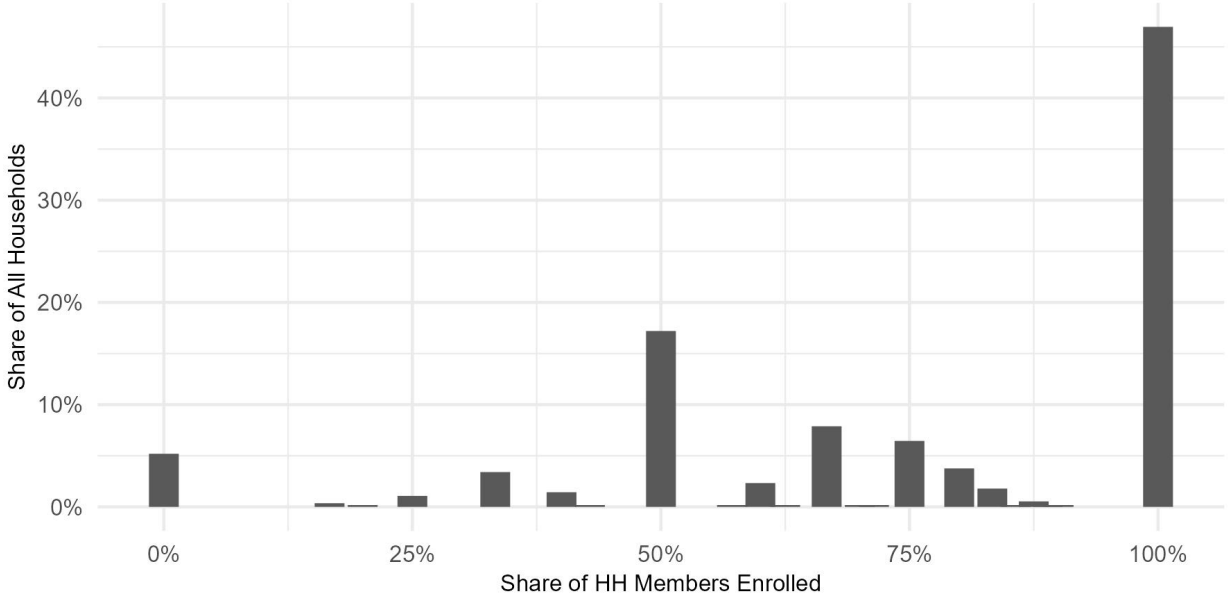
Under-enrollment is mostly individual, not household-based. That is, for the most part, some individuals across many households are left off the list as opposed to some households being omitted entirely while others are fully registered. As Figure 3 shows, in almost half of all households in the census, *all* members were enrolled. Only a minority of 29 households (5.2 percent) had *no* family members on the voter list, meaning the entire household was unenrolled. In the rest of households, some or even most members were registered, but at least one eligible adult in the house was not enrolled. This is in line with Joshi et al. (2023)'s

Figure 2: Individual Voter Registration Rate



finding that most households will have at least one member on the voter list. However, despite almost 95 percent of *households* being on the register, a full 26 percent of *individuals* in the two villages were unenrolled.

Figure 3: Household Registration Rate

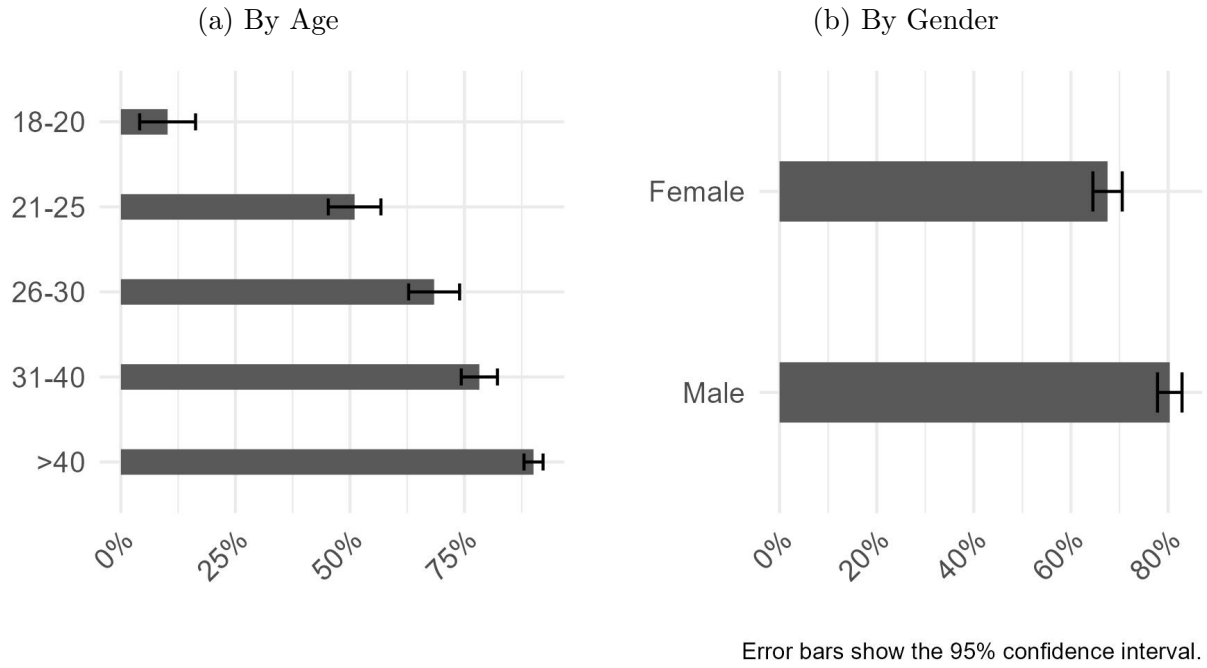


Who was left off the voter lists? Drawing on the demographic data collected for each

individual, I can compare registered and unregistered adults. Two variables strongly correlate with enrollment, namely age and gender. The influence of education varies by location, while other characteristics, including income, religion, and caste identity, are not strongly associated with registration status.

Figure 4a shows that, as expected based on the literature, enrollment rates increase with age. Only a minority of those up to 20 years old (10 percent) were registered to vote across both villages. That is despite the fact that the most recent election and, therefore, the most recent revision of the voter list, had concluded only weeks earlier. Enrollment rises to 51 percent among young adults aged 21 to 25 years, and more than 68 percent for those aged 26 to 30. More than 78 percent of 31- to 40-year-olds are registered, and more than 90 percent of those over 40 are.

Figure 4: Voter Registration Rate by Age, Gender

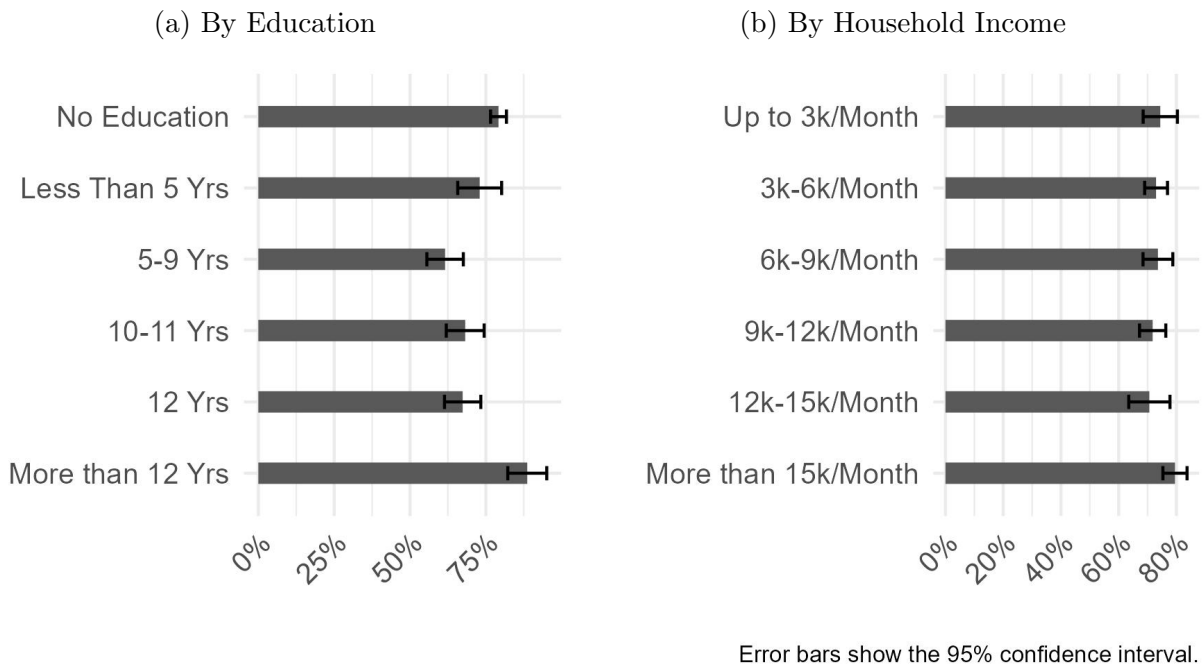


However, unlike in previous studies of voter enrollment conducted in the U.S., the U.K., and France, women were *less likely* than men to be enrolled than men in Uttar Pradesh (see Roy and Sopariwala, 2019). Only 67.5 percent of the 927 women enumerated across both villages were on the voter list. By comparison, more than 80 percent out of 956 men were

registered. The difference is statistically significant ($p<.0001$).[28] I will discuss this finding in more detail in Section 6.

By contrast, registration rates do not vary clearly with education. As Figure 5a shows, those with no education and those with the most education had higher registration rates than adults with middling levels of education. More than 79 percent of those without formal schooling were enrolled. That share is lower for those with up to 5 years of education (73 percent), 5 to 9 years of schooling (61.6 percent), 10 or 11 years of education[29] (68.2 percent) or 12 years[30] (67.4 percent). Among those who studied past high school, almost 89 percent are enrolled. However, only 97 individuals in the sample had higher education, while more than 900 adults, i.e., almost half of the sample, indicated they had no formal schooling.

Figure 5: Voter Registration Rate by Education, Household Income



Household income was not associated with registration status either. Those coming from the poorest households, earning less than 3,000 INR ($\approx$ 35 USD) per month, were just as

[28] These patterns hold in each village individually, see Appendix Figure A.2.

[29] Finishing 10 years of schooling, or "10th pass" in India, is an important educational achievement that improves job prospects.

[30] Completing 12 years of education, or "12th pass" in India, is the equivalent of finishing high school. It is required to gain access to a college education.

likely to be enrolled as those from the wealthiest households with a monthly income of more than 15,000 INR (≈ 172 USD) (see Figure 5b).[31] This should not be surprising, given that (under)enrollment is mostly individual and not household-based, while household income classifies the entire family. Since I only collected income information for the entire household, I cannot speak to whether individual earnings are associated with enrollment status. However, gender is a good predictor of labor market participation in India (Deshpande, 2002; Bernhardt et al., 2018; Deshpande and Singh, 2021), and women were significantly less likely to be enrolled in my sample.

Finally, registration rates do not vary by ethnic identity. Because the ethnic composition of the two locations differs considerably, Figure 6 visualizes enrollment rates for each village separately.[32] Within each village, Hindus and Muslims were equally likely to be registered to vote (Figure 6a). However, since each location was quite religiously homogeneous – with Village A being a Muslim-majority village and Village B Hindu majority – I would caution against drawing broader conclusions on the equity of registration rates for religious minorities in India. Finally, members of each caste group were roughly equally likely to be enrolled (Figure 6b). This finding is particularly encouraging in Village B, which was more diverse in terms of caste group affiliation than Village A. Members of the Scheduled Castes, historically the most marginalized caste category, were just as likely to be registered as members of the Other Backward Classes (OBCs) or members of the general caste groups.

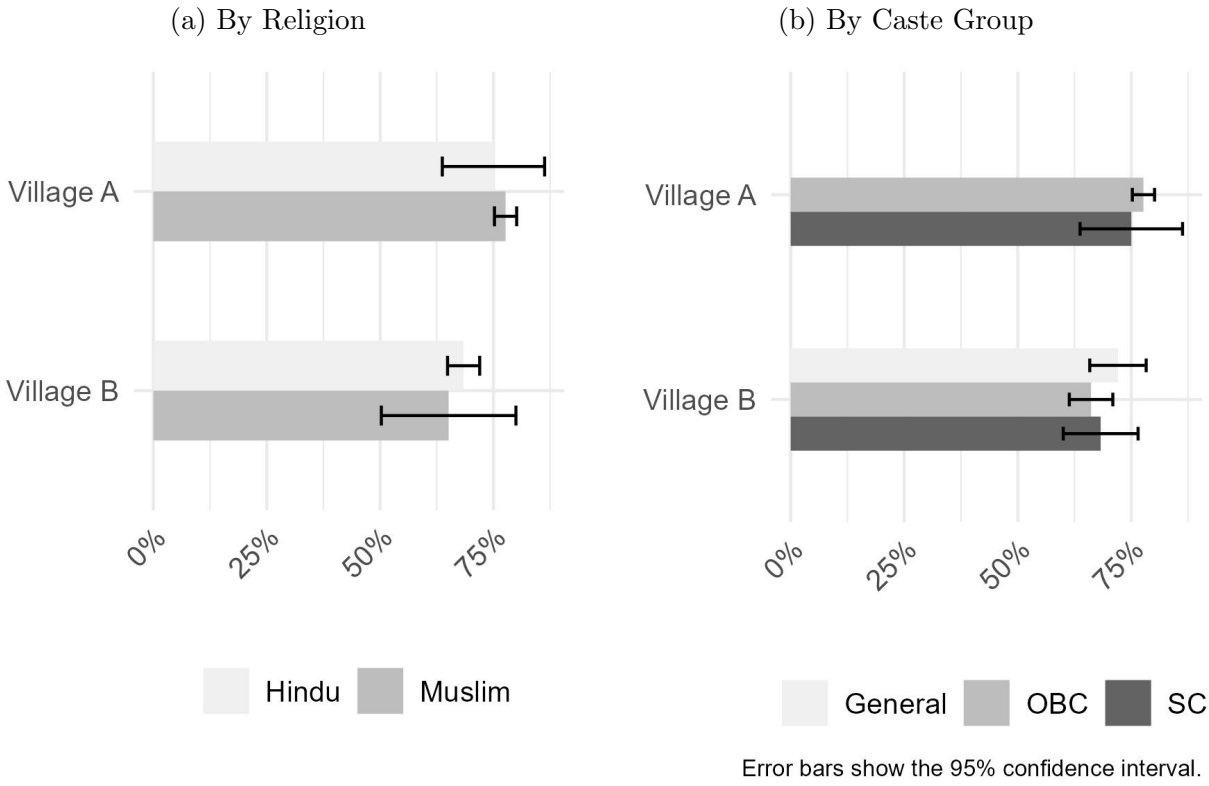
What predicts an individual's enrollment status among surveyed adults? I run OLS regressions to estimate the predictive power of the different demographic variables for voter registration in my sample. I estimate the following model:

$$Y_i = \alpha + \beta X_{ki} + VillageFE + \epsilon, \tag{1}$$

where Y_i is an indicator variable for whether an adult was registered to vote, which takes

[31] This holds if I use income quintiles instead of pre-defined income categories, see Appendix Figure A.3.
[32] See Appendix Table A.1 for a comparison of registered and unregistered adults by village.

Figure 6: Voter Registration Rate by Religion, Caste Group



the value of 1 if the respondent was enrolled as a voter, and 0 otherwise; X_{ki} is the battery of k demographic variables, namely gender, age, education, household income, religion, and caste identity; and $VillageFE$ are village fixed effects. The coefficient β can be interpreted as the change in conditional probability of a respondent being registered to vote, holding constant all other predictors.

Table 2 shows results. Column (1) presents results for the full sample. Gender, age, and education emerge as strong predictors of enrollment status, while household income and ethnic identity do not. The probability of being enrolled in the voter list is 11 percentage points *lower* for women than that for men, holding all other variables constant. All else equal, each additional year of age increases an individual's probability of being enrolled by about 1.1 percentage points. Furthermore, an additional year of education corresponds to a .6-percentage-point higher probability of being a registered voter.

Both age and education have a greater correlation with enrollment for women than men.

Table 2: Predictors of Voter Registration

	Dependent variable:		
	Registered (0/1)		
	All	Female	Male
	(1)	(2)	(3)
Female (0/1)	−0.111***		
	(0.019)		
Age (in yrs)	0.011***	0.013***	0.010***
	(0.001)	(0.001)	(0.001)
Education (in yrs)	0.006***	0.008**	0.005*
	(0.002)	(0.004)	(0.003)
HH Income (in INR)	0.00000	0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)
Muslim	0.023	0.040	0.010
	(0.050)	(0.074)	(0.068)
OBC	−0.009	−0.045	0.024
	(0.042)	(0.063)	(0.056)
SC	0.002	0.013	−0.011
	(0.049)	(0.073)	(0.065)
Village FEs	✓	✓	✓
Observations	1,883	927	956
R^2	0.787	0.732	0.834
Adjusted R^2	0.786	0.729	0.832
Residual Std. Error	0.398	0.428	0.367
F Statistic	768.354***	313.289***	593.603***
Note:			*p<0.1; **p<0.05; ***p<0.01
			Clustered robust standard errors in parentheses.

Column (2) shows regression results only for women and column (3) only for men. An additional year of age is associated with a 1.3-percentage-point higher probability of being on the voter list for females, but only 1 percentage point for males. One more year of education correlates with a .8-percentage-points higher probability of enrollment among women, but only .5 percentage points among men.

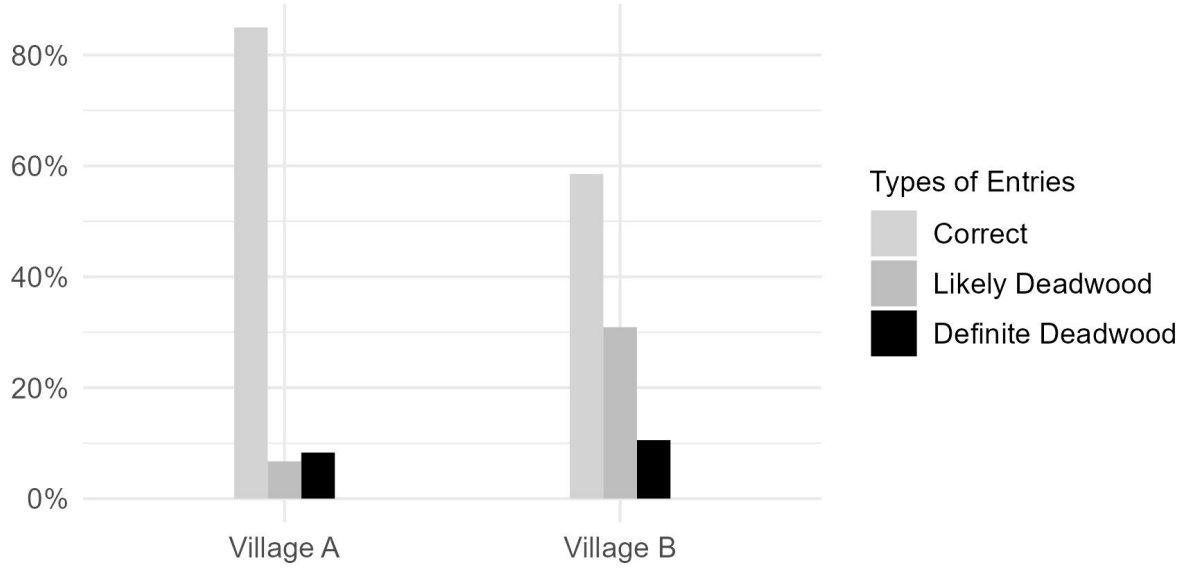
Results on education are mostly driven by Village A, where enrollment significantly correlates with enrollment status. By contrast, in Village B, where overall education levels are

lower, schooling is not associated with voter registration in meaningful ways (see Appendix Table A.2).

5.2 Accuracy of Voter Lists

The electoral roll in both study sites was inflated, containing a sizable share of deadwood, although accuracy varies greatly between the two locations. As described earlier, I distinguish three different types of entries on the electoral roll, namely correct entries, definite deadwood, and likely deadwood. Figure 7 shows the distribution of voter list entries for each study site. In Village A, 911 out of 1,072 names on the list (85 percent) corresponded to resident adults. Another 89 names (8.3 percent) were identified as definite deadwood. Almost half of this deadwood was due to the person passing; the other half was caused by marriage migration. Only 2 clerical errors were recorded. Finally, 6.7 percent of entries were classified as likely deadwood, mostly due to migration that left migrants with unclear ties to the village. For 13 individuals (1.2 percent of entries), no information was available at all.

Figure 7: Entries on Electoral Rolls, by Village



In Village B, a mere 483 out of 825 entries on the voter list (58.5 percent) corresponded

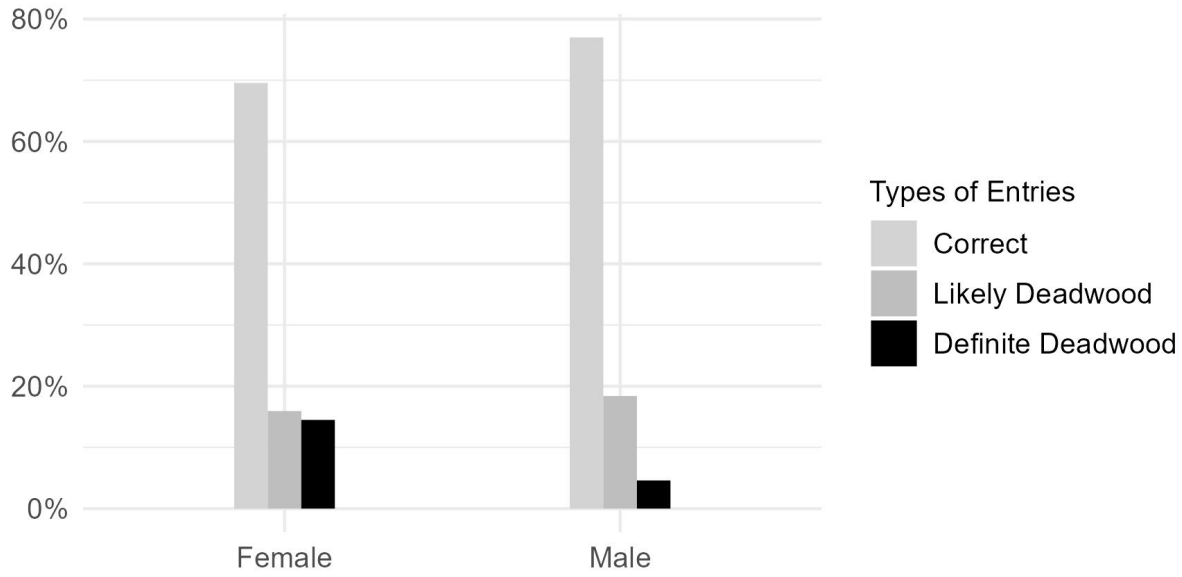
to a village resident enumerated as part of the census. Another 87 entries (10.5 percent) are classified as definite deadwood. Most of the deadwood stems from registered voters passing (6.3 percent of all entries), followed by marriage migration (2.8 percent of entries). A total of 12 clerical errors on the list were recorded (1.5 percent of entries). Finally, "likely deadwood" comprises almost 31 percent of the list in Village B. Two-thirds of this likely deadwood is based on migration (19 percent of all names on the list). About 10 percent of entries could not be identified, with no one in the village able to provide information on these names.

Because voter lists in India contain information on gender and age of the registered voter, I am able to further investigate the characteristics of entries that were determined to be correct, likely deadwood, or definite deadwood. Overall, there were 1,000 entries identified as male and 897 entries identified as female on the electoral rolls of both locations. Among female names on the list, almost 70 percent were correct, while 77 percent of male entries were proper. The difference is statistically significant ($p<.001$). By contrast, 15.9 percent of female entries and 18.4 percent of male entries fell into the category of likely deadwood; the difference is not statistically significant. Finally, 14.5 percent of female names on the list were classified as definite deadwood, while only 4.6 percent of male names were ($p<.001$).[33]

Finally, Appendix Figure A.5 plots the age distribution of the three types of entries on the voter lists. As the graph shows, definite deadwood entries have a bi-modal distribution, accounting for the two main types of reasons for this classification. Female marriage migration causes young registered voters to leave; this accounts for the first peak in the distribution, which reaches its peak around 30 years of age. The second major reason for definite deadwood is death of the registered voter, which accounts for the second, smaller peak around 80 years of age.

[33] Consequently, a significantly higher share of correct entries is male than female; and the vast majority of definite deadwood was comprised of female entries. See Appendix Figure A.4.

Figure 8: Entries on Electoral Rolls, by Gender



5.3 External Validity

The above analysis highlights problems with both the completeness and the accuracy of voter lists in two villages in Uttar Pradesh. While my qualitative field research experience suggests that the – largely female – under-enrollment I found in the village censuses are not the exception, I do not have additional quantitative data to extrapolate from these findings. However, below I provide suggestive evidence that at least the share of deadwood among female entries on the electoral rolls is comparable in other locations in the survey districts and, possibly, in the state.

I draw on data from another voter survey, conducted prior to the village censuses in February and March 2022, just ahead of the 2022 Uttar Pradesh state elections. The survey interviewed female registered voters in Bijnor district and Bahraich district, as well as the head of their household. Female respondents were selected using a multi-stage random sampling procedure: First, within each district, four Assembly Constituencies were randomly selected, blocked on reservation status (for three general and one reserved constituency in

each district).[34] In each constituency, 16 polling stations were then chosen at random (for a total of 128 polling stations). Finally, five registered female voters were randomly selected from the electoral roll for each polling station.[35] Enumerators then tracked down the selected woman, and attempted to interview her along with the person whom she identified as the head of her household.

For the purpose of this article, I rely on administrative data collected during the implementation of the survey. Whenever enumerators were unable to interview a selected female registered voter, they noted down the reason. This provides me with information on the quality of voter lists, at least for female registered voters, in the 128 locations of the survey. In both districts, success rates for interviews were under 15 percent.[36] Overall, 5,243 entries were sampled from the voter lists across locations. Only a small minority of sampled respondents had refused to participate. Instead, non-completion was mostly due to temporary absences (for work, family obligations, and so on), or to permanent absence because of death or migration (see Appendix Table A.3). Based on this data, I am able to distinguish among *correct entries*; *definite deadwood* on the voter lists, which includes any individuals who were confirmed to have died or to have permanently moved away for marriage, as well as clerical errors; and *likely deadwood*, which includes any non-marriage migration as well as entries that could not be tracked down through interviews with neighbors or local notables.

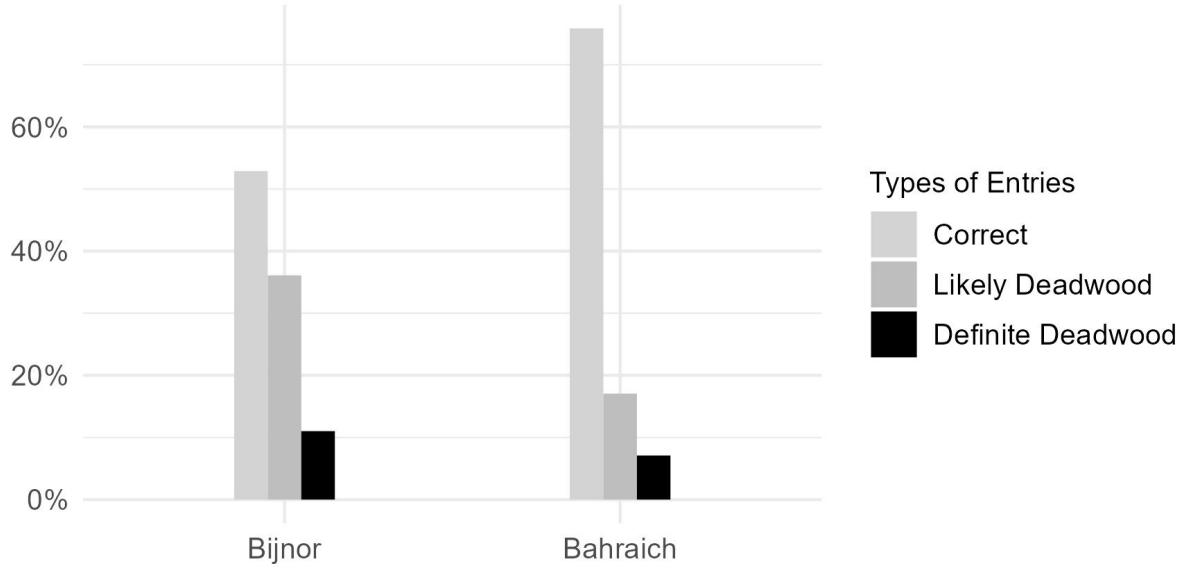
Results suggest that the share of definite deadwood is comparable to that found in the village voter list annotation. Figure 9 shows the classification of all female entries that had been sampled from the voter lists, by district. Just under 53 percent of entries in Bijnor district were found to be correct, while almost 76 percent of entries in Bahraich district

[34] In India, some constituencies at the national, state, and local level are reserved for members of the *Scheduled Castes*, or *Dalits*, and members of the *Scheduled Tribes*, or *Adivasis*. While all registered voters in those constituencies can vote, only members of the groups that enjoy reservation status can run for office. In Uttar Pradesh, 84 out of 403 ACs (21 percent) are reserved for the Scheduled Castes, and 2 (.5 percent) are reserved for the Scheduled Tribes.

[35] The survey, including the sampling procedure and sample, are described in detail in Roscher (2023).

[36] To complete 345 pre-election surveys of female electors in Bijnor District, enumerators had attempted a total of 2,341 interviews, for a success rate of 14.7 percent. In Bahraich District, field investigators attempted 2,902 interviews in order to complete the final N of 359, which means the success rate was 12.4 percent.

Figure 9: Female Entries on Electoral Rolls, by District



were (lightgrey bars). Definite deadwood constituted 11 percent of entries on the Bijnor rolls and 7.1 percent in Bahraich (black bars). Likely deadwood–that is, those who migrated with unclear remaining ties to the location as well as those on whom no information was available–accounted for more than 36 percent of entries in Bijnor, but only 17.1 percent in Bahraich. As Appendix Table A.3 shows, the main reason why entries were classified as likely deadwood in both districts was that enumerators were unable to track down the individual. One-quarter of females sampled from the voter lists could not be identified in Bijnor district. By contrast, a little over 13 percent of names could not be tracked down in Bahraich district. Overall rates for definite deadwood were 8.8 percent across both districts, which is statistically indistinguishable from the 9.3 percent found in the village study.

At first glance, the finding that voter lists are more accurate in Bahraich district, which is much poorer than Bijnor district, might be surprising.[37] After all, a poorer district might have less of the state capacity necessary to maintain voter lists. However, Bijnor district is more urban than Bahraich, with the 2011 government census classifying more than 25

[37] In fact, a report by the government of India ranked Bahraich second-to-last using a multi-dimensional poverty index that takes into account standard of living indicators as well as educational and health outcomes. The same report ranked Bijnor as the top 13th district out of 70 (Aayog, 2021).

percent of the population in Bijnor as living in urban areas but only a little over 8 percent of the population in Bahraich. Recall that voter lists in India are hyper-localized, meaning each individual needs to be registered at the nearest polling station. In rural settings, there is usually only one polling station per village, and mobility within villages is low. In urban contexts, mobility is higher, and towns and cities will have multiple polling stations. Past research has shown that rural-to-urban migrants are less likely to be registered to vote (Kumar and Banerjee, 2017; Gaikwad and Nellis, 2021), and that within-city mobility might lead to individuals being registered at the wrong polling station (Pyle and Nair, 2015). This likely explains the lower share of confirmed correct entries on the electoral rolls in Bijnor compared to Bahraich. In addition, because Bijnor is more urban, neighbors' and notables' information on individuals is lower, making it harder for surveyors to locate individuals. In a village of 1,000, the local village council usually knows everyone who lives in the vicinity. By contrast, in a town of 10,000 or 20,000 residents, ward councilors' knowledge of those who currently reside in the area might be more limited. This likely explains why the share of entries designated "likely deadwood" was higher in Bijnor than in Bahraich.

5.4 Rethinking Voter Turnout

When calculating turnout, the denominator matters just as much as the enumerator (McDonald and Popkin, 2001). In India, official election statistics use the number of registered voters on the electoral rolls as the denominator, while the number of those who turned out to vote forms the enumerator. However, the above analysis shows that voter lists in India are both incomplete as well as inaccurate. Incomplete voter lists leave eligible adults off, artificially *deflating* the enumerator and therefore potentially *overestimating* actual participation. By contrast, inaccurate voter lists include deadwood on the roll, artificially *inflate* the enumerator and potentially *underestimate* actual turnout rates.

I use polling-station-wise data on the number of ballots cast, published by the office of the Chief Electoral Officer, for the 2022 Uttar Pradesh state elections and match it to

the village census locations. I also collect *official turnout*, which divides the number of voters who turned out on election day by the number of names on the voter list. I then recalculate turnout using the same enumerator (ballots cast), but substituting one of two different denominators. First, I delete from the official number of registered voters on the list the definite deadwood. This excludes only those entries that were confirmed to have died or to have moved away for marriage, and therefore constitutes the upper bound for correct entries on the electoral roll. Second, I use the number of eligible adults–those that *should* be on the voter list–as determined by the village census.

Figure 10: Official Turnout Vs. Actual Turnout, by Gender

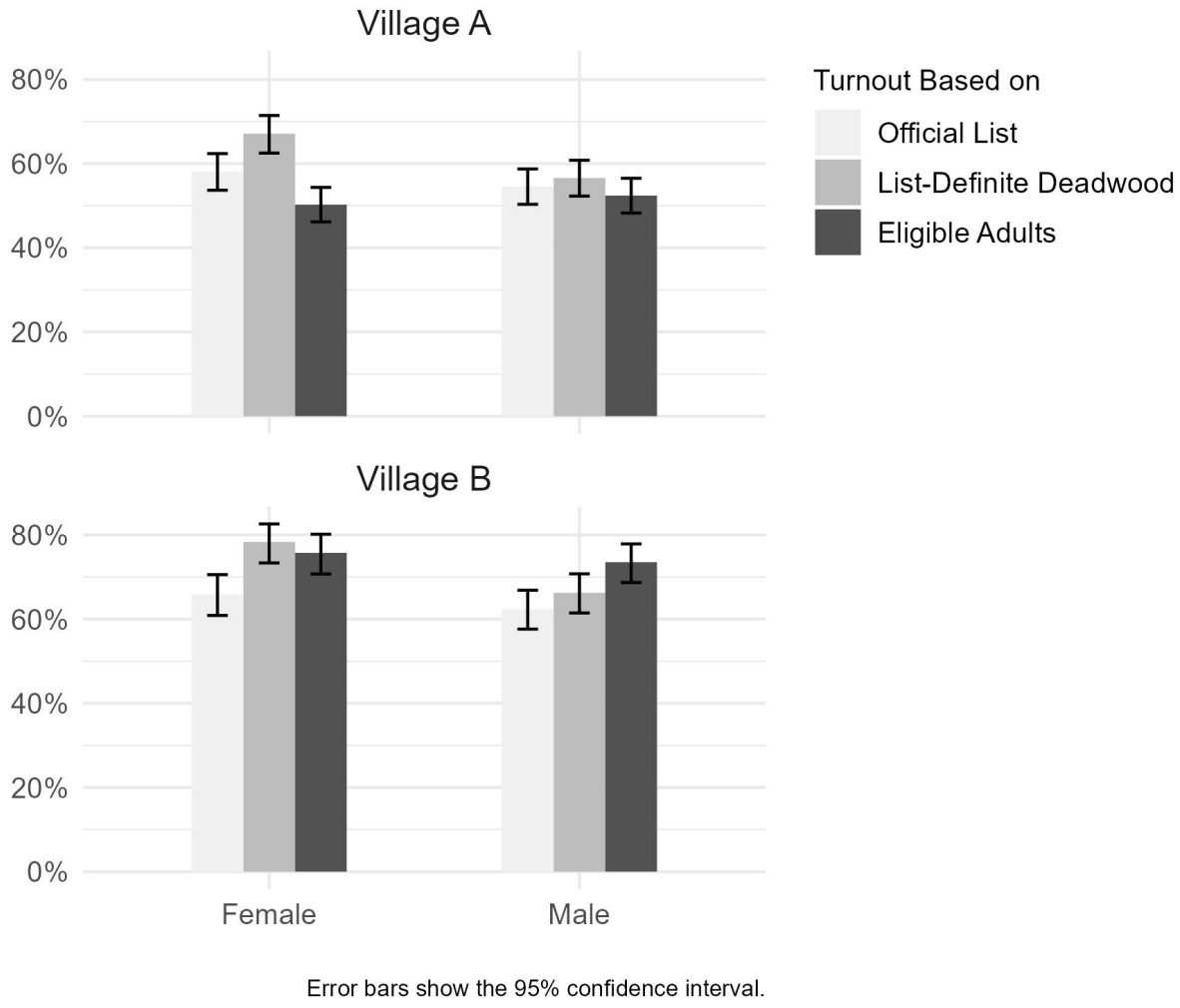


Figure 10 plots resulting turnout rates by village, and separately for men and women.

First, official turnout rates (light-grey bars) were 58.1 percent for women and 54.6 percent for men in Village A, and 65.9 and 62.4 percent, respectively, in Village B. This is in-keeping with recent trends of female turnout outpacing male turnout in most of India (Roscher, 2023). When using the voter list minus all definite deadwood as the denominator, turnout rates grow modestly for men but significantly so for women, since female entries form a larger share of definite deadwood. Keeping voter lists free from obsolete entries would significantly raise female turnout rates to 67.1 percent (p=.005) in Village A, and to 78.3 percent in Village B (p<.001). Finally, when using eligible adults, independent of their actual registration status, as the denominator, turnout is *lower* in Village A but *higher* in Village B. Female voting in Village A stood at 50.3 percent of all eligible women, significantly lower than official turnout rates (p=.01). This makes sense, given high female under-enrollment in Village A. While male turnout was lower (52.4 percent), the difference to official statistics is not significant. In Village B, by contrast, using eligible adults as as the denominator significantly increases turnout rates for women to 75.7 percent (p<.005) and for men to 73.5 percent (p<.001). Given high rates of definite deadwood on the voter lists for Village B, this result is unsurprising.

Two insights follow from these findings. One is that official turnout statistics released by the Election Commission of India might not capture actual voting rates accurately, depending on *whose* participation we care about: that of registered voters, or that of eligible adults. While official turnout figures across the board underestimated turnout of registered voters because of deadwood on the electoral roll, official statistics *overestimated* participation in one location but *underestimated* it in another because of varying levels of under-enrollment across villages. The second insight is that independent of which statistic we use, female turnout kept up with – or even outpaced – male turnout across both locations.[38]

[38] The exception was turnout as calculated using eligible adults in Village A: women's turnout at 50.3 percent was slightly below men's at 52.4 percent, although the difference is not statistically significant.

6 Discussion

Here, I wish to make three important, interrelated points that follow from my analysis. First, aggregate data – at the village, constituency, state, or national level – is not suitable for evaluating the health of the electoral roll. That is because aggregate data does not allow us to gauge the extent of deadwood on the list; and because any deadwood on the list, in turn, will likely obscure the true scope of under-enrollment in a locality. Aggregate data, therefore, will almost always *underestimate* existing voter disenfranchisement in India.

Second, the root cause of both persistent under-enrollment and deadwood on the list lies in the perverse incentives faced by grassroots electoral officers in charge of maintaining the rolls, as well as in insufficient monitoring capabilities on part of the Election Commission of India, which relies mostly on aggregate data.

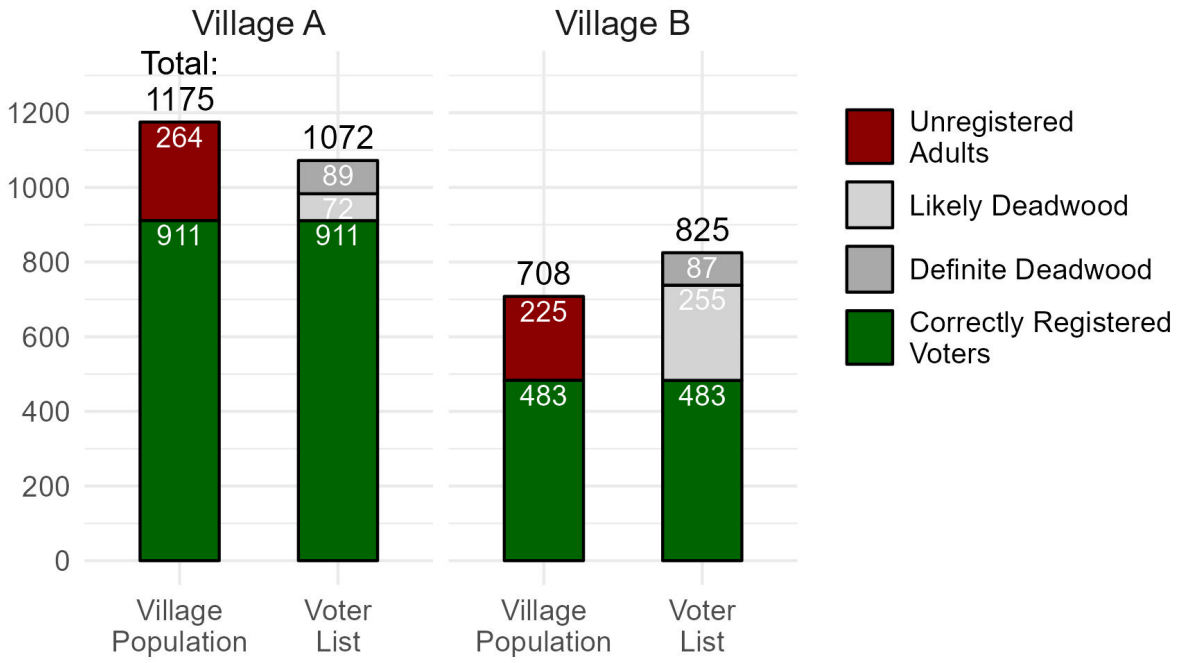
Third, the confluence of traditional marriage customs and the decentralized nature of voter lists in India mean that women are much more likely to be unregistered than men. It also leads to a higher share of deadwood among female entries on the voter lists, which in turn enables the under-enrollment of women residents in a locality.

6.1 How Aggregate Data Mask Problems with the Voter List

In India, voter list inaccuracy obscure the true scope of under-enrollment. Voter lists in the two study sites simultaneously exhibited under-enrollment and deadwood; however, these facts are not obvious when only looking at village-level population numbers or voter lists. As Figure 11 shows, Village A had 1,175 adult residents, and 1,072 entries in the voter list; Village B had 708 adult residents and 825 entries in the voter list. These aggregate numbers might tempt one to conclude that Village A suffers from under-enrollment, with $1,175 - 1,072 = 103$ names missing from the list, while Village B displays deadwood on the voter list to the extent of $825 - 708 = 117$ entries. However, such a conclusion would be based on two strong assumptions, namely that all existing entries in the electoral roll in

Village A are correct, and that all actual residents of Village B are registered. As I have shown above, that is not the case.

Figure 11: Comparing Actual Village Population to Electoral Roll



Instead, the true scope of under-enrollment in Village A is 264 individuals, not the 103 eligible adults suggested by comparing population aggregates and registration numbers. By contrast, Village B exhibits significant under-enrollment, not only the deadwood that aggregate comparisons would suggest. The excessive deadwood on Village B's electoral roll, in fact, hides the existence of large number of unregistered eligible adults. Based on these findings, I would caution against drawing conclusions about the quality of voter lists based on discrepancies between aggregate voter registration numbers and aggregate population data (see, for example, Retnakumar, 2009; Shariff and Saifullah, 2018; Roy and Sopariwala, 2019; Retnakumar and Kurup, 2021).

6.2 Why Voter Lists Are Both Incomplete and Inaccurate

What causes the shortcomings in voter list completeness and accuracy I documented empirically? To investigate this question, I draw on a review of official ECI procedures and handbooks, field observations, as well as dozens of interviews with election officials across North India. I posit that perverse incentives for low-level bureaucrats in charge of maintaining electoral rolls at the polling station level, combined with insufficient monitoring capabilities on part of the ECI, are likely to blame.

As briefly described before, each polling-station-level voter list in India is maintained by what is called a Booth-Level Officer (BLO). The BLO is tasked with conducting door-to-door canvasses during the annual summary revision of the voter list, in order to determine who should be added to or deleted from the electoral roll in a particular location. Ideally, the BLO herself should reside within the catchment area, and her long-term connection with the location should aid her in identifying individuals who have reached maturity or have newly arrived and, conversely, in identifying those who have died or migrated.

However, BLO face an incentive structure that is not conducive to maintaining complete and accurate voter lists. In fact, the current system incentivizes BLOs to accumulate deadwood on the electoral rolls and only invest minimally in new registrations. Several factors contribute to this. First, BLOs have incentives to min-max voter list maintenance. Updating voter lists is not a BLO's main job. Instead, Booth-Level officers typically are low-ranking government or semi-government employees such as teachers at government schools or anganwadi workers, i.e., workers at a rural government-run child care center.[39] They are expected to fulfill their voter-list-related duties on top of their regular jobs, while only receiving minimal additional compensation.[40] The main reason many BLOs feel motivated to fulfill their duties is avoiding reprimands from superiors: as government employees, any

[39] Based on availability of qualified workers, however, BLOs could also include electricity bill readers, panchayat secretaries, postmen, or other government or semi-government officials. See of India (2023).

[40] BLOs are currently paid 6,000 INR a year ($\approx$ 72 USD), which is less than most anganwadi workers and teachers would make in a month. In interviews with BLOs, many said they either hadn't received their remuneration or they considered it too little money for the effort the job required.

rebuke of their work for the ECI might negatively affect their career, including lost wages or held-up promotions.

Second, BLOs have low to no incentives to delete names from the voter list. In interviews, many Booth-Level Officers pointed out that deleting a name from the list is comparatively hard, because they either need to obtain a death certificate for the deceased (which is difficult to get in India), or have several family members certify that the person moved away in the case of migrants (which is difficult if the entire family migrated, or hard to manage if the remaining family refuses because they hold out hope that the migrant will return in future). In addition, if the BLO initiates a deletion and someone objects to it – a migrant herself, or a family member of the individual, or even a local politician – the officer might get reprimanded.

Third, adding new voters to the list is comparatively easier for BLOs than deleting names. While registering voters requires BLOs to travel to the polling station site (if they do not reside there already) and conduct home visits, the documentation required for new enrollments – such as an ID and proof of residence – are usually easier to obtain than, say, death certificates required for deletions. In addition, there is little reason to suspect anyone objecting to new voter registrations: the newly registered voter herself clearly wanted to get on the list; her family likely already supported her efforts; and politicians or supervisors are unlikely to be skeptical of new enrollments. BLOs therefore have reasons to focus their efforts on registering new voters.

Fourth, BLOs receive voter list targets from superior officers that are used to evaluate the quality of their work. Higher-ranking officers set these targets by comparing polling-station-wise population projections based on the census with existing voter lists. Specifically, these superior officers check whether there are gaps between the projected adult population and the number of registered voters; whether the gender ratio in the census data matches the gender ratio on the voter list; whether the number of newly enrolled young adults aged 18 or 19 matches census projections for that age cohort; and whether an unusually high number

of new voters was added or entries deleted from the list between revisions.[41] In the absence of reliable external data on death and migration rates, superiors therefore set targets not for the number of deletions and additions required to achieve the new enrollment goals; but simply registration totals they aim to reach. Superiors will also usually only check a BLO's work by comparing aggregate population estimates with aggregate registration numbers, *not* by checking changes to the list. This leaves room for BLOs to forgo deletions and focus entirely on new additions. Avoiding deletions will accumulate deadwood on the list over time, which, in turn, will mask further under-enrollment, as I discussed above.

To illustrate, consider a polling station with 1,000 registered voters on the list. Between revisions, 20 new individuals became eligible to vote, while 8 moved away and 4 died. To revise the list, the BLO should therefore delete 12 names and add 20 new ones, for a total of 1,008 entries. However, because deletions are hard, while additions are easy; and because superiors do not set targets for changes, only for totals, and only rely on aggregate outcomes for quality control, the BLO has incentives to simply add 8 new voters to the roll. This will not only leave 12 deadwood entries on the roll, but will also leave off 12 eligible adults from the register. In fact, this scenario closely mirrors what one BLO told me during an interview: Before the most recent state elections, he was told by his supervisor that based on population projections, there should be 20 more voters on the list in his locality. To him, that meant that after 20 additions, he could stop surveying the village.[42] The target neither set incentives for the BLO to delete existing entries from the list, nor to conduct a full village canvass to enroll all newly eligible adults.

6.3 Why Both Under-Enrollment and Deadwood Skew Female

The two villages enumerated in this study exhibited considerable under-enrollment as well as deadwood. As described above, perverse incentives for Booth Level Officers in charge of maintaining the list can explain why and how deadwood accumulates on the electoral

[41] Manual on Electoral Rolls (2023), p. 54, p. 84.
[42] Phone interview, Uttar Pradesh, March 4, 2022.

roll and, in turn, mask growing under-enrollment. But why were both unregistered eligible adults as well as obsolete names on the list more likely to be female than male (see Appendix Figure A.6)? I theorize that traditional marriage customs combined with the decentralized nature of the voter register in India likely are to blame. On the one hand, marriage norms which require women to leave their natal village combined with a decentralized voter list that demands effort to change registrations upon moving create incentives for families to hold off on enrolling their daughters (but not their sons). On the other hand, those women that *do* register to vote before marriage are likely to eventually become deadwood on the list: the bureaucratic hurdles associated with changing a localized voter registration mean women (and their families) are unlikely to delete their names from the list when they leave.

As briefly mentioned earlier, marriage customs among most Hindus and some Muslims across much of India prescribe patri-local village exogamy, meaning that upon marriage women leave the family and village they grew up in and join their husband's household in another location. By contrast, sons usually are expected to stay with their parents and take care of them in old age, with their (future) wives joining them (see, for example, Dube, 1997; Jejeebhoy and Halli, 2005; Brulé, 2020). In fact, women make up the largest group of *permanent* migrants in India, as they tend to permanently relocate upon marriage (Tumbe, 2018, p. 34-35). By contrast, men are much more likely to be *seasonal* or *semi-permanent* labor migrants: they leave their place of origin to work somewhere else from anything between a few weeks (seasonal) to several years or even decades (semi-permanent), while maintaining a homestead – and often leaving behind their wife and kids – in their natal place (Tumbe, 2018, p. 40). While permanent migrants, settling in a new place for good, should be registered to vote at their new residence, semi-permanent migrants do not always change their voter registration to their new place of residence. Sometimes, they hold off on changing their registration because they want to maintain the connection with their region of origin and reserve the right to vote there; while other times bureaucratic hurdles make it hard for new arrivals to enroll in cities (Kumar and Banerjee, 2017; Gaikwad and Nellis,

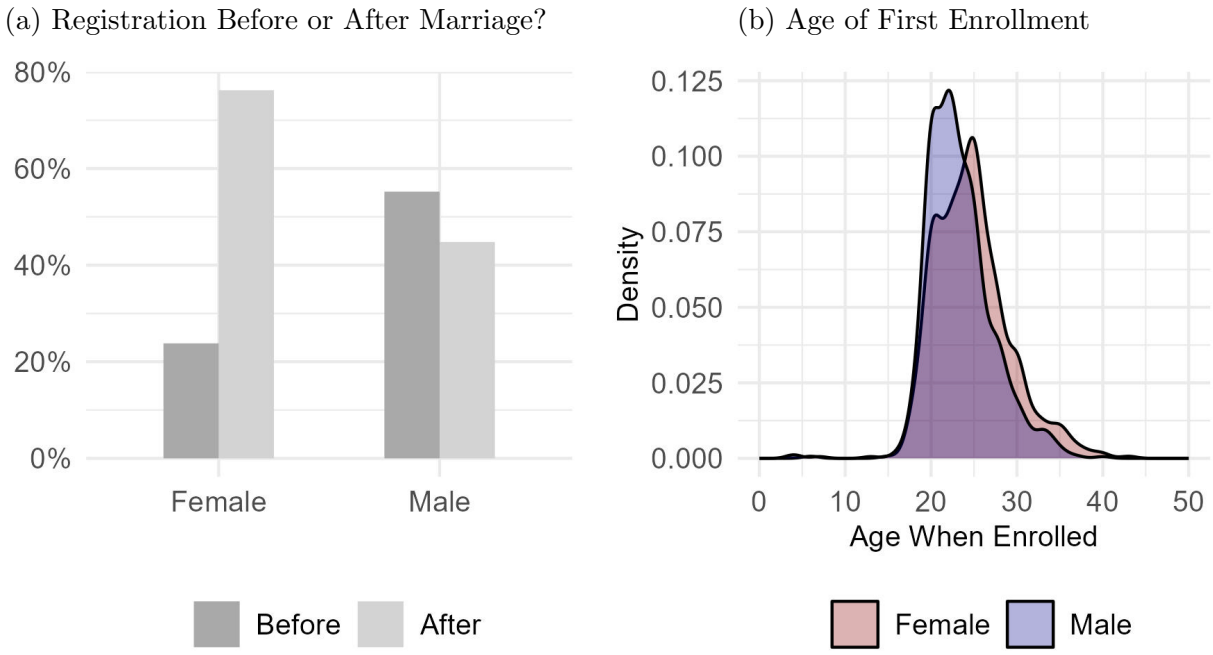
2021).

The average age at marriage coincides closely with the legal voting age in India: As per the 2011 census, women were, on average, 19.3 years old when they got married (up from 18.3 years in 2001), while men were 23.3 years old (up from 22.6 years).[43] Unlike men – who expect to stay put or, even if they migrate for work, to stay tethered to their natal village – many women expect to permanently move away at that age. Accordingly, women, as well as the families they depend on to help them navigate the registration process, often choose to defer voter registration until after they are married and settled in their marital village. Farzana, who was married when I spoke to her, said that she had voted for the first time in her life in the 2021 local elections in Uttar Pradesh: "I didn't vote before that. I voted when I came here after my marriage."[44] One man, now in his 80s with six grown and married children, told me that unlike for his sons, he had not helped his daughters register to vote before marriage, because "they will get married, what is the point of making their IDs here," referring to the localized voter list for the polling station of the women's natal home.[45] And a Booth-Level Officer who was assigned to a semi-urban slum area said that registering young women as voters sometimes proves harder than registering young men. She reported that occasionally, families do not wish to have their unmarried daughters enrolled when they turn 18, presumably because they expect them to get married and migrate soon.[46]

This is borne out by my village census data. As Figure 12a shows, the lion's share of women who were registered (76 percent) indeed only enrolled *after* they got married, while a slight majority of men (55 percent) were registered *before* marriage. This is not an artifact of differences in marriage age between women and men, but a sign of differences in age at registration. The village census collected information on how many years a person was enrolled; using that and the individual's age, I calculated the approximate age when the respondent first registered to vote. Figure 12b demonstrates that among registered voters

[43] See https://pib.gov.in/newsite/PrintRelease.aspx?relid=119871.
[44] Video interview, Uttar Pradesh, February 21, 2022.
[45] Video interview, Uttar Pradesh, November 10, 2021.
[46] Personal interview, Chhattisgarh, March 15, 2024.

Figure 12: The Relationship between Age and First Registration



in the two villages, women were, on average, older than men when they first enrolled. The mean age for women to enroll was 24.7 years, compared to 23.3 years for men ($p<.001$).

However, getting married is not a guarantee of voter enrollment for women. Among ever-married adults – i.e., those who are currently married, widowed, or divorced – there are stark gender differences in registration rates. As Appendix Figure A.8a shows, 70 percent of ever-married women are registered to vote, but more than 89 percent of men are; the difference is statistically significant ($p<.001$). In fact, out of 689 currently married women I surveyed across the two villages, 165 (24 percent) were not registered to vote, *even though their husband was enrolled*. By contrast, I only encountered 16 currently married men who were not registered even though their wife's name was in the voter roll (2.3 percent out of 677 married men surveyed).

However, while historically, women seem to have been much more likely than men to only register after marriage and to have been, on average, older than men when they first registered, this pattern might be slowly disappearing. In fact, those women who said they had first registered to vote before marriage were much younger than those who said they

registered after marriage (see Appendix Figure A.7). The mean current age of women who had registered to vote even before they got married was just under 32 years old, while those who enrolled only after marriage were on average close to 49 years old. The difference is not that stark for men, where those who registered to vote before marriage were on average 40 years old, and those who enrolled only after marriage averaged 49 years. In addition, there is no gender gap in enrollment among currently unmarried adults across the two villages, as Appendix Figure A.8b illustrates. Just under 55 percent of unmarried women and a little more than 53 percent of unmarried men were registered to vote; the difference is not statistically significant.

While it is of course normatively positive that women's registration rate is catching up with men's among younger cohorts and unmarried individuals, this also means that the share of deadwood among female entries on the voter list that permanent marriage migration produces will likely grow in future in these two villages.

7 Conclusion

This article provides evidence of considerable problems in voter registration in India. Using unique data comprised of two full village censuses as well as voter list annotations, I found that voter lists were both incomplete and inaccurate in both locations. On average, only 74 percent of eligible adults were enrolled to vote, while 26 percent were effectively disenfranchised by not being registered. These numbers put registration rates in rural India ahead of the U.S.' estimated 73.6 percent enrollment (Bureau, 2025). However, the onus of voter registration in the U.S. is almost entirely on the individual, while India puts considerable effort into encouraging and facilitating voter enrollment. By comparison, enrollment rates found in India are lower than in other countries with state-assisted registration, such as the U.K. at 86 percent (Commission, 2023) or France at 93 percent (Braconnier et al., 2017). In line with previous findings, young adults were particularly likely to not be registered.

That is despite the fact that the most recent revision of the electoral roll, which should have included field visits by booth-level officers to enroll newly eligible adults, concluded only weeks before the survey.

In addition, I found between 8.3 percent and 10.5 percent of names on the official voters lists were definite deadwood in the two study sites, with female names more likely to be obsolete than male names. Data from a larger survey of registered female voters across two districts suggests that at least among women, these deadwood rates on the voter lists are the norm, rather than the exception. This makes Indian voter lists considerably *less* accurate than those of other countries. Ansolabehere and Hersh (2010) estimated that 4 percent of entries on the U.S. registers were likely to be deadwood and 1.5 percent were duplicates, putting U.S. lists at more than 94 percent accuracy. In the U.K., lists were thought to be 88 percent accurate (Commission, 2023).

In stark contrast to findings from other countries, women in my study sites were significantly less likely to be registered than men. I theorize that patri-local marriage norms that require women to leave their natal village and join their husband's household upon marriage combined with hyper-localized voter lists likely explain this phenomenon. Families are more likely to hold off on bearing the costs of registering their daughters than their sons because daughters are expected to leave when they get married. Because voter registration in India is based on the polling station, women who move upon marriage will have to change their registration. Consequently, women are more likely than men to enroll only after marriage and are, on average, older than men when they register. However, this affect might be attenuating among younger generations.

My analysis shows that religion and caste identity did not predict enrollment status for individuals. Other research has suggested that Muslims might be under-enrolled in India (Shariff and Saifullah, 2018; Das, 2024). Under the ruling Hindu-nationalist BJP, Muslims have suffered attacks on their civil liberties (Tudor, 2023). In Uttar Pradesh, the site of my study, the BJP in fact has been in power since 2017, and its 2022 state election campaign had

clear religious overtones (see, for example, Ali, 2022). Equality in registration for Muslims, then, is a positive sign for Indian democracy. However, the two study sites were quite homogeneous in terms on religious composition: only 5 percent of residents in Village A were Hindu, and only 6.5 percent of residents in Village B were Muslim. It should be less surprising that Muslims residing in a Muslim-majority village are enrolled at high rates (and rates equal to Hindus). Extrapolating from these results to other locations is difficult, given that research has shown that *relative local group size* is important (Brass, 1997; Wilkinson, 2004). To further explore registration rates among the religious minority, more data–from locations with various religious compositions–is needed.

I trace the origins of faulty voter lists to the perverse incentives that street-level officers in charge of maintaining the lists face. It is easy for these Booth-Level Officers to add new voters, but difficult to delete names from the rolls. When their superiors set targets for the number of voters that should be enrolled at their polling station, they therefore have incentives to simply add names until aggregate goals are reached. This accumulates deadwood on the list, which in turn produces and hides under-enrollment. This deadwood – and consequently, under-enrollment of eligible adults – cannot be detected by comparing aggregate population estimates to overall enrollment numbers.

The scope of both deadwood on the electoral rolls as well as under-enrollment among the adult population that I found in my study suggests that micro-level quality checks might be required in order to improve the health of the electoral roll. This could take the form of rotating BLOs more frequently, and for regularly overhauling voter lists completely, based on full village enumerations. It could also mean having supervisors conduct perform ground-level spot checks of the list. One option for such spot checks would be to involve local notables. As part of the village censuses, I also interviewed the *pradhan* (village council president) of each location and asked him to mark on the voter list all those entries that he thinks should be deleted. On average, the pradhan was able to identify, with minimal effort, 45 percent of the confirmed deadwood on the list (see Appendix Figure A.9). Pradhans

were able to point out a sizable number of people who had passed away, as well as some of the women who had gotten married and moved away. However, recent research suggests that pradhans might actually have more limited knowledge on the local population than previously thought (Schneider, 2019). More work is needed to determine how accurate or biased pradhan's input on voter lists might be.

Appendix

Tables

Table A.1: Comparing Registered and Unregistered Adults

	Village A			Village B		
	Registered	Unregistered	P-Value	Registered	Unregistered	P-Value
% Female	46.43	64.39	0.000	42.03	58.22	0.000
% Male	53.57	35.61	0.000	57.97	41.78	0.000
Avg Age	43.61	29.20	0.000	45.51	32.13	0.000
Avg Education	5.14	6.95	0.000	3.78	4.20	0.284
% Hindu	4.94	5.68	0.746	94.20	93.33	0.778
% Muslim	95.06	94.32	0.746	5.80	6.67	0.778
% General	0.00	0.00		30.43	25.33	0.191
% OBC	95.06	94.32	0.746	51.76	56.89	0.233
% SC	4.94	5.68	0.746	17.81	17.78	1.000
Avg HH Income	13305	12977	0.516	8920	7538	0.074

Table A.2: Predictors of Voter Registration, By Village

	Dependent variable:	
	Registered (0/1)	
	Village A	Village B
	(1)	(2)
Female (0/1)	−0.104***	−0.122***
	(0.023)	(0.034)
Age (in yrs)	0.013***	0.010***
	(0.001)	(0.001)
Education (in yrs)	0.010***	0.001
	(0.003)	(0.005)
HH Income (in INR)	0.00000	0.00000
	(0.00000)	(0.00000)
Muslim	0.008	0.007
	(0.053)	(0.067)
OBC		−0.042
		(0.050)
SC		−0.030
		(0.058)
Village FEs	✓	✓
Observations	1,175	708
R^2	0.185	0.156
Adjusted R^2	0.181	0.148
Residual Std. Error	0.378	0.430
F Statistic	52.993***	18.479***

Note: *p<0.1; **p<0.05; ***p<0.01
Clustered robust standard errors in parentheses.

Table A.3: Response Rates and Reasons for Non-Response to Survey

(a) Bijnor District

	N	Percentage
Total	2341	100.00
Completed	345	14.74
Noncompletion: Temporary Reason		
Female Absence	462	19.74
Male Absence	247	10.55
Refused	159	6.79
Health Reasons	25	1.07
Noncompletion: Permanent Reason		
Female Migration	132	5.64
Died	123	5.25
List Error	3	0.13
Noncompletion: Unclear Reason		
Not Identified	587	25.07
Family Migration	258	11.02

(b) Bahraich District

	N	Percentage
Total	2902	100.00
Completed	359	12.37
Noncompletion: Temporary Reason		
Female Absence	1161	40.01
Male Absence	579	19.95
Health Reasons	86	2.96
Refused	16	0.55
Noncompletion: Permanent Reason		
Died	153	5.27
Female Migration	53	1.83
Noncompletion: Unclear Reason		
Not Identified	386	13.30
Family Migration	109	3.76

Table A.4: Reasons for Non-Enrollment Among Married Adults

Reason	% Women	% Men	P-Value
Never filled out Form	32.89	43.62	0.022
Enrolled at another PS	19.60	21.81	0.636
Applied but mistake in documents	15.28	7.98	0.025
Don't know what to do to enroll	11.30	14.89	0.306
Applied but never received Voter ID	7.97	3.19	0.051
Don't have required identification	7.31	4.26	0.240
Applied but official refused to accept	3.65	1.60	0.294
Other	1.99	2.66	0.865

Figures

Figure A.1: Village Census Coverage in Village A

Figure A.2: Voter Registration Rate by Age, Gender

Figure A.3: Registration Rate by Household Income Quintile

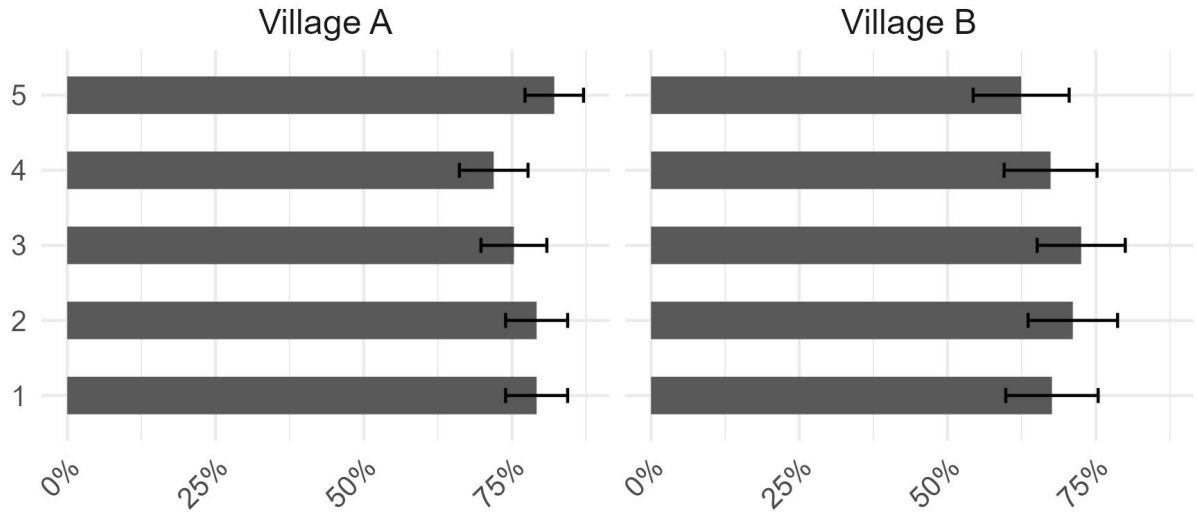


Figure A.4: Entries on Electoral Rolls, by Gender

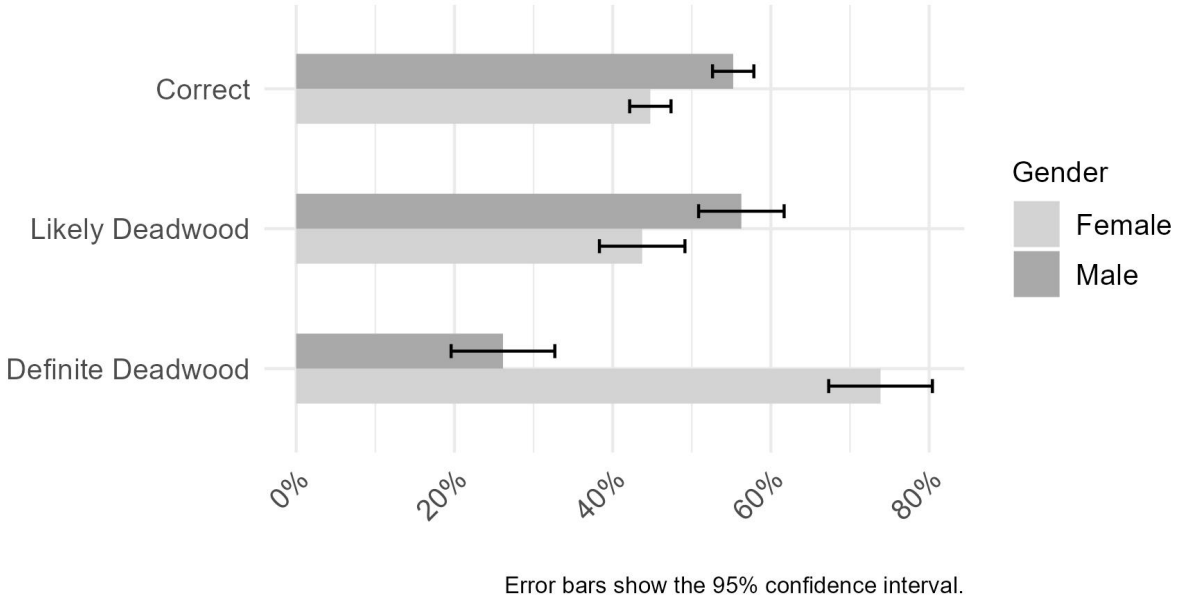


Figure A.5: Density Plot of Age of Entries on Electoral Rolls, by Type of Entry

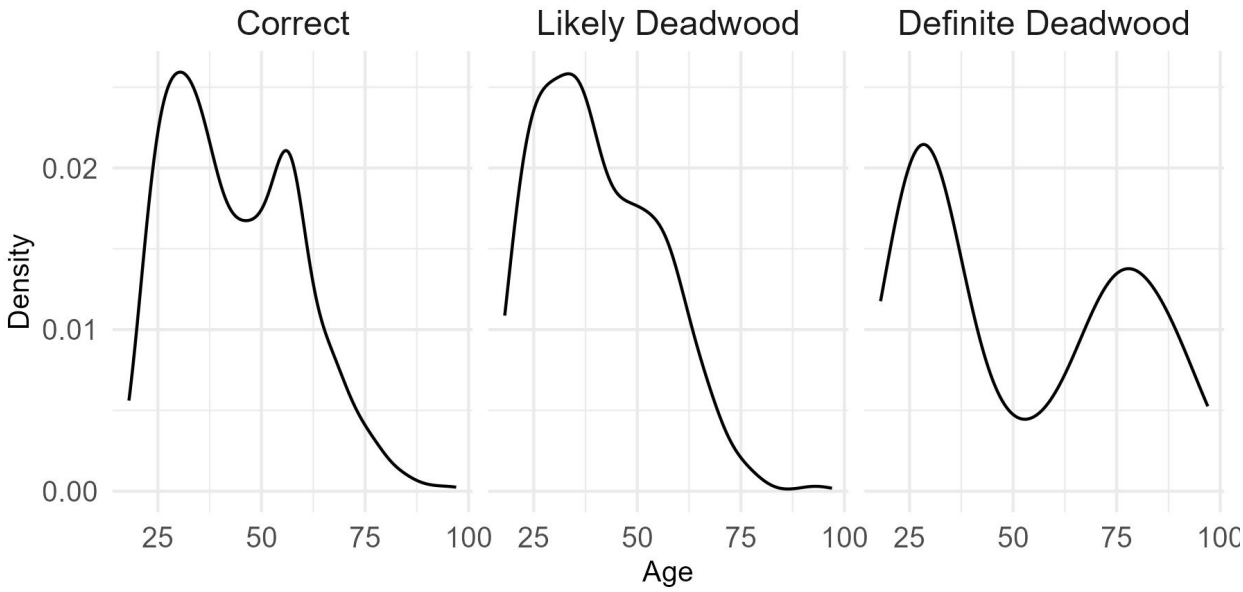


Figure A.6: Under-Enrollment and Deadwood, by Gender

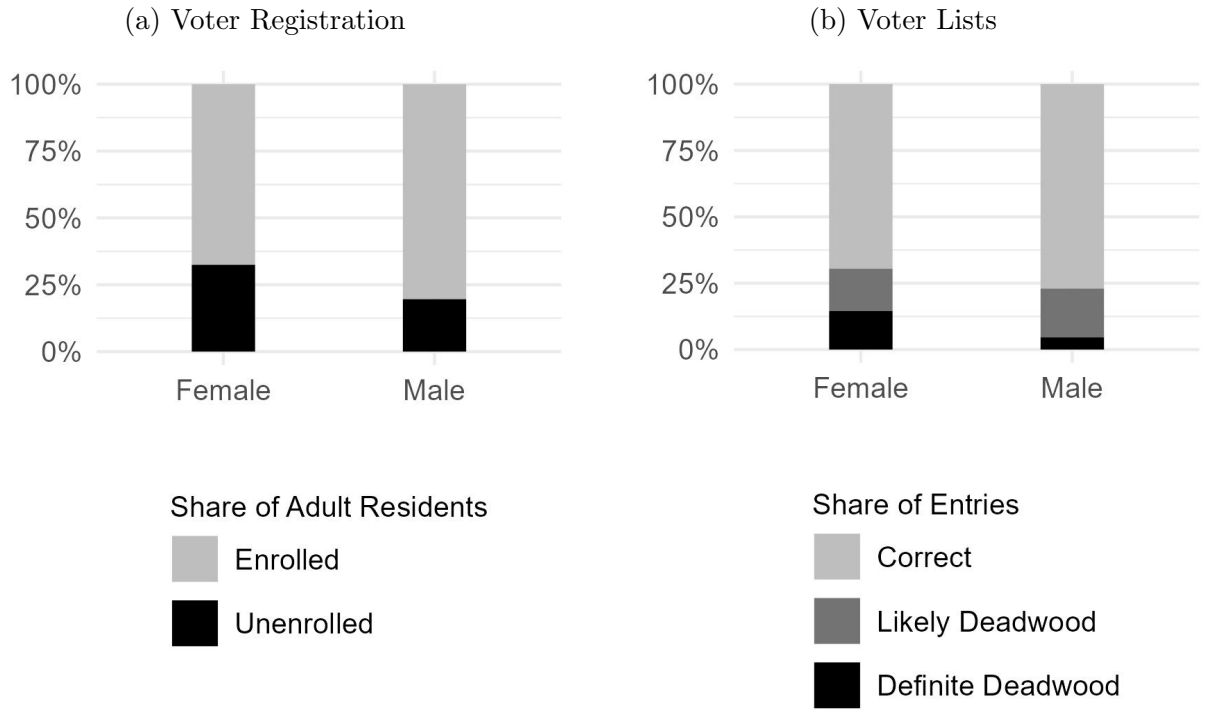


Figure A.7: Age Distribution of Registered Voters by Timing of First Registration

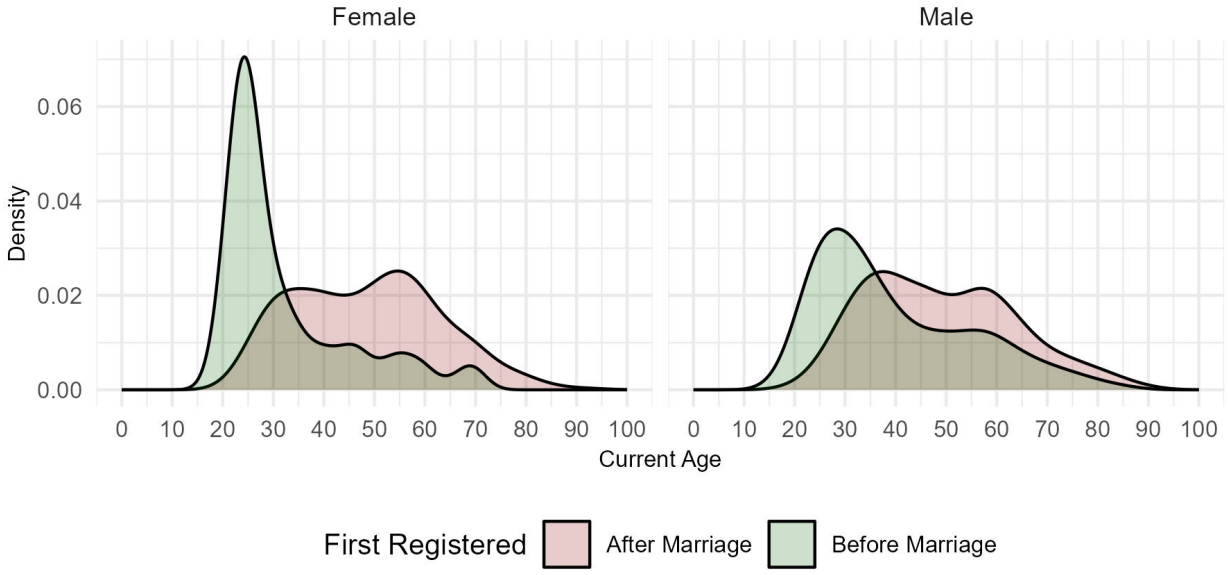


Figure A.8: Registration Rates Among Ever-Married and Never-Married Adults, by Gender

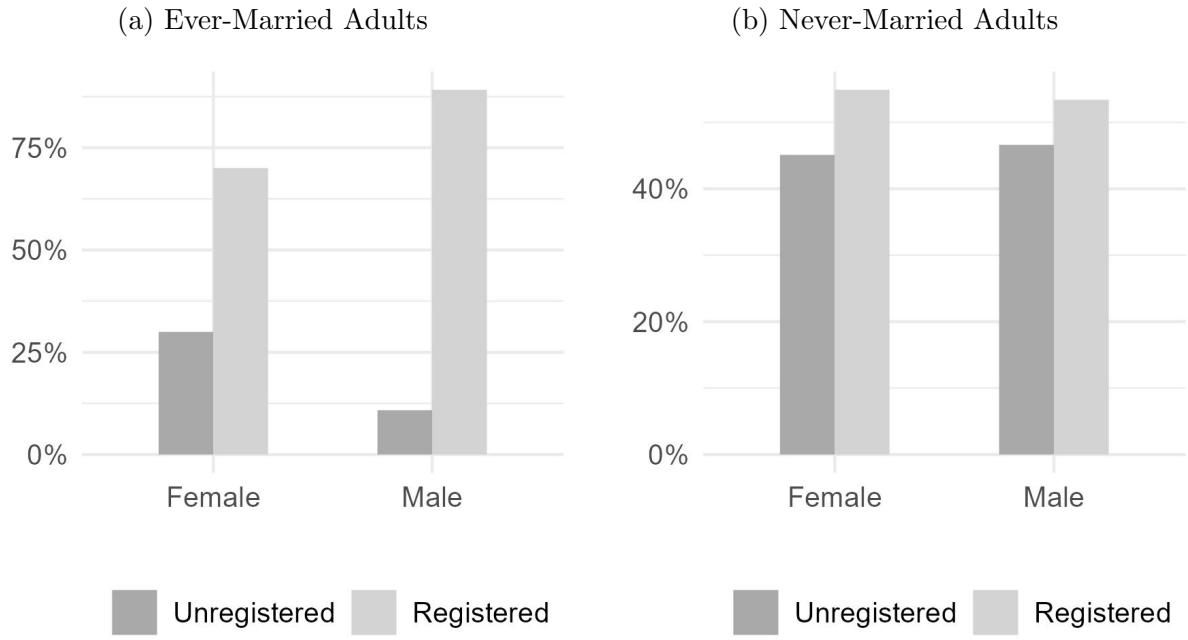
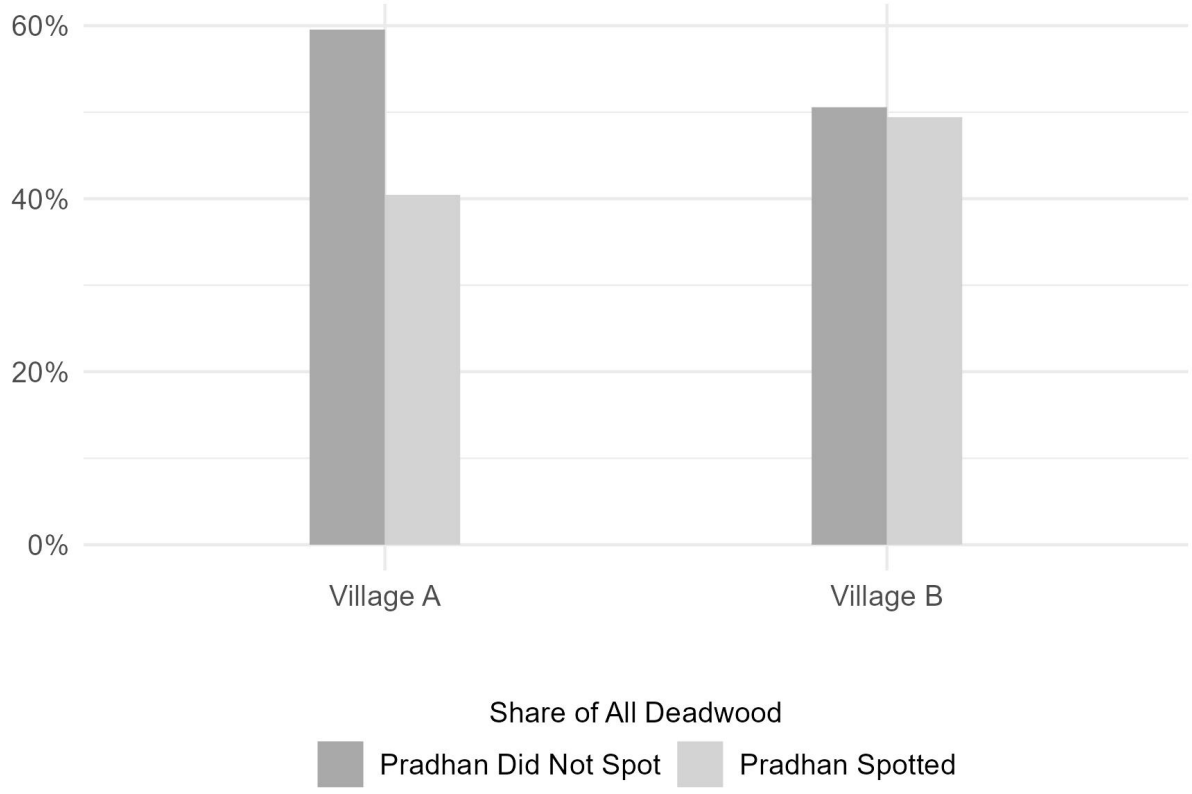


Figure A.9: Share of Deadwood on Electoral Rolls That Pradhans Were Able to Find



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