Operationalizing Inequality:

Low Caste Status, Village Composition, and Public Goods Access in Rural India

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ABSTRACT

Using data from the 2005 Indian Human Development Survey, this paper seeks to differentiate the effects of systemic and interpersonal discrimination by examining whether low caste individuals and households in India have better public goods access when they live in villages where they constitute a majority or minority. I show that low caste villagers have better outcomes in general in villages where there are higher concentrations of other low caste people.

I. Introduction

Inequality is often construed as a rigid, predictable social hierarchy. Many economic models built to capture the nature of inequality lend themselves to essentialism, marking discrimination as merely "the effect" of being female, for example. But I argue there is nothing about a marginalized identity that lends itself inherently to inferior outcomes; rather, patterns of inferior outcomes for marginalized groups are a product of social systems, both interpersonal and institutional. This paper seeks to explore this notion using caste in rural Indian villages as a case study.

In particular, I am concerned with the question: Do low caste villagers have better or worse access to public goods in villages where they constitute a majority or a minority? In looking at access to public goods, we can examine the impact of social hierarchy in the public sphere. While previous literature on caste diversity in India (Iyer, Banerjee, and Somanathan 2005) has shown that greater diversity is correlated with a lower level of public goods provision, this paper seeks to add to the literature in two ways. For one, I contend that provision is not the end of the story, because provision does not imply access. I will examine whether low caste households systematically differ in their use of public goods compared to non-low caste households conditional on the public good being provided in their village. Secondly, I contend that diversity is not the only important measure of village composition because this ignores those low caste individuals who may be living in a village that is majority-high caste. To test this, I construct a "sliding scale" measure of the percent of villagers who belong to a low caste and interact this with a low caste indicator variable to tease apart the influence of village composition on low caste status.

Using data from the 2005 Indian Human Development Survey, I find that using a more traditional model without the interaction term yields results that suggest that low caste households do indeed have inferior access to public goods. This study, however, adds nuance to this by uncovering hidden heterogeneity among low caste households that is dependent on village composition. I find that low caste households tend on average to have better access to public goods in villages where there are greater concentrations of other low caste families.

This paper is structured as follows: section II provides a brief background on the caste system and the operationalization of caste-based discrimination. Section III reviews the related theoretical literature on caste and the economics of social hierarchy. Section IV presents the data and methodology. Section V describes the results. Section VII discusses the implications of the study and concludes.

II. Cultural Background

India is a highly rural society—nearly 70% of Indians live in rural areas (Census of India 2001). About 80% of Indians identify as Hindus, many of whom acknowledge the existence of a religiously-justified social hierarchy known as the caste system (Census of India 2001).

Caste in South Asia has both religious and sociological connotations, both of which are relevant for the present study. The basic tenet of caste is to divide society into a hierarchy of five main classes, or *varnas*,

> beginning with Brahmins as the highest (Priests and teachers), Kshatriyas (warriors and rulers), Vaisyas (farmers, merchants, and artisans), and Sudras (laborers)… Untouchables, also known as Harijans or Dalits, fall outside of the caste system all together. These were the original caste groupings as made clear by one Hindu Holy Scripture called the Bhagvad Gita. (Rao 2010)

Each *jati,* or caste, is classified, generally speaking, as belonging to one of these varnas (see Figure 1). André Béteille defines a *jati*

> as a small and named group of persons characterized by endogamy, hereditary membership, and a specific style of life which sometimes includes the pursuit by tradition of a particular occupation and is usually associated with a more or less distinct ritual status in a hierarchical system. (Béteille 1965)

Interestingly, the exact nature of the hierarchy of *jatis* within each varna is ambiguous, subjective, and highly-debated (Bennett 1983; Béteille 1965). Occupation is not only determined by varna but also by caste within the varnas—among the Dalits, for example, there are separate castes for musicians and for potters each with their own hierarchical structure (Folmer 2007). Traditionally, the occupation assigned to the caste is the one males in particular will adopt, and changing castes is nearly impossible—the primary mode of inter-caste mobility is a caste demotion brought about by impure acts, such as intermarriage or the consumption of water touched by an inferior caste (Cameron 1995, Bennett 1983, Höffer 2004). Caste is therefore a stricter social hierarchy than other forms of birth-basted stratification such as race in the United States (which does, for example, allow for exogamy).

The intersection of caste and gender is a particularly murky one, as indicated by Cameron's (1995) ethnography of Dalit women and Bennett's (1983) ethnography of high caste women. High caste women are seen as important spiritual caretakers of the home, ensuring the kitchen and food are prepared according to religious mandate and taking care of daily worship. Low caste women's roles are less well defined, since their financial situation may compel them to work outside the home, and low caste women have significantly worse outcomes than low caste men and high caste women (Cameron 1995, Bennett 1983). Though some perceive their lack of a defined role to mean that they have greater personal freedoms, such as the freedom of movement, they also suffer greater rates of sexual assault and homicide.[1]

Caste was not only an informal institution, but was also formalized and legalized during the reign of the British empire, when caste was included on the census, forcing people to choose from a finite number of discreet[2] identities (Dirks 1992). Since Indian independence in 1947, the caste system has largely shifted from a formal institution to an informal one. Caste-based discrimination was made illegal in the constitution, and a

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[1] http://www.ncdhr.org.in/ncdhr/general-info-misc-pages/wadwiu
[2] That is, in the mathematical sense, where values are distinct and separate; the opposite of continuous.

system of affirmative action, called the reservation system, was imposed to set aside opportunities in government, both the political and bureaucratic components, for women, caste minorities, and ethnic minorities. These laws, however, remain fairly ineffective and are rarely enforced (Silliman Bhattacharjee 2018). Caste, however, remains socially important and is signaled through external symbols such as names, dress, and occupation. This means that caste can be determined in anonymous exchange, which has critical economic implications.

III. Literature Review

A. Clientelism in Agrarian Societies

To deconstruct the effects of stratification and the resultant discrimination as it pertains to economic lives and economic outcomes, we first need a working theoretical framework through which we may understand stratification in rural societies and how stigmatized groups respond to their own marginalization. Since the caste system can be characterized by patron-client relationships in traditional rural communities (Cameron 1995), special attention must be paid to these social structures as they manifest both culturally and historically. Scott (1972) highlights the difference in social structure: "For the peasants, the main social links are those which tie them to elite patrons and these links tend to reduce the social significance of horizontal ties between peasants." He describes the expectation of reciprocity in feudal and patron-client systems in South East Asia, which shares many characteristics of similar relationships in South Asia, and notes how colonization fundamentally undermined the ability or incentives for elites to reciprocate. With the politicization of hierarchy came the evolution of stigma as a means of exercise of control (Dirks 1992).

In many ways, caste followed this same trajectory: what was initially a patron-client relationship became a basis for ostracizing low caste individuals. Cameron (1995) warns anthropologists away from focusing too heavily on the religious aspects of caste, neglecting the economic significance of caste-based arrangements in agrarian societies. She describes the transformation of low caste labor—in particular that of low caste women—from the "secure, but exploitative, inter-caste patron-client relationships and their replacement by informal and daily wage labor in the context of increasing poverty." Rural India also exhibits remarkably low socioeconomic and spatial mobility (Munshi and Rosenweig 2009), which allows this system to persist particularly strongly in village settings, the primary focus of the current study.

This newest iteration of the caste system in rural areas has critical implications for the current study. High and low caste households are no longer interdependent, which means that high caste households have both greater license to discriminate and less interpersonal contact with low caste individuals. High caste families rely less on low caste families for certain goods and services. This creates unemployment for low caste people while high caste people are allowed to either continue their traditional pursuits (teaching and performing religious services) or to engage in tasks previously delegated to low caste people, such as sowing the fields (Cameron 1993). For low caste households, this means the destabilization of their livelihoods and limited means of changing their circumstances—they can either switch industries, which may be difficult in small rural

economies, or migrate, which could be expensive. If India intends to become a meritocratic democracy, which the affirmative action requirements for political, bureaucratic, and educational positions imply, then public goods access—not just provision—is *essential* for allowing low caste individuals to amass the capabilities sets (in Sen's [1992] terms) to make possible improved economic standing. In the case of the three public goods examined here, education would allow for low caste individuals to switch into industries with real employment opportunities instead of having to uproot their households or rely on high caste households for a pittance (Silliman Bhattacharjee 2018). Improved healthcare and water access would allow low caste individuals to develop the necessary human capital to exert more autonomy over their circumstances. Finally, improved water and sanitation facilities would mitigate the need for low caste individuals to be coerced into handling human waste, as they often are (Silliman Bhattacharjee 2018).

Though most of the lessons about the relationship between diversity and public goods have been applied to the United States, some work has been done on the provision of public goods in India. Iyer, Banerjee, and Somanathan (2005) found using Indian data from 1991 that lower public goods provisions were correlated with greater social divisions, with particular regard to landowner-peasant relations, caste diversity, and religious diversity. Betancourt and Gleason (2000) found that the allocation of public goods in rural Indian districts (e.g., that of nurses, doctors, and teachers) noticeably reflected bias against Dalits and Muslims. This paper seeks to add to the literature on public goods not by trying to predict *provision* but *access*. I hypothesize that even though goods that are ostensibly public are available, not all households have genuine access to them, whether as a matter of logistics or of threatened social sanction.

B.   *Stigma and Identity Management*[3]

Erving Goffman's *Stigma: On the Management of Spoiled Identity* describes in great detail how the stigmatized understand their own identities and navigate interactions with "normals" and with fellows (Goffman 1963). Most relevant for the paper at hand, however, is his discussion of "information control in stigma management" (Goffman 1963). There are two layers to the stigmatized person's identity: the personal (having to do with the individual) and the social (having to do with representing the group of the stigmatized). In the language of economics, they can choose to build social capital among fellows or among the "normals," referred to in this paper as "high-status individuals" or "out-group members." If they chose to build social capital with in-group members, they may pursue a path of *in-group alignment,* which consists of a stringent adoption of one's stigma and identity, expressing traits known to be associated with that marginalized group,

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[3] Note that I am taking a very narrow definition of "identity" in this paper. For the context of this paper, I understand identity to be socially ascribed categories. These are externally imposed on the subject and signaled by the subject in culturally salient ways, which in India could be through names, dress, piercings, occupation, or even appearance. Thus, Goffman's theory of stigma is here narrowly construed to fit this definition. I recognize, however, that sociologists and anthropologists are likely to disagree with this definition, as well as the implied definition of culture used throughout this paper.

conceiving of membership in the group as "natural," and at times confronting disapproval openly, "consolidating a public image of his differentness as a real thing and of his fellow-stigmatized as a real group" (Goffman 1963).

If an individual chooses to pursue social capital building with out-group members, there are two ways of achieving this. The first, *out-group alignment*, does not require a denial of one's identity as a stigmatized person. Rather, one merely does not confront discrimination, adapts to it, and "protects normals" from witnessing "the unfairness and pain of having to carry a stigma…" (Goffman 1963). The individual thus compliantly (if not cheerfully or ignorantly) participates in the system of social stratification by accommodating the negative expectations of high-status individuals. This process is a lengthy curating of the social identity for the comfort of high-status individuals. An individual may also manage their *personal identity*, a collection of traits and social markers unique to them as an individual, in a manner which allows them to distance themselves from the stigma itself, which is signaled externally primarily to out-group members (but which we may imagine may also have signaling value within the in-group community). However, this paper is more concerned with the management of their social identity.

Goffman's framework is especially useful for understanding caste discrimination in India. This paper classifies those identified as Dalits, Other Backward Castes (OBCs) and Adivasis (tribal peoples, also referred to as Scheduled Tribes) as low caste.[4] Dalits, given the sociological attention paid to them and the extent of discrimination against them, provide an important case study for Goffman's framework in the context of this paper. Recent decades, for example, have seen the rise of Dalit[5] activists challenging social sanctions that arise from the belief that Dalits pollute water or certain foods by touching them or the vessels in which they are presented (Cameron 1993). In Nepal, for example, these Dalit activists go to non-Dalit tea shops and refuse to wash the cups from which they had been drinking (Folmar 2007). Questioning and confronting the custom of separate amenities is an example of *in-group alignment*, where Dalits refuse to accommodate high caste discomfort with their presence.

In traditional village settings, many Dalits practice *out-group alignment* by engaging in the occupation delegated to their caste in patron-client arrangements with higher caste villagers and avoiding the pollution of

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[4] Note that the terms Scheduled Caste, Scheduled Tribe, and Otherwise Backward Castes are terms that have their origin and the colonial period and which have been adopted in data collection operations in India today. Even the IHDS uses these abbreviations. I have opted to use the terms "Dalit" and "Adivasi," as these seem to me to be the least politically charged. Because OBC is such an amorphous category, it is the only accurate term I can use to describe people who are identified as part of this group.

[5] Formerly referred to as "Untouchables," Dalits or Harijans, are considered to be ritually polluted and polluting. Higher castes are forbidden from taking water touched by Dalits and Dalits are barred from entering temples, thus being excluded from important social and religious events ("Untouchable | Hindu Social Class" 2010). https://www.britannica.com/topic/untouchable.

other villagers by observing their customs. In areas where all are well-known to each other, this may be the only viable option, since the caste of everyone is known and the ability to sanction transgressors stronger than in town or city settings.

Signaling using symbols is an option that may be open even to Dalits living in villages where their status is well-known. For one, conspicuous consumption may be a claim to social status in an attempt to rewrite the rules of status to be more aligned with twenty-first century consumerism. Khamis et al. (2010) find evidence for this in their paper "Consumption and Social Identity: Evidence from India," where they discover that OBC households in particular spent much more on "visible consumption" than Brahmins and High Caste households when controlling for income. Visible consumption of items such as clothes or vehicles may serve as status symbols and as disidentifiers simultaneously. Dalits may also enforce inter- or intra-caste hierarchy among one another, asserting superiority and replicating patterns of ritual discrimination (such as barring members of other castes from entering their houses) practiced against themselves—another status symbol and claim to prestige, if only one important within the Dalit community (Folmar 2007).

They may also adopt the practices of higher caste individuals, a process called "Sanskritization." In Nepal, a low caste group called the Sarkis

decided that they would no longer eat beef, in emulation of other Hindu castes. Only Sarkis ate beef according to tradition. But KB [the interviewee] and others recognize this act as one that is used to justify their untouchability; discontinuing beef consumption would remove one source of their stigmatization. Anyone caught eating beef was to be subject to a significant fine. (Folmar 2007).

In Gujarat, India, A. M. Shah (2010) writes of a group of Dalits, the Garoda, that claims to be Brahmin, taking Brahmin names, wearing the sacred thread (which indicates one is of a higher caste and has undergone a series of initiation rites), and serving as priests to other Dalits (Shah 2010). Dalits also build their own temples and teashops to replicate higher castes' social spaces and avoid discrimination (Folmar 2007).

In understanding the implications of this study, we have to be careful, then, to realize that living among other low caste individuals does not imply a lack of discrimination or some kind of fraternal egalitarianism. Rather, there is a chance that low caste individuals will not have differential outcomes dependent on village composition due to the reality that they may *always* be placed in a social hierarchy, and therefore public goods access may still be unequal among majority-low caste communities. However, this discussion does allow us to contextualize the research question and consider mechanisms by which differential outcomes or non-differential outcomes arise in the data.

C.   *Stratification Economics*

The next step in understanding the theoretical nuance of the current research question is to reflect on the role of hierarchy in determining economic outcomes. Economists focusing on race and inequality, particularly with regards to impoverishment, have begun to eschew arguments of group dysfunctionality of

low-status individuals in favor of understanding high-status individuals as self-interested agents who exert social power to maximize material and relational gains by limiting the capabilities set (along Amartya Sen's definition) of low status individuals (Darity 2008; Sen 1992). "There are material benefits that redound to dominant groups that motivate their efforts to maintain privilege" (Darity 2005), and these efforts may limit the ability of low status groups and individuals to improve even when motivation to do so is extant.

Economists traditionally view the liberal market economy as innately able to correct social inequities by punishing unfair market participants through competition—consumers will simply substitute away from goods produced by those who wield unfair power over them. This position generally neglects the prevalence of informal economic activity in developing economies, where in-kind transactions often take place (Subramanian and Deaton 1996) which are not necessarily beholden to the rules of the market economy.

> Buyers and sellers are at the mercy of each other and other ethnic, cultural, and socioeconomic
> factors. The informal economy represents a perennial form of social stratification that does
> not enjoy the level playing field assumed by liberal economics. (Commons 2008)

Here, therefore, to deconstruct the nature of labour supply and demand, consumer behavior, human capital development, and social capital development, it is critical to map power dynamics in the local economy. This will help us understand the limits of the agency employed by the participants as well as to contextualize decisions that may appear irrational or inefficient (such as "conspicuous consumption," following Khamis et al. [2010]). Additionally, and importantly for the current study, it challenges the assumption that provision is equal to access when it comes to the provision of public goods. High caste villagers may very well be *incentivized* to preserve and even exaggerate the inequality between themselves and low caste neighbors, and by implication may want to police the access to public benefits. Deconstructing the operationalization of public goods access may allow us to think more carefully about improving the access of impoverished and low caste households (who may not be the same households!) to goods and services such as water, sanitation, education, and healthcare.

D.   *Caste and Economic Outcomes*

Despite the abolition of caste seventy years ago, it is nevertheless a strong determinant of economic outcomes, a point which has been consistently reinforced by development literature over the last thirty years. To begin, caste and socioeconomic class are not necessarily synonymous, especially as modernization and globalization allow people to move into careers not normally associated with their caste. Vaid (2012) finds that "with regard to social mobility opportunities, … although Scheduled Castes…have a difficult time gaining upward class mobility, higher castes are not entirely cushioned from the forces of downward mobility." Nevertheless, lower caste individuals and Muslims tend to have lower income, and this is traceable back to a difference in endowments of wealth and human capital due to historic labor market discrimination (Karki and Bohara 2014, Khamis et al., 2010).

Caste also restricts networking abilities, a major component of social capital attainment. Munshi and Rosenweig (2009) show that exogamy, while remarkably low across all caste boundaries, is particularly uncommon among the lowest status groups and the poorest among these low status groups. They hypothesize that marriage networks allow for risk-sharing within caste, but restrict socioeconomic mobility by diminishing opportunities for exogamy.

In sum, economists have begun to realize that traditional models of intergroup disparities do not accurately reflect the negative economic impacts of discrimination and at-birth inequalities. This paper seeks to add to this literature by learning about the influence of interactions between high status and low status people on economic outcomes. Caste in India provides a particularly interesting case study, given the close alignment to Goffman's (1963) theory of stigma as well as the theoretical ambiguities in how exactly caste may affect outcomes given the aspects of religious purity. Previous literature on caste has demonstrated that low caste individuals face broad disadvantage, both in the market and in their communities. I follow this literature, examining social capital, cultural norms, and economic behavior understand the effect of group dynamics on the wellbeing of low caste individuals.

IV. Empirical Strategy

This study uses data from the India Human Development Survey 2005 (IHDS) collected by the University of Maryland and the National Council of Applied Economic Research, New Delhi. The research team surveyed 143,162 individuals from 41,554 households in 2,474 communities across India in order to obtain a nationally representative sample. The number of respondents in each state is reflective of its relative population size. Respondents were asked a series of questions on topics ranging from health, education, civic participation, consumption, social networks, labor market participation, and household structure in order to holistically measure wellbeing in India. Most primary respondents were male heads of household, and village heads were the respondents of the village survey.

A. Model

To study the impact of village composition on the economic outcomes of low caste households, I test a basic linear model that takes the form:

(4)
$$\lambda_i = \beta_0 + \beta_1 P_j + C_i + \beta_2 P_j * C_i + \mathbf{X}_i \beta_3 + \mathbf{\Phi}_j \beta_4 + \varepsilon_{ij}$$

where λ_i is a measure of human development of person i, P is a measure of the relative percent of low caste villagers in village j, C is an indicator equal to 1 if the household is low caste, $\mathbf{X}$ is a vector of household- and individual-level controls, and $\mathbf{\Phi}$ is a vector of village-level controls. I also interact the caste indicator with the percent low caste variable to disaggregate the effects of social categorization and village composition.

The dependent variable λ_i captures, at least initially, measures of either social capital (the composition of social networks and the intimacy of relationships with professionals) or public goods access (number of public schools, number of public hospitals, source of water, access to sanitation, and receipt of government benefits). While none of these strictly fit the economic definition of a public good, the village is sufficiently

small in scale compared to the national government, and therefore is reasonably non-rivalrous (i.e., one person using it does not prevent simultaneous use by another). This paper is a test of how non-excludable such goods are—are certain individuals barred from use of these goods?

Villages that were majority-low caste were about 87% low caste on average, with a standard deviation of 14.33 percentage points. Low caste households comprised about 26.16% of the population in villages where low caste individuals were a minority (the standard deviation was 15.69 percentage points). 71.51% of villages surveyed were majority low caste, and low caste households comprised 68.39% of the population on average. This implies that villages were highly homogeneous overall, and low caste individuals tended to either form a majority by a wide margin or to be greatly outnumbered. Along these lines, I noted that the people in my study were highly homophilous, meaning they were much more likely to live in villages with fellows. Of the low caste households, 82.29% lived in villages that were majority low caste, compared to 43.63% of high caste households and 55.5% of non-Hindu households. In villages where low caste households lived, however, the low caste population was about 77.4% of the village, compared to 47.5% of the villages where high caste households lived and 51.5% of the population where non-Hindu households lived (Table 1 in Appendix A).

In terms of household economic indicators, there was certainly variation between low caste households in majority- and minority- low caste villages, but these differences were generally small in magnitude. Households in majority-low caste villages had higher income, higher per capita consumption, lower fertility, and more education than those who did not. They also lived higher above the state poverty line (371% compared to 353%). Households in majority low caste villages, however, owned less land than those who did not, which contradicts ethnographic research from Hindu villages (Cameron 1995, Bennett 1983). Though these differences were small, however, a difference of means test demonstrated that they were statistically significant, and this may indicate that individuals living in villages with fellows may be better off than those living in villages where they are a minority (Table 2 in Appendix A).

V. Analysis

A. Education

To begin, I examined access to and quality of education using the education and health survey, which was administered to a restricted sample of mothers and their children. I first wanted to explore access to education in the most obvious ways—to begin, I wanted to know if low caste students were using the schools in their village (measured through school distance) in a way that fluctuated with village composition, and if there were different patterns of enrollment and attendance for low caste households that varied with village composition. Tables are reported in Appendix B and trend lines are reported in Appendix C.

Panel A shows the results of the regression run without the focal interaction term. Distance to school is negatively and significantly correlated with the low caste indicator, implying that low caste students tend to live about 0.2 km closer to their schools than non-low caste students, ceteris paribus. The percent low caste in

the village is positively correlated with distance to school, but this is both statistically and economically insignificant—a difference of about 0.007 km. The model predicts that low caste students spend 0.05 hours more per week (about 3 minutes) in school than non-low caste students, though this result too is small in magnitude and statistically insignificant. A marginal change in the percent low caste was associated with a 0.5-hour decrease in school attendance per week, a rather large change that is estimated to be statistically significant. Low caste status was positively correlated with the age at which students started school by about 0.1 years, but marginal change in the percent low caste was negatively correlated with a decrease in the age of entry to school by 0.04, though this latter result was statistically indistinguishable from zero. Both the low caste indicator and the percent low caste coefficients were positively correlated with the likelihood of repeating a grade and significant at the 1% level. The low caste coefficient was small in magnitude (about 1.8% increase in the likelihood of repeating a grade), but the percent low caste predicted a nearly 6% increase in the likelihood of repeating a grade per marginal increase in the percent low caste.

Panel B demonstrates how the predictions change when we add the interaction term. Distance to school is still negatively and significantly correlated with low caste status, but this coefficient is now larger— the model predicted that low caste students tended to live 0.4 miles closer to school than their non-low caste peers in villages where there were no other low caste students. The coefficient for percent low caste is now negative, estimating that a marginal change in the percent low caste is associated with a 0.25 km decrease in distance to school, but this result is not statistically distinguishable from zero. Importantly, the interaction term shows up as large in magnitude and statistically significant at the 5% level; a marginal increase in the percent low caste is associated with a 0.5 km increase in the distance to school for low caste students.

The hours in school coefficient remained positive, small, and statistically insignificant for low caste students, implying that low caste students spent about 10 more minutes per week in school than non-low caste students in villages where there were no other low caste children. A marginal increase in the percent low caste was now correlated with a decrease of 0.4 hours per week in school, but this too was statistically insignificant. The interaction term implied that a marginal change in the percent low caste was associated with a decrease in time spent in school for low caste students by about 12 minutes, though this result was not statistically significant.

With regard to the number of days absent per month, all three coefficients were estimated to be large and statistically significant in the second model. The low caste indicator implied that students missed 0.5 more days than non-low caste children in villages where there were no other low caste children. A marginal increase in the percent low caste was associated with an increase in days missed by 0.8 days. On the contrary, however, a marginal increase in the percent low caste was associated with an 0.8 day *decrease* in the number of days missed for low caste children.

The age at which students started school showed a similar pattern. Low caste children started school 0.3 years older than non-low caste children in villages with about 0% low caste. A marginal increase in the

percent low caste was also positively correlated with the age of starting school. However, a marginal increase in the percent low caste was associated with a *decrease* in the age at which students started school for low caste children by about 0.3 years.

The predicted likelihood of grade repetition again reinforced this pattern. The coefficients for low caste and percent low caste were positively correlated with the likelihood of repeating a grade. Low caste children in areas with no other low caste households were about 5% more likely to repeat a grade than non-low caste children. A marginal increase in the percent low caste was associated with an 8% increase in the likelihood of repeating a grade for non-low caste children. However, a marginal increase in the percent low caste was correlated with a 5% decrease in the likelihood of repeating a grade for low caste children.

Thus, we see that there is a hidden story when the intersection of individual identity and community composition is left out. Table 3 reveals that low caste students tended to be better off in villages where there were more people who were also low caste. Naturally, we cannot draw causal conclusions from this, but even the associational relationship is moving. But just because children are going to school does not mean that the quality of the education they are receiving is equal. Indeed, teachers can be political actors in ways that cause the classroom to be an important mechanism for perpetuating rather than ameliorating the effects of discrimination.

To test this, I analyzed how parents reported the behavior of their children's teachers. Parents were asked whether teachers regularly showed up for work, whether the teacher was local, fair and good, whether the teacher favored certain *jatis* over others, and whether their children were ever praised or ever beaten in the classroom.

I first examined teacher quality. Again, Panel A presents the results of the model without the interaction term. Column 1 describes the relationship between the focal variables and teacher absenteeism, a major problem in South Asian schools (Boo 2012). The first model predicts that low caste students' teachers tend are 0.9% less likely to be reported as regularly attending, a result that is statistically significant but not economically significant. A marginal increase in the percent low caste is correlated with a 1.4% increase in the likelihood of parents reporting that teachers regularly attend, which has economic meaning as well as statistical significance. Both low caste status and the percent low caste in the village were negatively correlated with the parents' likelihood of reporting that their children's teachers were local (1.7% and 2.3%, respectively). Low caste parents were less likely to report that the teachers were fair and more likely to report that the teachers were discriminatory by about 1% compared to non-low caste parents. On the other hand, a marginal increase in the percent low caste was associated with a decreased likelihood of reporting a biased teacher (by 1.2%) and an increased likelihood of reporting a fair teacher (by 1.6%). Low caste parents were less likely to report that they believed the teachers were good, but a marginal increase in the percent low caste was associated with a greater probability that teachers were considered good. Finally, low caste parents were less likely to report that their children were praised and more likely to report that their children had been beaten in school (by 3.6% and 2.1%

respectively).

Again, Panel B reveals hidden heterogeneity. When the interaction term is included, the coefficient on teacher attendance loses statistical significance and remains minute in magnitude. The percent low caste coefficient remains about the same size, with the same sign and level of significance. The interaction term is negative, but small in magnitude and not statistically distinguishable from zero.

Low caste parents were 6.8% less likely to report that their children's teachers were local in villages where there were no other low caste residents. A marginal increase in the percent low caste was associated with a 7.1% decrease in the probability of reporting a local teacher. However, a marginal increase in the percent low caste was correlated with an 8.4% increase in the likelihood of reporting a local teacher.

Low caste parents were still about 1% less likely to report that their children's teachers were fair but now 5% more likely to report that the teachers were biased in villages where there were no other low caste families. A marginal increase in the percent low caste was positively correlated both with reporting a fair teacher and a biased teacher, a result that is not immediately explicable. For low caste households, a marginal increase in the percent low caste was negatively correlated with reporting a fair teacher, but this result was statistically and economically indistinguishable from zero. However, a marginal increase in the percent low caste was strongly negatively correlated with the likelihood of reporting a biased teacher for low caste households by about 6.4%.

Once more, low caste households were 4.4% less likely to report that their children were praised in school and 3.4% more likely to report that their children were beaten in villages without other low caste households. A marginal increase in the percent low caste meant that parents were about 1% more likely to report their children being praised (though this was not statistically significant) and about 4.5% less likely to report their children being beaten (which was significant at the 1% level. The coefficients on the interaction term were not statistically significant but nevertheless suggested that low caste parents were less likely to report their children being beaten and more likely to report their children being praised in villages where there was a greater concentration of low caste households.

B. Health

Table 3 shows the association between the focal variables and the choice of initial healthcare provider for a non-chronic affliction such as fever or diarrhea. Panel A suggests that low caste patients were more likely to utilize a public doctor or nurse by about 2% and less likely to seek care from a private provider by about 2.1% or from a pharmacy by about 1%. They were no more or less likely, however, to seek care from a traditional healer. The percent low caste coefficient was never statistically significant and was negligibly small for predicting the use of a public provider or traditional healer. The results did suggest that a marginal increase in the percent low caste was correlated with a 2.1% decrease in the likelihood of using a private healthcare provider and a 1.1% increase in the likelihood of using a pharmacy, but these results are inconclusive.

Panel B reports that low caste households were less likely to seek care from a public doctor or nurse by 0.8% in villages where there were no other low caste residents, and a marginal change in the percent low caste was associated with a lower likelihood of seeking care from a public healthcare provider by about 2.2%, but these results were not statistically distinguishable from zero. For low caste households, however, a marginal increase in the percent low caste was associated with a 4.5% increase in the likelihood of seeking care from a public provider.

Low caste households were less likely to report using a private doctor or nurse in villages with a low caste population close to zero, and a marginal change in the percent low caste was also negatively associated with using a private healthcare provider. For low caste households, however, an increase in the percent low caste was correlated with a 2.2% decreased likelihood of using a private healthcare provider.

Low caste households were somewhat more likely to report using the pharmacy (.7%) in villages without other low caste residents, though this result was not significant. On the other hand, the marginal effect of a change in the percent of low caste villagers was an increase the likelihood of using the pharmacy by 3%. A marginal increase in the percent low caste was negatively correlated with pharmacy use by about 3% for low caste families, however.

Use of a traditional healer was only barely more common among low caste families in villages with no other low caste residents. The marginal effect of a change in the percent of low caste villagers is also positive, but by a similarly negligible magnitude. For low caste households, a marginal increase in the percent low caste was correlated with a 4% decrease in the likelihood of using a traditional healer. None of these results are significant, and the differences between low and non-low caste households are minute. Caste, then, does not appear to play an important role in determining the primary healthcare provider for respondents.

Beyond the type of care sought, I was also curious to know if low caste villagers tended to seek primary care outside of the village to understand if inequities in care manifested spatially. Table 6 presents the results for the analysis of place of treatment. Low caste households were 1.9% more likely to seek care in the village and 1.7% likely to seek care in a different village compared to non-low caste households. They were also 0.7% less likely to seek care in a nearby town and 0.6% less likely to seek care in the district headquarters, but this result was not statistically indistinguishable from zero. A marginal increase in the percent low caste was correlated with a 0.2% increase in the likelihood of seeking care in the village and a 2.2% increase in the likelihood in seeking care in another village. Only the second of these results is statistically significant. A change in the percent low caste is also correlated with a 1.5% decrease in seeking care in a town and a 0.3% increase in the likelihood of seeking care in the district headquarters, but neither of these results is statistically significant and the latter is also economically insignificant.

When the interaction term is added, we note that low caste households in villages with no other low caste residents were 4.4% more likely to report visiting a healthcare provider in town. The coefficient for percent low caste was also positive but statistically indistinguishable from zero. For low caste households, a

marginal increase in the percent low caste was correlated with a 4% lower likelihood of utilizing a provider in the village, but this result too was statistically insignificant.

The second model also predicted that low caste households in villages without other low caste residents were about 4% less likely to seek care in another village. The percent low caste coefficient was minute (about 0.2% less likely to seek care in another village) and statistically indistinguishable from zero. However, a marginal increase in the percent low caste was correlated with a 4.2% increase in the likelihood of seeking care in another village for low caste households.

Column 3 predicts that low caste households in villages without other low caste households were 2.3% less likely to seek care in another town. A marginal increase in the percent low caste was also negatively correlated with seeking care in another town by about 3.1%. For low caste households, however, a marginal increase in the percent low caste was correlated with a 2.7% increase in the likelihood of seeking care in another town, but this effect was statistically insignificant.

Finally, the second model predicted that low caste households in villages without other low caste residents were 2.2% more likely to seek care in the district headquarters. Additionally, the percent low caste coefficient was positive, suggesting that a marginal change in the percent low caste was correlated with a 3% increase in the propensity to seek care in the district headquarters. For low caste households in particular, however, a marginal increase in the percent low caste was correlated with a 4.6% decrease in the propensity to seek care in the district headquarters.

These results leave us with the impression that low caste households are generally more likely to seek local care than non-low caste households, and that an increase in the percent low caste in the village may actually result in families travelling further to seek care. The major caveat to this, however, is that the change in percent low caste is also negatively correlated with seeking care in the district headquarters, which may suggest a different kind of systemic healthcare segregation is taking place, where non-low caste families have access to the transportation to the district headquarters to utilize what may be higher quality health services than may be administered in a rural clinic.

C. Water

Given the significance of water in Hinduism as the main vehicle for the inter-caste transmission of impurity, I also wanted to examine the influence of caste and village composition on water access. I examine a number of different types of water sources, predicting the likelihood that households had that particular water source as their primary source, controlling for that being the dominant water source in the village (if one does not have a well, it is unlikely one will take water from a well, and this was one way of getting at that. This also accounts for norms in the village—are low caste households behaving normatively or non-normatively according to the standards of their village?). Important to note is that for this section of the paper, observations are at the household, not individual, level in order to avoid double-counting households with multiple members.

Table 7 examines whether houses have indoor plumbing. Column 1 presents the results without the interaction term. Low caste status was correlated with a 0.4% greater likelihood of having indoor plumbing, significant at the 10% level. On the other hand, a marginal increase in the percent low caste was correlated with a nearly 8% decrease in the likelihood of having piped water, significant at the 1% level. When we add the interaction term, the model predicts that low caste villagers have a 3% greater likelihood of having indoor plumbing in villages where there are no other low caste residents. The percent low caste coefficient loses its magnitude and statistical significance. The interaction term, however, implies that a marginal increase in the percent low caste is correlated with a 5.4% lower propensity to depend on indoor plumbing for water among low caste households.

Table 8 examines the use of hand pumps. The first model without the interaction term predicts that low caste households are 1% less likely to depend on a hand pump as their main source of water. A marginal increase in the percent low caste, however, is correlated with a 4.9% increase in the use of a hand pump. When we add the interaction term, the coefficient for low caste loses statistical significance but remains about the same in magnitude. The coefficient for percent low caste increases to about 5.7% increase in the likelihood of dependence on a hand pump, but a marginal increase in the percent low caste only increases the propensity of low caste households to depend on a hand pump by 1.3%, a result that is not statistically distinguishable from zero.

Finally, I examined dependence on open wells. Column 1, the model without the interaction, predicts that low caste households were 1.7% more likely to depend on an open well for water. A marginal increase in the percent low caste, in addition, was associated with a 2.1% increase in dependence on open wells. Column 2, however, predicts that low caste households in villages without other low caste residents were only 1.4% more likely to depend on an open well, and this result lost statistical significance. A marginal increase in the percent low caste was also associated with a 4.5% increase in dependence on open wells. For low caste households, however, a marginal increase in the percent low caste was correlated with a 3.1% lower propensity of reporting dependence on open wells.

There is no consistent trend in these tables. Nevertheless, these results do reveal a couple potential stories. For one, low caste households are only more likely to have a private source of water—that is, indoor plumbing—in communities where they are outnumbered. Additionally, low caste status itself seems to have little to do with the use of hand pumps, but residents of villages with higher concentrations of low caste residents are more likely to depend on hand pumps, which may indicate a more systemic difference between low caste *communities* and non-low caste communities. Finally, low caste status does seem to be related to using a more unsanitary water source such as an open well. For non-low caste households, this means an increased likelihood in using an open well as the concentration of low caste villagers goes up. For low caste households, on the other hand, living around more low caste villagers is correlated with a lower likelihood of using such a water source. This could suggest that low caste villagers may be able to substitute away from water sources such

as open wells towards better water sources when they live in villages with people who have the same ritual status as they.

VI. Discussion

What lessons can we learn from investigations like this, beyond just the answer to the research question at hand? What kinds of policy statements can we make following our new understanding of the relative poverty of low caste households? To begin, we first need to lay out a justification for the normative analysis that is to follow. It is difficult to condone or condemn cultural practices that are outside of the scope of our own lives. Assuming that caste should be dealt with the way that race in the United States is dealt with risks (though of course does not implicitly entail) false equivalencies. Rather, we need to understand the idiosyncratic cultural dimensions that define the morally 'grey' areas of caste-based discrimination. Broadly, there are two implications to discuss: conflicting individual rights and the moral implications of advocating for integration.

There are many manifestations of caste-based discrimination that are ethically ambiguous. Take, for instance, a case I was told about while in Nepal. There was an upper caste teacher who taught at a school that primarily served Dalit students. The teacher taught his students faithfully and effectively, but a civil rights case was brought against him for caste discrimination. Why? Because for all the time he spent in that school, a drop of water never touched his lips. The Dalit community felt discriminated against because this teacher was, by his refusal to drink, upholding practices that were used to justify and perpetuate the notion that Dalits were impure and 'untouchable.' The teacher, however, argued that not drinking water at school was a private religious practice that did not constitute discrimination because of the fact that he had, in all other aspects, gone out of his way to serve the Dalit community. How do we decide on a course of action when two fundamental rights— the right not to be discriminated against for socially ascribed characteristics and the right to exercise a free conscious and practice religion freely—come into conflict?

Now let us suppose we have a mixed-caste village where we are somehow able to take away high caste residents' ability to restrict low caste residents' access to water. The good news for low caste individuals is that they are now welcome to use the same water source as non-low caste individuals, which may be either a less expensive source (not indoor plumbing) or a higher quality source (a covered well instead of an open well). We have managed to ameliorate the effects of discrimination for the low caste people, since they now have equal access to water. However, in doing this, we have violated the right to the free exercise of religion for upper caste residents. Can we force them to commit an act that can be seen as so defiling that it may have repercussions in their next life?

Broadly, it is wrong to discriminate on the basis of arbitrarily designated and socially ascribed identities (e.g., physical appearance being attached to fewer opportunities and to negative stereotypes). The mere fact of their arbitrariness violates human dignity by depriving certain groups from achieving their full human potential. Such discrimination does not meet the criteria for the definition of justice I will outline below. Additionally,

some of the manifestations of caste-based discrimination are condemnable from a human rights perspective and indeed have been condemned within the Hindu community. Dalits in particular face high rates of sexual and physical violence, are often compelled by upper caste members under threat of violence to handle human excrement without protective gear, are turned away from jobs they are qualified for on the basis of caste (which is illegal but rarely prosecuted), and have their wages withheld by employers or officials (Silliman Bhattacharjee 2014). These practices violate the human dignity of Dalits, and cracking down on these discriminatory practices would not constitute an infringement on the rights of upper caste Hindus to practice their religion.

In cases that may infringe on this right, however, we need a formal framework to understand some of the nuance of trying to eradicate caste-based discrimination. For this paper, I am going to use the framework used in bioethics; though it was developed for a different context, I believe it is remarkably useful for analyzing the efficacy and permissibility of public policies. This consists of four main pillars against which to check the ethical viability of one's actions: non-maleficence, beneficence, autonomy, and justice. Non-maleficence requires that we do not harm those we are trying to help. Beneficence is a stronger obligation in requiring that not only do we have to do no harm, but we also have to "take positive steps to prevent and to remove harm from the patient" (McCormick 2013). Autonomy means that we have to respect the right of an individual to make decisions for themselves regarding which treatments they are willing to be subjected to (McCormick 2013).

Justice is the most elusive of the four tenets of bioethics because of the variety of definitions of justice. Most people associate justice with fairness, but fairness, too, has a number of possible definitions. On one hand, this justice can be meritocratic—those who achieve the most receive the greatest share of goods and services. Of course, those who achieve the most may be able to do so solely because of the opportunities they have been afforded in life rather than innate talent, and so an alternative understanding of fairness may be that we provide for "each according to need" (McCormick 2013). Yet another interpretation of this would be to just give everyone an equal share of society's goods and services regardless of individual characteristics (McCormick 2013).

The second definition of fairness is most in line with what John Rawls famously laid out in his *Theory of Justice*. He defines two principles of justice: the Principle of Equal Liberty and the Difference Principle. The first requires that "each person is to have an equal right to the most extensive basic liberties compatible with a similar liberty for others" (Rawls 1971). The Difference Principle states that "social and economic inequalities are to be arranged so that they are both (a) reasonably expected to be to everyone's advantage, and (b) attached to positions and offices open to all" (Rawls 1971). It is this definition of "justice as fairness" that I advocate for in this paper, since it helps us highlight and analyze inequities that are arbitrarily distributed (such as low caste children being beaten by their teachers more often) as compared to those that are not. I will apply the bioethics framework to the outcomes of interest in this paper in successive order (arguably from the most clear-cut to the most ethically ambiguous).

Working to mitigate discrimination against low caste students in school in villages with higher concentrations of high caste students is, I argue, morally permissible. It satisfies the principle of non-maleficence, because we harm neither the high caste students nor the low caste students by removing discrimination from the classroom. The only potential violation of this is that high caste students may face greater competition in the classroom and the labor market since low caste students are not systematically taken out of the running for opportunities. The justice principle may overrule this potential maleficence against high caste students by requiring remedy for the historic affirmative action for high caste citizens. We may deprive the teacher of some small amount of utility that comes from discriminating, but this does not *harm* the teacher. Religions tenets are not violated in this situation, since non-discrimination on the basis of the outcomes I examined would not entail that high caste students or teachers violate religious practices such as not handling water touched by low caste students. There *are* other outcomes that may affect students in the classroom, such as a teacher refusing to drink water, that may have negative effects on low caste students, and it is unclear what to do in cases such as these. I will discuss how we might negotiate water-related issues when discussing water access.

 I also argue that removing discrimination from the classroom is beneficent. Most obviously, it improves the psychological wellbeing of low caste students and encourages better educational outcomes. Secondly, there may be positive externalities for the high caste students by making the classroom more positive. This may encourage the building of inter-caste relationships, since low caste students are not being unduly marginalized or held back. Finally, there are likely to be positive effects that redound to the teachers from having good relationships with all their students rather than the negative psychosocial and physical consequences of habitual negative emotion.

Does non-discrimination uphold autonomy? For low caste students, non-discrimination actually *enhances* their autonomy by providing them with real opportunities to realize their full potential. Of course, policies such as this *do* restrict the autonomy of high caste students and teachers to choose to discriminate. Once again, however, this may not have precedence in situations such as these. Let us consider this restriction in light of the Rawlsian principles of justice. The right of high caste individuals to discriminate against low caste individuals can neither be categorized as "to everyone's advantage, and … attached to positions and offices open to all" (Rawls 1971) since low caste people are not benefited by such discrimination and cannot themselves discriminate against high caste people. Thus, we can perhaps instead understand this restriction of the autonomy of high caste individuals as a recasting of the basic equal liberties for all—the right not to be discriminated against arbitrarily.

In promoting policy changes, we have to understand both how these factors come into account and how realistic it is that these principles will be enacted. Integration stands as a go-to solution for the differential outcomes bred by inequality and segregation, but this paper demonstrates that it may not be as effective as we would hope. As it stands, forcing integration would place low caste students in direct competition with high

caste students. High caste communities are of course incentivized to ensure that their children do well; thus, this direct competition is likely to *increase* rather than decrease low caste students' exposure to discrimination, and we see this borne out at least circumstantially in this study. Additionally, what would happen to low caste instructors if education were suddenly integrated? These individuals would be out of work, since we assume that high caste teachers would receive hiring preferences, and therefore the services of low caste teachers would become redundant. As a result, low caste students may suffer for not having teachers who belong to the same community as they do. If low caste students do not have role models from their own community, this may further entrench the idea that they were not "cut out" to be professionals, even if the teacher encouraged them equally to their high caste peers.

Access to healthcare is a more complicated matter than education when examined in the cultural context of India. Here, I will start with the principle of autonomy. Again, requiring non-discrimination in healthcare settings improves the ability of low caste individuals to choose where and how they wish to receive care but may restrict the ability of high caste patients and healthcare providers to discriminate against low caste patients or choose healthcare options that allow them to fulfil their religious duties as these high caste individuals conceive of them. In this sense, most of the same argument outlined above about autonomy and justice applies.

Forbidding discrimination by healthcare providers certainly satisfies the principles of beneficence and non-maleficence for low caste individuals, since they will now have equitable access to care regardless of their caste or socioeconomic statuses and will not be harmed by expanded access to care. Rather, they have a greater chance of receiving good and proper treatment for ailments. For high caste patients or providers, it is not clear that we meet either condition. Doctors in India already have a massive caseload, which often results in doctors not asking any questions of their patients and in high rates of misdiagnosis (Das et al. 2008). A good doctor is likely to be high caste, since we know there is great caste-based discrimination in university admissions (Bertrand et al. 2010). If he or she is able to discriminate in choosing their clients, they may be able to spend slightly more time with patients and resultantly produce better patient outcomes. Low caste patients are often more impoverished than their high caste counterparts (Karki and Bohara 2014), which means the doctor will either have to take a cut in pay (assuming he or she cannot charge more than the patient can afford, as this would also result in caste-based discrimination, which we have already prohibited) or take on a greater caseload. As a result, the doctor may have greater stress, lower income, and lower job satisfaction.

The other dimension of beneficence and non-maleficence that comes into play here is the relationship between body fluids and Hinduism. Having a greater number of low caste patients almost guarantees that a healthcare provider will come into contact with the body fluids of low caste people. Body fluids are considered a vessel of impurity, and so this greater risk of exposure may have social, economic, and religious consequences for high caste people in banning them from engaging in important religious activities until they can undertake the relevant purification activities. These activities may impose a cost on the healthcare providers in time or in

money, like making offerings to a priest or waiting out a period of time after which one is considered re-purified. Thus, the conditions of non-maleficence and beneficence may not be met for high caste individuals if we encourage perfect integration.

If we allow for the healthcare market to respond to integration (e.g., allowing for price discrimination or changing the supply of doctors) the net effect of integration is ambiguous. From the patient side, going to the higher quality hospitals that may now be more crowded may not result in better care. Increased demand for these services would likely drive up the price, meaning that low caste or otherwise economically disadvantaged groups (like Muslims) may be priced out of the market. If the supply of doctors is more or less fixed, we may be placing undue stress on the doctors. Alternatively, we may open avenues for untrained providers to enter the market (as they can do in India [Das et al. 2008]) and therefore expose *all* patients to inferior care. Despite all this, we may agree that the expanded choice and access to better care options are more important. Once more, the negative consequences of discrimination may disappear, leading to a higher quality of life for low caste people. When working jobs with severe health risks (like collecting human waste, a low caste profession), having access to higher quality care may allow them to better provide for their families even when poor health befalls them.

Water access remains the most difficult of the three resources analyzed because of its central meaningfulness in Hinduism and given the mixed results found in this study. Prohibiting discrimination in water access could have either positive or negative consequences for low caste residents. They may be less likely to have sources of water like indoor plumbing that mitigate the transmission of mosquito-borne diseases bred in water sources like ponds or open wells. On the other hand, they may be more likely to use higher quality sources such as covered wells instead of open wells. They may, in other words, be substituting away from the best and worst sources of water in favor for "middle of the road" options like a covered well or a hand pump. It is unclear, then, whether the conditions of beneficence and non-maleficence are met. It is highly dependent on the source of water that low caste households currently use. Additionally, encouraging low caste individuals to use water that high caste individuals use may tempt low caste people into not fulfilling their *dharma*, or their prescribed social role. This may have consequences for their afterlife, relegating them to another socially disadvantaged incarnation for not living a pious life and fulfilling their duties as a low caste member of society.

There are no positive consequences for high caste individuals, and sharing water may result in exposure to religious pollution. It is difficult to say with certainty that we should force someone to commit an action that will have negative consequences after they die. This is maleficent and does not respect the autonomy of the individual to make decisions that uphold their beliefs. From the perspective of a high caste individual, a low caste person did something in a past life that they are being punished for by being reincarnated in such an inferior position. The low caste person is being served justice, in this way. A high caste person, on the other hand, was good enough in a past life to enjoy reincarnation in a privileged position, and therefore should obey the rules of their religion to ensure a favorable reincarnation again. Denying them the ability to fulfil this mission

may be psychologically and spiritually harmful and infringes on their right to autonomously practice their religion.

What is just, though? There is clearly a distribution of inequalities (i.e., the unequal ability to handle water without polluting it) that is not to the benefit of all who participate in the caste system. This benefit is not attached to position attainable by low caste individuals, at least in this incarnation, though we could argue that it is potentially attainable in their next incarnation. Under our definition of justice, we should encourage equal access to water. But this is a very Western notion that we are applying to a cultural milieu that may not conceive of justice this way. Rather, they may see "justice as merit" as one way of policing water access—high caste individuals earned the right to have better water access through good behavior in past lives. For the purposes of this analysis, then, we can say that unequal access to water is not just, but we have to acknowledge the assumptions laden in this claim. In this case, it is hard to unequivocally endorse integration.

In each of these cases, we see that integration can be an inefficient or unjust solution to the problems of unequal access to public goods for low caste people. That low caste people may have better outcomes, ceteris paribus, in villages where there are more people like them indicates that integration may itself fail the test of non-maleficence. Without disturbing the conventions of caste-based social hierarchy (which can be problematic but difficult to change, especially as a cultural outsider), integration may simply put low caste individuals at higher risk of being exposed to more and worse discrimination, since they are now competing with high caste people, are less likely to have low caste service providers, and have less bargaining power against high caste people. One policy solution that I believe may be viable is providing separate amenities for low caste individuals that cater specifically to them in a way that gives them equitable outcomes compared to high caste people. For American audiences, this will certainly smack of the "Separate but Equal" doctrine, but let me describe how this proposed solution differs from a principle of "Separate but Equal."

To begin, "Separate but Equal" was not implemented in a way that remedied the differential outcomes between racial groups in the United States. Rather, there were separate facilities that were of significantly inferior quality for African Americans. Having facilities that cater to low caste communities would only be ethical if these services were of *equitable* quality to facilities that cater to high caste communities. To accomplish this, facilities have to meet three criteria. One, they have to account for the fact that low caste individuals may need more extensive care than high caste individuals given the persistent intergenerational inequality that low caste families have experienced. Two, they have to provide opportunities for low caste professionals to operate these facilities, and these low caste professionals have to be given a serious chance to be of similar quality to high caste professionals. Three, all individuals in the society, high and low caste, have to be allowed to choose which of the two facilities they wish to utilize. The other problem of "Separate but Equal" was that African Americans were *not allowed* to utilize the facilities that catered to white Americans. In the solution that I propose, however, the autonomy of low caste individuals is expanded by allowing for them to decide whether they would be better

off with equitable access (i.e., a facility that caters specifically to them) or with equal access (i.e., the same facilities that high caste individuals use).

To illustrate what I mean, let us use healthcare as an example. Imagine we had a mixed-caste village that had exactly 50% low caste residents and 50% high caste residents; in other words, it is fully integrated. Currently, they have one health center in the village that caters to low caste residents, and high caste residents travel to the hospital in the nearby town. Perfect integration by breaking down the de facto segregation could mean either having the low caste families go to the town hospital or having the high caste families go to the local clinic. Overcrowding is a risk at both locations leading to higher costs or inferior care. For low caste families, there is also a greater risk of being discriminated against when being placed in direct competition with the high caste clients, especially if there are no low caste healthcare providers.

Alternatively, we could develop the local clinic to cater to the low caste families. In the short run, this might have to involve seeking a non-discriminatory high caste or non-Hindu provider. Ties between the local clinic and the district hospital could be expanded such that the low caste families have better access to the town hospital in times of need. In the long run, we would be able to foster low caste students and subsequently recruit them to medical schools where they can learn to be effective doctors. Then, these medical school graduates can go back into their communities to work for their friends and families, providing them with compassionate care that is attuned to the needs of their patients. In both the short run and the long run, the state government could delegate funds to these local clinics such that they have sufficient, sanitary medical equipment with which to treat their patients. This would turn the local clinic from a place to which low caste people are relegated to a well-equipped facility with well-trained, Dalit staff who can specially cater to their needs, much like the Garoda became the priests for Dalit communities in Gujarat. Finally, the cost of consultations, treatments, and prescriptions should be subsidized and doctor corruption, especially in the form of bribery, should be more heavily prosecuted so that Dalit clients are not priced out of the market.

In the case of education, I do not believe that we need separate schools to cater to Dalit children. Rather, the government could invest more in public schools, which are notoriously of poor quality (Boo 2012), by providing better student resources, increasing teacher pay, and providing rigorous training to teachers from a variety of caste backgrounds. Ideally, children could have multiple teachers from different communities over the course of their school careers. This could have positive benefits for low caste, high caste, and non-Hindu children alike by having contact with authorities who are of different social backgrounds. High caste parents could still elect to send their children to different schools if they can afford it, but the public schools would also be high quality and allow the students that pass through them would have a reasonable chance to go on to better professional opportunities.

Finally, in the case of water, building two separate, high-quality sources of water is a viable solution to low caste villagers' generally inferior water access. In the long run, we may want to encourage that such discrimination cease. In the short run and the medium run, however, it would be naïve to assume that simply

asking people to integrate will make it happen. Thus, a wise work-around for governmental or non-profit organizations trying to improve water access in these villages could be to construct a separate water source for low caste people if the low caste residents believe that this would give them the better access to water.

This study is intended to further discussions within India and the Hindu community about how best to improve the lives of Dalit members of their society. We can, generally speaking, grant that caste-based discrimination is wrong, but how exactly to fix it remains up to Indians. This study *does* tell us, however, that pure integration (forcing high and low caste villagers to share the same resources) may not always be the most viable solution, since increased contact with high caste neighbors does seem to lead to worse outcomes for low caste individuals. Rather, I argue for an alternative solution that could be explored before caste-based discrimination becomes a non-factor in the lives of rural dwellers: providing non-segregated but separate facilities that cater specifically to low caste villagers' needs.

The last point I wish to make is on the applicability of this study to other manifestations of social hierarchy based on socially ascribed characteristics, particularly race in the United States. The empirics of this paper are intended to serve as a point of comparison for race. In fact, it was the conversation about racial integration that led me to this research. Scholars of race in the United States should take up this line of questioning and examine how public goods access for racial minorities changes as the racial composition of a neighborhood or some other social network changes, given that the circumstantial evidence is also extant in the United States to support this hypothesis: discriminatory practices by doctors, restricted access to public benefits due to higher rates of incarceration, and a higher likelihood of being punished in school (Hoffman et al. 2016, Sugie 2012, "Discipline Disparities for Black Students, Boys, and Students with Disabilities" 2018).

However, the solutions I propose in this paper may not be applicable or appropriate in an American setting, given that the history of de jure segregation is so violent and deeply-entrenched. The American race context also lacks the conflicting rights that comes with violating one's religion as is present in the Hindu contexts. Providing separate resources is a fraught solution given its history, but we can explore options such as recruiting more African Americans in to teaching or healthcare to allow facilitate access for these minority groups in ways that would not require separate facilities. To make strong claims on the ideal solutions in this case is beyond the scope of the paper, though, a point that I hope readers acknowledge. Other arguments could be made for situations where these rights *do* conflict, such as interactions between LGBTQ+ and non-LGBTQ+ individuals, but these require treatment that is sensitive to the particular cultural context to develop a fully-fledged understanding of the ethical implications of banning discrimination or promoting separate services for these populations, as I hope I have emphasized in this paper.

Finally, we need to acknowledge that idealism and pragmatism do not always have to work against each other. A short-term, pragmatic solution that operates under the prevailing norms does not preclude the idea that we should be working to shift these norms over time.

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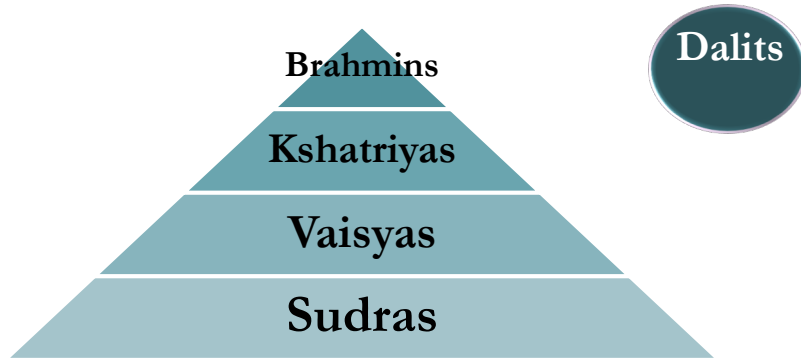
Figure 1: Varna Hierarchy in Hinduism

Table 1: Low Caste Populations in Village of Residence
By Caste Status of Household

	(1) All	(2) Low Caste	(3) High Caste	(4) Non-Hindu
% of Villages of Residence that are Majority Low Caste	71.51% (45.14)	82.29% (38.18)	43.63% (49.59)	55.50% (46.70)
Percent of Low Caste Households in Village of Residence	68.39% (31.69)	77.40% (26.65)	47.50% (29.53%)	51.50% (37.42)

Notes: Standard errors in parentheses.

Table 2: Low Caste Household Wellbeing by Village Type

	(1) All	(2) Minority Low Caste	(3) Majority Low Caste
Log of Income	10.143 (1.058)	10.124 (1.040)	10.227*** (1.130)
Log of Land Owned	1.757 (1.302)	1.794 (1.138)	1.534*** (1.180)
Log of Consumption	6.222 (0.646)	6.194 (0.657)	6.351*** (0.631)
Highest Education in Household (Years)	6.276 (4.824)	6.261 (4.840)	6.346** (4.752)
Number of Children	2.390 (1.950)	2.409 (1.951)	2.299*** (1.945)

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 where significance is the result of a difference of means test between low caste households located in minority low caste and those in majority low caste villages.

Table 3: Student Outcomes

	(1) Distance to School	(2) Hours/Week in School	(3) Days/Month Absent	(4) Age Started School	(5) Repeat Grade
Panel A: Regression without Interaction					
Low Caste	-0.159**	0.046	0.075	0.100***	0.018***
	(0.065)	(0.109)	(0.069)	(0.013)	(0.006)
Percent Low Caste	0.007	-0.491**	0.409***	-0.036	0.057***
	(0.115)	(0.215)	(0.132)	(0.023)	(0.011)
Observations	30,782	29,262	29,701	49,187	48,535
R-squared	0.188	0.351	0.340	0.237	0.089
Panel B: Regression with Interaction					
Low Caste	-0.433***	0.166	0.576***	0.256***	0.045***
	(0.132)	(0.236)	(0.133)	(0.024)	(0.013)
Percent Low Caste	-0.254	-0.376	0.885***	0.110***	0.082***
	(0.161)	(0.286)	(0.175)	(0.035)	(0.016)
Low Caste* Percent Low Caste	0.457**	-0.200	-0.832***	-0.256***	-0.044**
	(0.190)	(0.334)	(0.202)	(0.038)	(0.018)
Observations	30,782	29,262	29,701	49,187	48,535
R-squared	0.188	0.351	0.341	0.238	0.089

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls are age, sex, marital status, education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, number of public schools, number of private schools, total number of government programs, total number of village groups, road accessibility, distance to nearest town, and percent of households with electricity. District fixed effects are used.

Table 4: Teacher Quality

	(1) Teachers Attend	(2) Local Teacher	(3) Fair Teacher	(4) Good Teacher	(5) Biased Teacher	(6) Ever Praised	(7) Ever Beaten
Panel A: Regression without Interaction							
Low Caste	-0.009***	-0.017***	-0.010***	-0.013***	0.010***	-0.036***	0.021***
	(0.002)	(0.005)	(0.002)	(0.002)	(0.003)	(0.005)	(0.004)
Percent Low Caste	0.014***	-0.023**	0.016***	0.018***	-0.012*	0.017*	-0.057***
	(0.004)	(0.011)	(0.003)	(0.004)	(0.006)	(0.009)	(0.008)
Observations	48,955	48,953	48,897	48,856	48,879	48,368	48,049
R-squared	0.152	0.248	0.085	0.113	0.197	0.255	0.361
Panel B: Regression with Interaction							
Low Caste	-0.006	-0.068***	-0.009**	-0.015***	0.049***	-0.044***	0.034***
	(0.004)	(0.011)	(0.004)	(0.004)	(0.007)	(0.010)	(0.009)
Percent Low Caste	0.017***	-0.071***	0.017***	0.016***	0.024***	0.010	-0.045***
	(0.005)	(0.015)	(0.004)	(0.004)	(0.008)	(0.012)	(0.010)
Low Caste*	-0.005	0.084***	-0.002	0.003	-0.064***	0.012	-0.021
Percent Low Caste	(0.006)	(0.017)	(0.006)	(0.005)	(0.009)	(0.015)	(0.013)
Observations	48,955	48,953	48,897	48,856	48,879	48,368	48,049
R-squared	0.152	0.248	0.085	0.113	0.198	0.255	0.361

Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Controls are age, sex, marital status, education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, number of public schools, number of private schools, total number of government programs, total number of village groups, road accessibility, distance to nearest town, and percent of households with electricity.

Table 5: Healthcare Provider

	(1) Public Doctor or Nurse	(2) Private Doctor or Nurse	(3) Pharmacy	(4) Traditional Healer
Panel A: Regression without Interaction				
Low Caste	0.020***	-0.021**	-0.010**	0.001
	(0.007)	(0.008)	(0.005)	(0.003)
Percent Low Caste	0.003	-0.021	0.011	-0.001
	(0.012)	(0.014)	(0.007)	(0.005)
Observations	15,271	15,271	15,271	15,271
R-squared	0.179	0.207	0.062	0.033
Panel B: Regression with Interaction				
Low Caste	-0.008	-0.007	0.007	0.004
	(0.015)	(0.018)	(0.009)	(0.006)
Percent Low Caste	-0.022	-0.008	0.028**	0.002
	(0.017)	(0.020)	(0.012)	(0.008)
Low Caste*	0.045**	-0.022	-0.029**	-0.004
Percent Low Caste	(0.022)	(0.026)	(0.014)	(0.009)
Observations	15,271	15,271	15,271	15,271
R-squared	0.179	0.207	0.063	0.033

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls are age, sex, marital status, education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, number of health facilities, total number of government programs, total number of village groups, road accessibility, distance to nearest town, and percent of households with electricity.

Table 6: Place Treatment Sought

	(1) Same Village	(2) Different Village	(3) Another Town	(4) District Town
Panel A: Regression without Interaction				
Low Caste	0.019**	-0.014*	-0.007	-0.006
	(0.009)	(0.008)	(0.006)	(0.005)
Percent Low Caste	0.002	0.022*	-0.015	0.003
	(0.015)	(0.013)	(0.010)	(0.007)
Observations	16,170	16,170	16,170	16,170
R-squared	0.112	0.083	0.068	0.054
Panel B: Regression with Interaction				
Low Caste	0.044**	-0.040**	-0.023*	0.022**
	(0.019)	(0.017)	(0.013)	(0.010)
Percent Low Caste	0.025	-0.002	-0.031**	0.030**
	(0.022)	(0.020)	(0.015)	(0.012)
Low Caste*	-0.040	0.042*	0.027	-0.046***
Percent Low Caste	(0.028)	(0.025)	(0.019)	(0.015)
Observations	16,170	16,170	16,170	16,170
R-squared	0.112	0.083	0.068	0.055

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls are age, sex, marital status, education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, number of health facilities, total number of government programs, total number of village groups, road accessibility, distance to nearest town, and percent of households with electricity.

Table 7: Piped Water

	Dependent Variable is Household Main Water is Piped	
	(1)	(2)
Low Caste	0.004*	0.030***
	(0.003)	(0.013)
Percent Low Caste	-0.076***	0.002
	(0.005)	(0.015)
Low Caste*Percent Low Caste		-0.054***
		(0.018)
Observations	130,871	24,266
Adjusted R-squared	0.446	0.476

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls are education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, total number of government programs, total number of village groups, road accessibility, distance to nearest town, whether the primary source of water for the village is piped, and percent of households with electricity.

Table 8: Hand Pump

	Dependent Variable is Household Main Water is Hand Pump	
	(1)	(2)
Low Caste	-0.010***	-0.008
	(0.002)	(0.012)
Percent Low Caste	0.049***	0.057***
	(0.005)	(0.015)
Low Caste*Percent Low Caste		0.013
		(0.017)
Observations	130,871	24,691
Adjusted R-squared	0.490	0.502

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls are education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, total number of government programs, total number of village groups, road accessibility, distance to nearest town, whether the main water source in the village is a hand pump, and percent of households with electricity.

Table 9: Open Well

	Dependent Variable is Household Main Water is Open Well	
	(1)	(2)
Low Caste	0.017***	0.014
	(0.002)	(0.010)
Percent Low Caste	0.021***	0.045***
	(0.004)	(0.012)
Low Caste*Percent Low Caste		-0.031**
		(0.015)
Observations	133,120	24,266
Adjusted R-squared	0.246	0.292

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls are education, household size, log of income, government benefits, years household has lived in village, main source of income, total number of households in village, how many people come to the village to work seasonally, how many people leave the village to work seasonally, total number of government programs, total number of village groups, road accessibility, distance to nearest town, whether the main water source in the village is an open well, and percent of households with electricity.

Trend Lines for Results

Distance to School
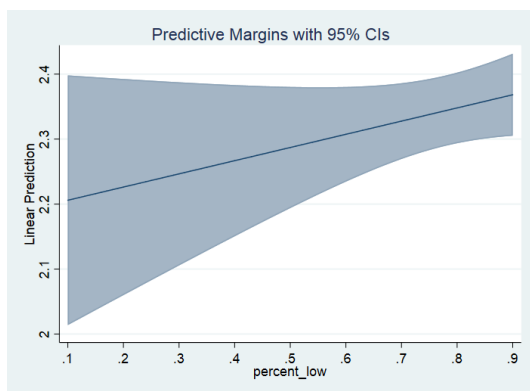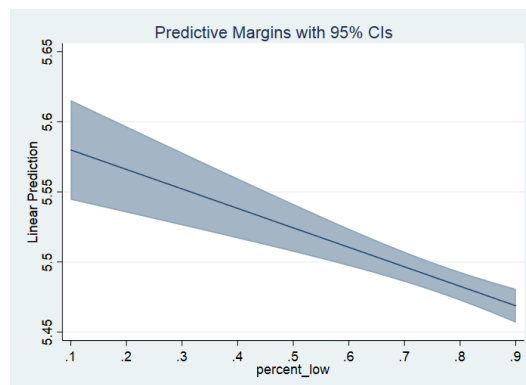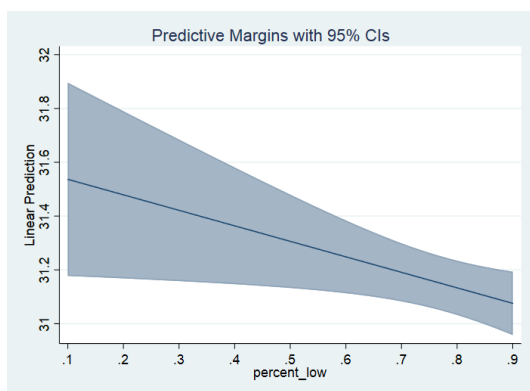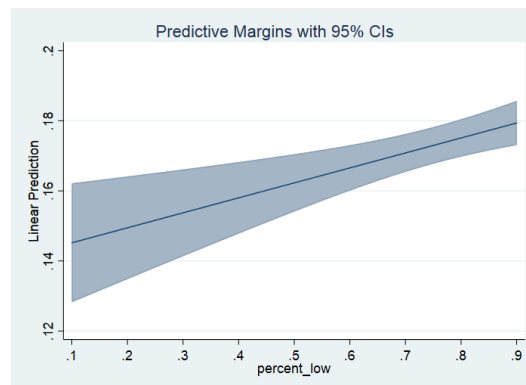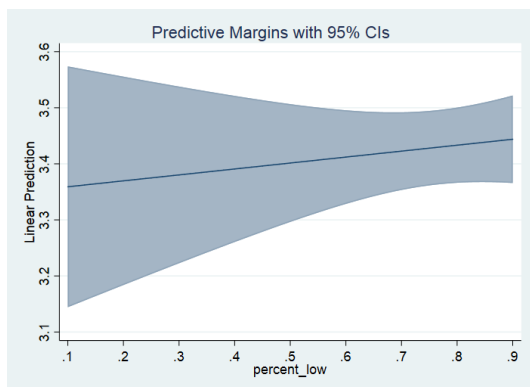
Predictive Margins with 95% CIs

Age Started School

Predictive Margins with 95% CIs

School Hours/Week

Predictive Margins with 95% CIs

Repeat Grade

Predictive Margins with 95% CIs

Days Absent /Month

Predictive Margins with 95% CIs

Teachers Attend

Predictive Margins with 95% CIs

Local Teacher

Predictive Margins with 95% CIs

Fair Teacher

Predictive Margins with 95% CIs

Good Teacher

Predictive Margins with 95% CIs

Biased Teacher

Predictive Margins with 95% CIs

Ever Praised

Predictive Margins with 95% CIs

Ever Beaten

Predictive Margins with 95% CIs
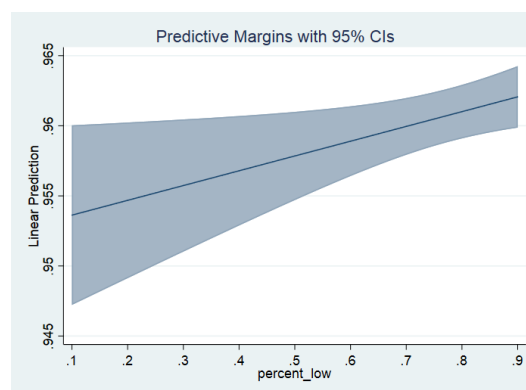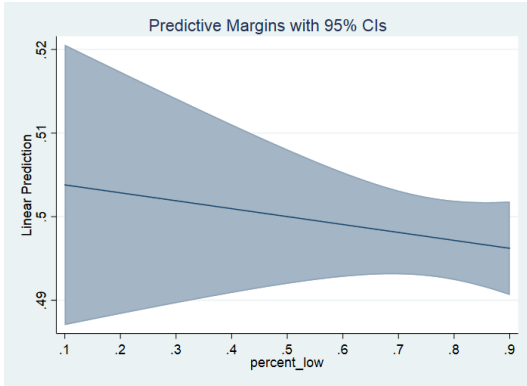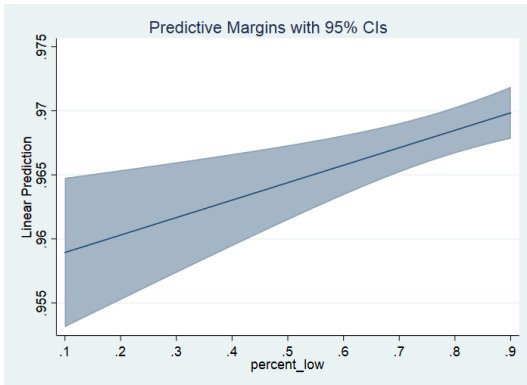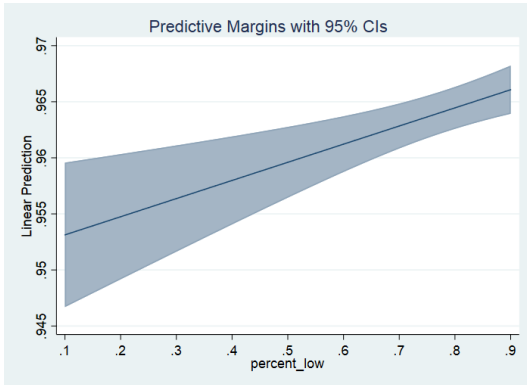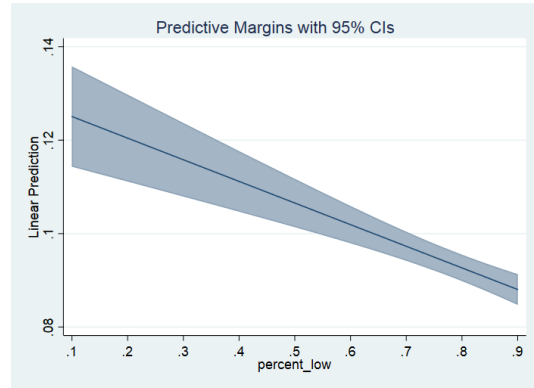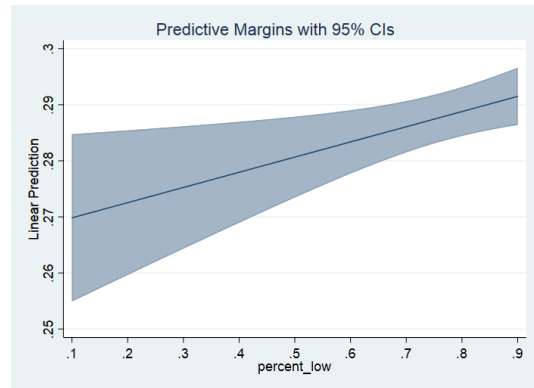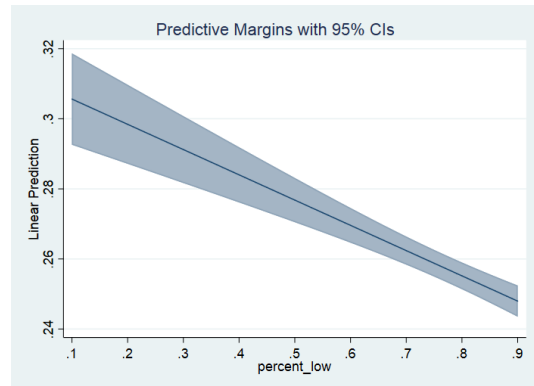
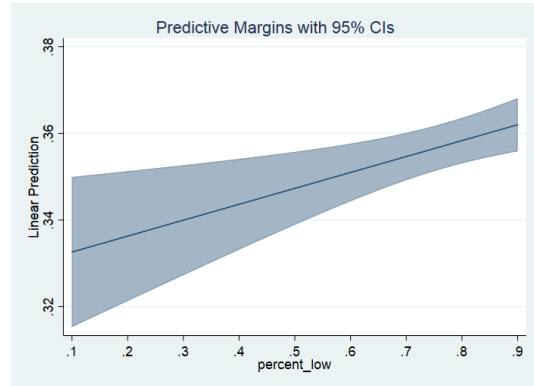## Public Doctor/Nurse
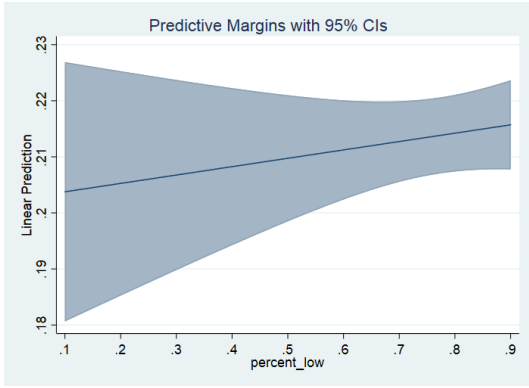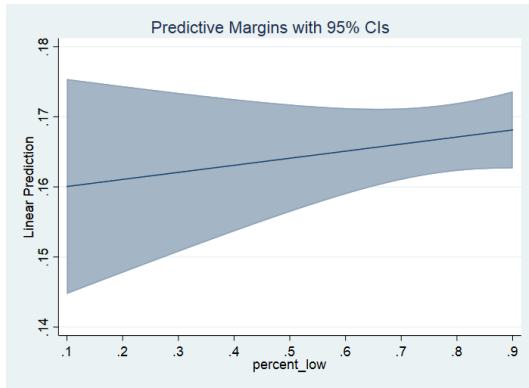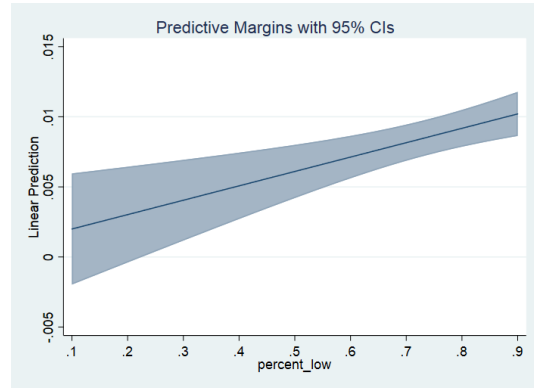

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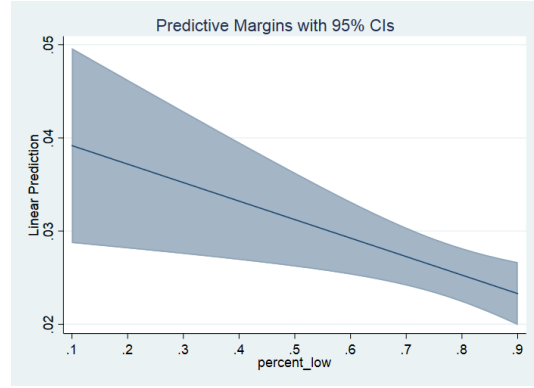
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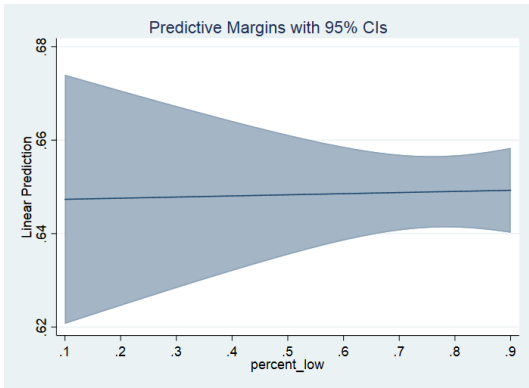
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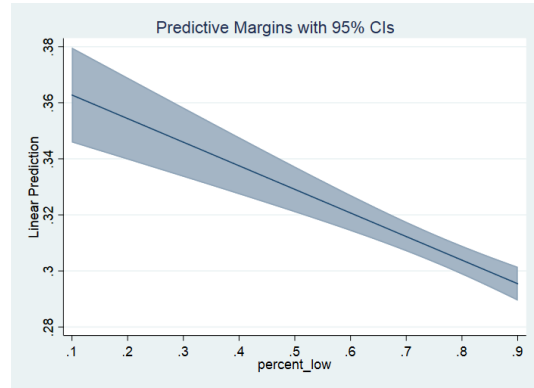
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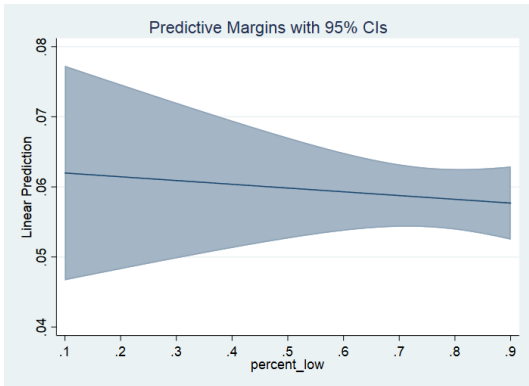
Hand Pump Water

Open Well

Predictive Margins with 95% CIs

Covered Well

Predictive Margins with 95% CIs

Pond

Predictive Margins with 95% CIs