Why the Working Poor Organize
An Ethnographic and Machine Learning Analysis of Civil Society Participation*

Calla Hummel†
University of Texas at Austin

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Abstract

Why do the working poor participate in civil society in some places but not others? Most working adults around the world lack the material resources and social capital associated with civil society participation. Yet people participate where existing theory predicts that they abstain: witches and fortunetellers working on the streets in Bolivia frequently unionize. When poor workers participate in civil society organizations, they often improve their working conditions and political representation. I argue that states with lower capacity offer incentives to people who can organize representative, self-regulating groups. Individuals with the resources to take advantage of these incentives then create civil society organizations and recruit colleagues to join. I develop the argument with comparative case studies of street vendors in La Paz and El Alto, Bolivia and São Paulo, Brazil and perform preliminary tests with logistic regression and machine learning analyses of self-employed people across the Americas.

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†University of Texas at Austin, Department of Government, 158 W 21st ST STOP A1800, Austin, TX 78712-1704, calla.hummel@utexas.edu. Replication data and code available on request and will be publicly posted to my website and Dataverse.

Introduction

In La Paz, Bolivia, Isabel sells knock-off clothes at her unionized and licensed stall in the city's largest clothing market. The city's Witches' Market pushes up against the eastern edge of the clothing market, where a powerful union regulates commerce and disputes among dozens of self-identified witches, fortunetellers, and street vendors. Police pass by Isabel's stall and the Witches' Market daily but rely on the unions to catch and punish street vendors who violate laws. In São Paulo, Brazil, Mariana sells knock-off toys around 25 de Março, Brazil's largest street market. Mariana spends a third of her time running from the military police who patrol the market and chase unlicensed street vendors. Mariana does not belong to a street vendor union and she dismisses work-based organizing as futile. Why does Isabel participate in civil society while Mariana disengages? More generally, why do the working poor participate in civil society in some places but not others?

When workers join civil society organizations, they often improve their working conditions and political representation, while building social capital (Fischer and Qaim 2012, Putnam et al. 1994). However, researchers find that growing segments of workers—particularly poor, informal, contract, or self-employed individuals—participate in civil society less frequently than more privileged workers (Castells and Portes 1989, Kurtz 2004, Perry 2007). Politically alienated workers may be behind recent turns to far right parties and outsider candidates, which in extreme cases roll back democratic institutions (King and Rueda 2008, Lindvall and Rueda 2014). When poor workers decide to participate in civil society, that decision impacts work experiences, political engagement, and potentially mass politics. I suggest that civil society research overlooks how the interaction between individuals and state capacity—a state's ability to implement laws (Amengual 2013)—pushes some states to encourage the working poor to participate in civil society more than others.

I argue that states pay people to participate in self-regulating groups when delegat-

ing enforcement to civil society costs less than government enforcement. People with extra resources, like Isabel, join these groups in order to take advantage of state incentives. I suggest that lower capacity states are more likely to turn to civil society because lower capacity precludes adequate enforcement. Enforcement affects the working poor more than other citizens because the working poor are more likely to commit minor infractions—like working or driving without a license—out of necessity than citizens with more resources (Holland 2016). Where states enforce, like in Brazil and the U.S., people like Mariana are more likely to land in the criminal justice system, but where states delegate, like in Bolivia and India, the working poor are more likely to participate in civil society.

The project contributes to work on the politics of enforcement (Holland 2016, Amengual 2013, Weaver and Lerman 2010) by finding that cash-strapped governments can save money and increase compliance by delegating enforcement to civil society organizations. Delegation increases participation within vulnerable populations and can potentially decrease the number of people in criminal justice systems for minor infractions. Empirically, the project contributes to labor politics by establishing individual and geographical variation in self-employed workers' civil society participation where existing research expects little or no variation (King and Rueda 2008, Perry 2007). Additionally, the project contributes to civil society research by explaining why poor workers around the world participate in civil society more than existing theories predict, particularly in lower capacity states. Finally, the project contributes methodologically to comparative political research by demonstrating that machine learning techniques can supplement common statistical methods, particularly for researchers using cross-national survey data.

The following section outlines existing research and the gap that this project addresses: Explaining when and why the working poor participate in civil society. I then develop a theory of state capacity and individual resources to explain variation across places and individuals. In the case study section, original interview, survey, and ethnographic data

from street markets in La Paz and El Alto, Bolivia, and São Paulo, Brazil show the theoretical mechanisms at work in three subnational cases. Street vendors constitute 5-10% of workers in most major cities, typically have little formal education, and earn roughly minimum wage (Bhowmik 2012), which makes the population empirically relevant and theoretically appropriate for establishing the theory's plausibility. In the quantitative section, logistic regressions on cross-national data from the Latin American Public Opinion Project, the OECD, and the World Bank find significant associations between lower state capacity, higher personal resources, and increased civil society participation, while nonparametric machine learning analyses support the theory by demonstrating that conditional combinations of state capacity and individual resources predict civil society participation. I conclude by suggesting that states can increase compliance and decrease spending by delegating some enforcement to civil society groups. Delegation to civil society may also decrease the number of people in criminal justice systems.

State Capacity and Civil Society

State capacity rests on a state's ability to enforce its laws, according to the many scholars who argue for a behavioral-based definition of state capacity (Amengual 2013, Goodfellow 2015, Holland 2016). Scholars agree that more state capacity means better outcomes: more development, more and higher quality services, and less conflict (Besley and Persson 2010). Researchers disagree on how state capacity affects civil society participation. The conventional wisdom is that higher capacity states experience more civil society participation because higher state capacity correlates with the political contexts and the individual resources that foster participation (Putnam et al. 1994, Tarrow 2011). This project's theory predicts the opposite for the working poor.

Resources largely shape which individuals participate in civil society (Cook 2012, Put-

nam et al. 1994, McAdam et al. 2003). People with more education, income, and contacts participate in civil society organizations while people with less tend to abstain (Hochstetler 2012, Murillo 2001, Karcher and Schneider 2012). As a result, scholars generally do not expect poor workers like street vendors to organize (King and Rueda 2008, Perry 2007, Roberts 2002). The working poor typically have few of the resources important to participation: The working poor make low wages, have low formal education relative to more privileged workers, hold minimum wage jobs, have high turnover which hurts work-based networking, and many have semi-legal work, housing, and immigration statuses that complicate legal claims and disrupt lives on a regular basis (Goffman 2015, Holland 2015, King and Rueda 2008). Even when states encourage participation with collective bargaining or public consultation laws, many workers do not have the individual resources to take advantage of favorable laws. Additionally, when poor workers are also informal workers—people who work outside of social security, tax structures, or labor regulations—they are by definition outside of the structures that corporatist organizations might mobilize (Duneier and Carter 1999, MacGaffey and Bazenguissa-Ganga 2000). Informal workers make up 50% of the global work force and most of the working poor in majority-world countries (Goldstein 2016, Neuwirth 2012). Contrary to conventional wisdom, poor workers and their organizations participate in civil society in many places.

If resources largely explain individual level participation, why do low resource actors ever participate? Scholars argue that grievances or relative deprivation can push people to participate where they otherwise would not (Gurr 1970), but as others have argued (Goodwin 2001), grievances and deprivation are relatively constant for the working poor. Researchers find that clientelist and populist parties target poor voters and encourage civil society participation around election cycles (Muñoz 2014, Holland and Palmer-Rubin 2015), which explains some variation. However, many workers participate extensively outside of election cycles. I suggest that officials can respond to capacity constraints by offering incentives

to self-regulating civil society organizations, which encourage engagement from people who otherwise would not have the resources to participate.

Resources, Enforcement, and Self-Regulation

Why do the working poor participate in civil society in some places but not others? I present a theoretical process that starts with state capacity: Lower capacity states typically spend less on enforcement than their higher capacity counterparts. In the first mechanism, states may materially encourage people to participate in self-regulating groups, under the condition that delegating enforcement to civil society costs less than government enforcement. In the second mechanism, people with more resources participate and take advantage of state incentives. Therefore, when lower capacity states target incentives to the working poor, people participate more, whereas higher capacity states that increase enforcement instead of incentives do not see an increase in participation. The individuals within a target population who participate tend to have more preexisting resources than their colleagues who do not.

States

States want their citizens to obey the law, but compliance is often costly for individuals and enforcement is costly for the state (Holland 2015, Ronconi 2010). States can unilaterally ignore noncompliance, make compliance easier, or increase enforcement, depending on their capacity. Some noncompliance may not matter, but for many regulations, noncompliance can mean child fatalities or collapsed buildings. Second, states can reduce regulation, but watering down policy can lead to the same outcomes as ignoring noncompliance. States can increase enforcement to induce compliance, but doing so is costly (Ronconi 2010). The Brazilian government spends tens of millions of dollars every year on federal and military police tasked with confiscating counterfeit consumer items like off-brand dolls from suppliers

and retailers, many of them informal importers or street vendors like Mariana (Pinheiro-Machado 2011, Itikawa 2010). Not all states have the capacity to increase their budgets and personnel by millions to catch misdemeanors. For example, law enforcement budgets in Bolivia are specific and low: With recent raises, Bolivia now pays entry-level police officers slightly above minimum wage. Additionally, the state recently began paying for uniforms but requires officers to buy their own guns (Rojas 05 July 2014, Villareal 27 June 2012). Even if a municipality wanted to enforce all street vending laws, Bolivian police lack the training and discipline to programmatically carry out their work (LAPOP 2014, Goldstein 2005). Thus, lower capacity states typically spend less on enforcement than their higher capacity counterparts.

States have another option: delegation. States may encourage people to participate in self-regulating groups, especially where delegating enforcement to civil society costs less than government enforcement. Where this condition is met, states may attempt enforcement to dissuade potential non-compliers, then compromise and offer persistent and unorganized non-compliers a private or club good if they participate in a self-regulating group. Lower capacity states in particular may find delegation cheaper than other options. When the state encourages a self-regulating group, it delegates monitoring and enforcement, saves on enforcement costs, transfers regulatory responsibility to civil society, and can call on representatives to negotiate over viable policy and enforcement in the future.

Who do states offer incentives for participation to? States are more likely to compromise with people committing minor violations because the smaller the infraction, the smaller the payoff for enforcement. Similarly, states are more likely to compromise with large groups of people than small ones because as groups grow, adequate enforcement becomes more expensive. Therefore, states may compromise more with street vendors, squatters, and undocumented migrants, especially where they constitute large groups of nonviolent, minor offenders (Holland 2014). Conversely, states less frequently compromise with counterfeit sup-

pliers or traffickers because most states prefer to enforce laws against these smaller groups of more serious offenders, if they have the resources.

As capacity increases, states can implement a wider range of laws and adequately fund enforcement. States typically triage law enforcement spending and put more resources toward serious crimes like homicide while lightly policing minor infractions like littering. Only high capacity states like the United States have the option to pursue broken windows policies, where authorities heavily police all violations, especially visible minor infractions (Goffman 2015). This theoretical process suggests that as capacity increases, states offer fewer direct incentives for participation in self-regulating groups and put more resources toward enforcement. With fewer incentives, the working poor participate less. Additionally, the theory implies that with increased enforcement, the working poor in higher capacity states are more likely to interact with the criminal justice system than their colleagues in lower capacity states.

Citizens

Groups of individuals frequently have common goals that they must work together to achieve, but face collective action problems (Olson 1965, Ostrom 2007). Group and individual attributes make collective action problems more or less difficult to overcome: Large, diffuse, resource-poor groups are much less likely to solve their collective action problems (Marwell and Oliver 1993, Olson 1965), and in most places, street vendors and other poor workers constitute large, diffuse, resource-poor groups. The formal collective action literature establishes that private or club goods can resolve collective action problems (Axelrod 1984, Hardin 1982). States can intervene and solve a potential group's collective action problem by offering private incentives to participants.

A potential group must include individuals with the education and experience to use state incentives, or no one will be able to organize effectively. Even when the state offers

resources for participation, people in the target population will not necessarily do so. States can only encourage citizens to participate in civil society if it exists or if there are individuals who know how to organize others. Before an organization forms, at least some individuals must know how to conduct the nonobvious logistics of meetings, committees, and founding documents. Additionally, some individuals must be in contact with state representatives that can inform them of new or underutilized incentives and some members must know and be able to communicate legal requirements for organizational registration and compliance.

In summary, states and poor workers interact to build civil society in some places but not others. Specifically, where the state cannot fully enforce its laws, it may offer private or club goods to poor workers who have the skills to organize a self-regulating group. Once groups are established, workers with more resources participate to take advantage of these incentives while the most destitute abstain, which largely explains variation between individuals. Conversely, higher capacity states intervene less in civil society and fewer poor workers participate, which largely explains cross-national variation.

Scope Conditions and Observable Implications

The theory should explain why the working poor organize in democratic regimes with a minimum level of administrative capacity and civil society presence. The first scope condition is that the theory explains participation for the working poor, not all citizens. The working poor have low incomes by definition, typically complete less formal education than more privileged workers, and are more likely than wealthier citizens to commit minor violations because they cannot afford the fees, products, or upgrades that would make them compliant (Goffman 2015, Holland 2015). Second, the theory applies to states with enough capacity to minimally collect taxes, implement budgets, and staff licensing offices; the theory does not apply to states with capacity so low that they could be considered failed states (Holland 2016). Thus, the theory should explain participation in low capacity states like Bolivia and

Paraguay, but not Somalia. Third, the theory explains why low resource actors form and participate in civil society organizations; it does not explain how civil society writ large develops. Given that some civil society actors exist and some people in a population know how to organize a group, the theory explains new individual and organizational entrants into civil society. Finally, the theory should perform best in democratic regimes, where officials have electoral incentives to increase compliance without alienating noncompliant voters (Agarwala 2013, Holland 2015).

I define a mechanism as a causal link between variables. The theory specifies two mechanisms: first, lower capacity states have more difficulty covering enforcement costs, which creates pressure to delegate to civil society. Conversely, higher capacity states face pressure from enforcement costs but have more material and human resources to respond by increasing direct enforcement. Therefore, the theory expects that the lower (higher) a state's capacity, the more (less) it delegates to civil society, and that the more (fewer) incentives a state offers, the more (less) people participate. Second, state incentives encourage individuals to participate where they otherwise would not, leading individuals to use their pre-existing resources to take advantage of state incentives. Therefore, the theory expects that people with more (fewer) resources participate to receive state incentives more (less) than people with fewer (more) resources. The theoretical process and its mechanisms imply observable patterns for qualitative and quantitative data, summarized in Table 1.

Table 1: Variables, theoretical mechanisms, available data, and predictions:

Variable	Mechanism	Available Data	Supportive Case Data	Quantitative Prediction
State capacity	Enforcement costs push lower capacity states to offer participation incentives.	Cases: La Paz, El Alto, & São Paulo, LAPOP survey	Officials report compromise with civil society because they can't enforce. Street vendors report participating for state incentives.	Lower capacity states have higher participation.
Individual resources	Individuals use preexisting resources to capitalize on state incentives.	Cases: La Paz & São Paulo, original surveys, LAPOP survey	Resource-rich individuals use specific skills or connections to create and participate in organizations.	People with more resources are more likely to participate.

The causal mechanisms suggest that some states offer incentives to civil society while others do not and that some people participate because of those incentives while others do not. Each mechanism also implies specific patterns that different types of data can evaluate. Table 1 summarizes the causal mechanisms and the data that can evaluate aspects of those mechanisms. Table 1 then specifies what case data builds support for a mechanism and what findings the causal mechanism implies for the quantitative analyses. The following section outlines how the study operationalizes components of the theoretical process and tests its implications.

Research Design

The theory uses state capacity and individual resources to explain why poor workers participate in civil society in some places more than others. The multi-method research design

begins to address causal identification challenges by first establishing the plausibility of the theory with mixed method case studies comparing street vendors and their organizations in La Paz and El Alto, Bolivia, and São Paulo, Brazil. La Paz, Bolivia's working population organizes more than in the majority of the world, despite high levels of poverty and low levels of education and capacity (LAPOP 2014), which makes the city a theoretically interesting case to explain. Comparing La Paz to the neighboring city of El Alto holds many national-level features constant but varies city government capacity. Additionally, El Alto hosts the headquarters of one of the largest organizations of the working poor in the world: The Confederation of Street Vendors of Bolivia represents at least 250,000 street vendors (Lazar 2007). São Paulo, Brazil serves as a comparison because the city government has much more administrative capacity than the La Paz or El Alto city governments by most measures, including GDP per capita, infrastructure, and number of police. Additionally, the conventional wisdom would expect that street vendors in São Paulo have higher levels of organization because they have more opportunities in the largest city of a large, middle income country. However, street vendors and their organizations in São Paulo are typical of large cities (WIEGO 2016, Neuwirth 2012, Bhowmik 2012) while vendors in La Paz and El Alto, two cities in the poorest country on the continent, participate more.

I conducted ethnographic fieldwork because ethnography captures micro-level processes over time (Auyero 2001, Katz 1997). Ethnography is a relational and interactive method, and by revisiting people, actions, and topics repeatedly over time, ethnography creates opportunities for falsification or confirmation during the data collection process (Geertz 1973, Jerolmack and Khan 2014). Additionally, ethnography allows researchers to see if individuals' answers to questions change over time as relationships change. Ethnography is particularly suited for topics that individuals may be reluctant to talk about with strangers—like informal work and imperfect, non-state enforcement. For example, Bolivian street vendors in preliminary fieldwork described forming unions as a reactionary response to police repres-

sion; as fieldwork continued, the same people elaborated that punitive enforcement was one part of the story but that positive, material incentives consistently shaped their decisions to start, join, and participate in street vendor unions. Likewise, unorganized Brazilian street vendors initially refused interviews, but after seeing me working in the markets, vendors approached me to talk.

The logistic regression and machine learning analyses serve as preliminary evaluations of the theory's observable implications using out-of-sample data (Coppedge 2012): A subsample of self-employed respondents from the Latin American Public Opinion Project (LAPOP) combined with World Bank development indicators and OECD tax data. Globally most self-employed people make roughly minimum wage as domestic workers, day laborers, recyclers, or street vendors and survey researchers often use self-employment as a proxy for vulnerable or informal employment (Fiess et al. 2010, Hussmanns 2004). Additionally, people report their employment status more reliably than their income; defining the sample with self-employment generates a more complete dataset of low resource workers than defining the sample with income.

The quantitative analyses operationalize civil society participation with a binary variable for if a respondent reported attending professional association meetings in the prior year. The quantitative analyses trace one operationalizable component of state capacity and individual resources: Tax revenue per capita for capacity and education for individuals. For individuals, education is one of several key personal resources that people frequently leverage in political participation (Fischer and Qaim 2012, Meinzen-Dick et al. 2002, Putnam et al. 1994). This project uses education because people reliably report their education levels in surveys, unlike other important resources such as income or social networks. Importantly, most people complete formal education before they enter the workforce; unlike income or social networks, education is a personal resource that is causally prior to civil society participation for many individuals. Similarly, scholars do not agree on how to measure state

capacity (Goodfellow 2015, Hendrix 2010). Comparing 15 common operationalizations of state capacity, (Hendrix 2010, pg. 274) recommends that researchers operationalize the concept with variables that measure a state's revenue-generating capacity, because revenue measures account for more variation than others. I use tax revenue per capita because it measures a state's ability to collect the taxes it levies and the material resources that governments can allocate to different policy areas. Additionally, tax revenue per capita data exist for most countries and years in the dataset while other potential measures, like homicides per 100,000 or statistical capacity, have severe missing data. The analyses do not use composite measures or indexes of state capacity because most do not cover the years in the public opinion dataset that supplies individual-level information. The appendix includes analyses with different proxies for state capacity: GDP per capita, a common state capacity measure (Hendrix 2010), and social security contributions per capita, a revenue measure that captures the state's revenue generating capacity in labor markets.

To summarize, the case studies establish that the theoretical process works as proposed in the three cases, and suggest that state capacity and individual resources are causally prior to participation. The case studies cannot test or generalize the theory; as a preliminary test, logistic analyses of large n survey data find a similar relationship between tax revenue per capita, formal education, and professional association participation across 17 countries over ten years. However, the analyses assume that the logistic model's identifying assumptions are met; the data do not have features that allow for rigorous identification. Machine learning methods like random forests predict outcomes without requiring identifying assumptions, but current methods cannot estimate causal effects. This nonparametric approach supports the logistic analysis by finding similar and stronger patterns in the data without making any causal assumptions or claims. Multiple data sources and analytic frameworks examine the proposed theoretical process from different angles and point to the same conclusions, which builds confidence in the theory and empirical results, despite barriers to rigorous

identification.

Cases: Street Vendors in La Paz, El Alto, and São Paulo

Between July 2014 and July 2015, I collected 92 interviews, two small original surveys,[1] and worked as a street vendor. In La Paz, I worked with the main street vendor federation and one new association, as well as police and bureaucrats, and a team of four survey administrators. I also sold clothes once a week in a prominent street market. In El Alto, I interviewed street vendors and bureaucrats. In São Paulo, I interviewed bureaucrats, sold electronics with unorganized street vendors, and worked with a collaborator to collect interviews with organized and unorganized street vendors, as well as fielded an original survey. The following case comparisons use this original data unless otherwise noted. All names have been changed to comply with Internal Review Board confidentiality requirements; interested readers can find all protocols in the online methodological appendix.

In this section, I compare La Paz and El Alto to show how low capacity pushes governments to delegate to civil society, increasing participation among the working poor. I then show how in São Paulo, higher capacity enables increases in enforcement, precluding participation. Within each case, some people participate and some do not; I compare individuals *within* cases to establish the role of resources in individual participation decisions. Conversely, state capacity varies between the three cases; I compare city governments *across* cases to establish the role of state capacity.

[1]The La Paz survey has 204 responses while the São Paulo survey has 241. Both surveys had identical demographic questions but different participation questions and sampling strategies. Therefore, I limit my use of the original survey data to descriptive statistics and compare them informally.

La Paz and El Alto

Anarcho-syndicalist miners returning from Chile founded La Paz's first recorded street vendor organizations in the 1880s (Lehm et al. 1988). Over the following century, street vendor organizations in the country's capital waxed and waned with regimes and the economy (Peredo Beltrán 1992). The number and membership base of street vendor organizations exploded with the economic and political turmoil of the 1980s and continues to grow (Rojas 1992). In 2015, the city had an estimated 50,000-60,000 street vendors, or 5-6% of the capital's population. Seventy-five percent of street vendors belong to one of hundreds of street vendor unions, which in turn affiliate with four citywide federations and a national confederation. Many street vendors scrape by financially and many are illiterate, while others make a middle class living and hold university degrees. This heterogeneity shapes who participates in street vendor organizations and how.

The Confederation of Street Vendors of Bolivia has its headquarters in El Alto, a sprawling, self-built city that surrounds La Paz. Hundreds of thousands of people work as street vendors and virtually all belong to one of 538 street vendor unions (Lazar 2007, Tassi et al. 2013, 2015). The two cities differ in their administrative capacity: The La Paz city government has a clear organizational structure staffed by career bureaucrats who keep the city functioning on a constrained budget, while the El Alto city government struggles to convince employees to show up for work. Both cities rely on civil society organizations to enforce local laws but lower capacity El Alto delegates more to groups like street vendor unions.

Mechanism 1: Lower Capacity Increases Delegation to Civil Society

The La Paz city government encourages street vendors to form and participate in unions by offering licenses and bureaucratic access to organized vendors. Association leaders frequently reported that they formed an organization when a bureaucrat or colleague told them to, often after the city guard issued warnings for selling without a license. Ricardo, a photographer in

the champagne sellers' association, explains the process he and his colleagues went through:

> Our licenses came this year. For this, we joined the champagne sellers, because [city bureaucrats] do not want to give licenses to individuals, but an association helps... The first month, people from the city came by asking for our licenses. You know, the day we submitted our paperwork they disappeared, they haven't come back to bother us.

Ricardo states the common knowledge: The city will not license individuals but it will license union members. Ricardo then explained that photographers typically work in private buildings where they do not need vending licenses. The photographers only joined the union to get licenses and would not have joined if the city had not insisted. Once the union could demonstrate that they had begun the process of registering an organization—which is not a requirement for legally vending—the city guard stopped issuing warnings.

Once organizations form, the La Paz city government delegates enforcement and encourages street vendors to participate as union members in order to boost compliance with local laws. Isabel, a unionized clothing vendor, explains that the city delegates most enforcement to the organizations:

> The associations sign an agreement with the city government that they will follow the city's regulations. In effect, this means that the association enforces most things. The city government just enforces a few things in the licenses: time and place and having one. But if the city government finds something wrong, they'll just write a letter to the association saying "Your affiliates are doing this and you need to stop it."

The city government does not have the resources, personnel, or political capital to enforce vending regulations on its own and works with the street vendor organizations to achieve

basic compliance or policy goals. Jorge, a former city bureaucrat, details the extent of the city's negotiations with street vendor organizations:

> To do these [infrastructure projects], we have to go to the federations and lobby them... The other way is bottom up: We approach the vendors at their stalls and see how everything is, what they are missing, to know how we could frame something so that it's favorable to them... And if we reached an agreement with them, we would go to the federation with the agreement so that the federation could approve it. From the smallest thing, like moving a stall a meter to avoid blocking a garage, we have to negotiate.

Jorge explains that the city government must negotiate with street vendor organizations; it does not have the capacity to enact policy unilaterally. As a result, the city government offers incentives to induce policy compromises with the organizations. The city also offers individual members benefits like stall improvements for participating in ways that benefit the city government.

In El Alto, the city government signed a ten year agreement (see online appendix for full document) with the Federation of Street Vendors of El Alto that went much further. The agreement codified monthly coordination meetings and low annual vending fees while offering significant incentives for working with the government and internally enforcing local vending laws. In the 19-point agreement, the city agreed to return 50% of vending fees to the sector in the form of public works, finish infrastructure projects that affect vendors within 60 days, and never remove stalls, among other things. In return, civil society organizations like street vendor unions enforce dozens of local laws. In El Alto, vendor organizations also finance and construct infrastructure projects like roads that public sectors usually provide (Tassi et al. 2013). Goldstein (2016) documented similar agreements in Cochabamba, Bolivia.

For example, an association of witches, healers, wisemen, and fortunetellers monitors

and regulates a high-traffic area in the center of El Alto. The organization organized decades ago to secure the area and now coordinates with the city and the citywide street vending federation. Members pay annual licensing fees to the city as well as association dues; in return, the city maintains their licenses, which allow a concrete stall where they can store merchandise and conduct business. With this infrastructure allowance, each member of the witches' union holds a license worth tens of thousands of dollars on secondary markets. In this sense, the city pays potential violators to participate in civil society organizations that regulate members and markets.

Mechanism 2: Workers with More Participate More

Some vendors found multiple unions while others are joiners and some actively refuse membership. What explains this individual-level variation? Street vendors in La Paz are a heterogeneous group: Vendors come from several indigenous groups, speak multiple languages, and include children and grandparents. While many vendors have only a few years of formal schooling, others hold law degrees. Finally, many vendors barely subsist on their earnings while others have multiple cars and houses. In line with research that finds that people with more resources participate more than people with less, vendor leaders tend to be better off relative to other street vendors, while an original survey found that union members are twice as likely as unaffiliated vendors to own a car, and also more likely to own a house.

Education is particularly important: In an original survey, street vendors who had attended college were three times more likely to be union members than people who had not. Furthermore, rank and file vendors actively promote leaders with a college education, and leaders are disproportionately male and mestizo (Hummel 2016). Fabiana, a former vendor leader, points to education to explain why a federation leader will continue in his post, "Jaime Santana is the only one with the academic background, the diplomatic education, to do it." The federation leader in question has a social science degree from a French univer-

sity. Jaime Santana and other high-level leaders have spent decades as vendors, but are more educated than most of their colleagues and are the most involved in vendors' civil society organizations.

Surprisingly, street vendors in La Paz have more key resources like education than street vendors in São Paulo. Importantly, in the original street vendor surveys, 40% of street vendors in La Paz finished high school while only 16% of vendors in São Paulo had a high school degree. Again, this is surprising because Brazil is the wealthiest country in the region while Bolivia is the poorest. While both countries have high inequality, Brazil's social services are more robust than Bolivia's and Brazil's working poor generally have more opportunities and resources than their counterparts in Bolivia (Hunter and Brill 2016).

Both the La Paz and El Alto city governments turn to civil society organizations like street vendor unions to internally enforce local laws. Both city governments compromise by offering incentives to organizations and their members in exchange for self-regulation. Neither government has the capacity to unilaterally enact even basic policy objectives. However, lower capacity El Alto delegates more power to civil society than La Paz and sustains higher civil society participation.

São Paulo

Street vending has been a constant in São Paulo since the city's founding, but street vending organizations are a recent and fragile phenomenon. Only a dozen organizations representing 1-2% of the city's 100,000 street vendors exist (Itikawa 2010). Organizations rise and fall with their founders, have a largely absent member base, nonexistent bylaws, and infrequent meetings. Most street vendors do not participate in work-based organizations. The few street vendors who are unionized belong to the one small category that the state does negotiate with—disabled license holders—or have exceptionally high resources relative to their colleagues. São Paulo has the resources and administrative capacity to imperfectly enforce

its laws and it does, even against petty violators like street vendors.

Mechanism 1: High Capacity Increases Enforcement

The São Paulo city government started a licensing program in the 1980s that granted licenses to disabled street vendors (Itikawa 2010). The city periodically opened registration for new licenses in the 1990s, coinciding with periods of lower state capacity measures, like low growth and high violent crime rates. As economic and administrative indicators improved, both conservative and leftist administrations increased enforcement and revoked licenses: In 2001, at the beginning of Marta Suplicy's leftist Workers' Party administration, 23,000 street vendors had licenses but by 2004, only 6,000 licensed vendors remained (GGCHR 2014). Between 2006 and 2013, Gilberto Kassab's conservative administration revoked nearly 4,000 licenses and then declared the rest invalid. A court overturned the decision, but leftist mayor Fernando Haddad attempted to revoke all licenses again in June 2015. Paulo, an older, articulate vendor leader with decades of union experience, links the state, the economy, and vendor disorganization explicitly, "We will always have illegal vendors because the state... the state is not interested in organizing them."

The state's interventions in street vending are largely punitive. The federal government offers limited tax incentives for informal workers to formalize, but few workers know about or are able to access these programs. On the other hand, the federal government has spent millions of dollars to cut off supply chains of counterfeit, off-brand, and improperly taxed consumer goods, with mixed success (Pinheiro-Machado 2011).

The São Paulo city government employs thousands of military police and several squadrons of city guards solely to police street vending. Police confiscate unlicensed vendors' goods and attempt to deter newcomers. Licensed vendors report that the São Paulo city guard comes by once or twice a day to verify licenses and ensure that vendors follow regulations. Conversely, unorganized and unlicensed vendors working in busy commercial areas contend

with constant policing. For example, while working as an unlicensed vendor on the city's busiest commercial street, I hid from military police patrols with other vendors an average of 7 times per hour, or every 8.5 minutes.

Mechanism 2: Only an Educated Few Participate without State Benefits

Without state incentives, the vast majority of São Paulo's street vendors do not organize. Walter, a middle-aged street vendor in peripheral São Paulo, links the majority's lack of organization to the city's refusal to delegate or negotiate, "Why don't unlicensed vendors organize? Because it's very difficult to get anything out of the authorities." Talking about his unlicensed colleagues, Benedito, a licensed vendor working in downtown São Paulo, agrees, "They don't organize because the city government won't meet with them, it will never give them [licenses]."

For most street vendors in São Paulo, stringent enforcement keeps their resources low by discouraging those with other options from entering the sector and draining persistent vendors' resources through frequent confiscation and repression. On paper, policing street vendors means confiscating excess, improperly documented, or unlicensed goods, which inflicts financial losses on petty violators. In practice, many military police use arbitrary force while confiscating merchandise. For example, in 2014, a military police officer shot and killed a counterfeit CD vendor at point blank range while confiscating merchandise (Globo 09 September 2014). While working as a street vendor in downtown São Paulo in June and July 2015, I regularly saw military police draw their guns while chasing vendors, and several of the vendors I worked with had scars from police beatings.

Only a tiny minority of São Paulo's vendors belong to any kind of workers' organization. Organized vendors like Benedito are better off in terms of education and income than their unorganized colleagues. While most street vendors make roughly minimum wage and did not finish high school, organized vendors often came to the profession with more education

and earn higher profits from their work. Another union leader, Augusto, attended university and used his advantages to start a union:

> I took advantage of my secure situation... That's where I went after more information, investing time and money out of my pocket. I researched and discovered [The Workers' Trade Union Central] and started to get involved. And, at the time, I started a union. –Augusto, quote from interview transcription (GGCHR 2014, p19).

Unlike the La Paz and El Alto governments, the São Paulo city government and the Brazilian state more broadly have the capacity to forego dialogue with street vendors and pursue an elimination strategy. Eduardo, a street vendor from La Paz working in São Paulo, contrasts the two environments:

> Bolivia and Brazil are extreme opposites. In La Paz, any group can block the highways and the city... The government gives too much power to social organizations. But here? Nobody does anything.

The Brazilian state has succeeded in curtailing unlicensed vending and deterring many newcomers. However, it has not eliminated street vending and essentially plays a massive game of whack-a-mole with unorganized vendors. The individuals these policies target are overwhelmingly poor and have little formal education. As a result, few São Paulo street vendors participate in work-based organizations. Across the border in Bolivia, the conditions reverse: weak city governments actively encourage street vendors to participate in unions, and experienced vendors form and maintain these organizations to capture state incentives. The follow section establishes this pattern with quantitative data from across the Americas: where state capacity is lower, more workers participate in civil society organizations.

Logistic and Machine Learning Models of Participation

The analyses use a dataset from the Latin American Public Opinion Project with 44,184 self-employed respondents. The dataset has 26,304 complete observations from 17 countries for nearly two dozen measures. I do not impute missing observations because most missingness comes from added or discontinued questions over different waves, not nonresponses. In-person interviewers surveyed respondents from 2006 to 2014. While the samples are random and nationally representative, the data is not panel data; administrators sampled new respondents for every wave and added countries in later years.

The dependent variable of interest is whether a respondent reported attending professional association meetings or not in the last 12 months: 19% of the sample attended at least once. I proxy state capacity with tax revenue per capita data from the World Bank and the OECD and include country and year fixed effects. The other independent variables capture individual-level resources, particularly the number of years a person spent in school. I include measures of other resources and demographic information, such as household assets, age, children, gender, and political participation.[2] The appendix includes models with random effects and analyses with GDP per capita and social security contributions per capita as alternative measures of state capacity as well as coding for control variables. Results are generally consistent across specifications and estimators. Table 2 and Figure 1 summarize the descriptive statistics.

[2]I do not include controls for ethnicity because the survey's ethnicity questions change by country, and the resulting 27 categories have significant missing data. I include ethnicity as a robustness check in the appendix and the fixed effects results do not change significantly, though the variable prevents the random effects model from converging.

Figure 1: Respondents by country:

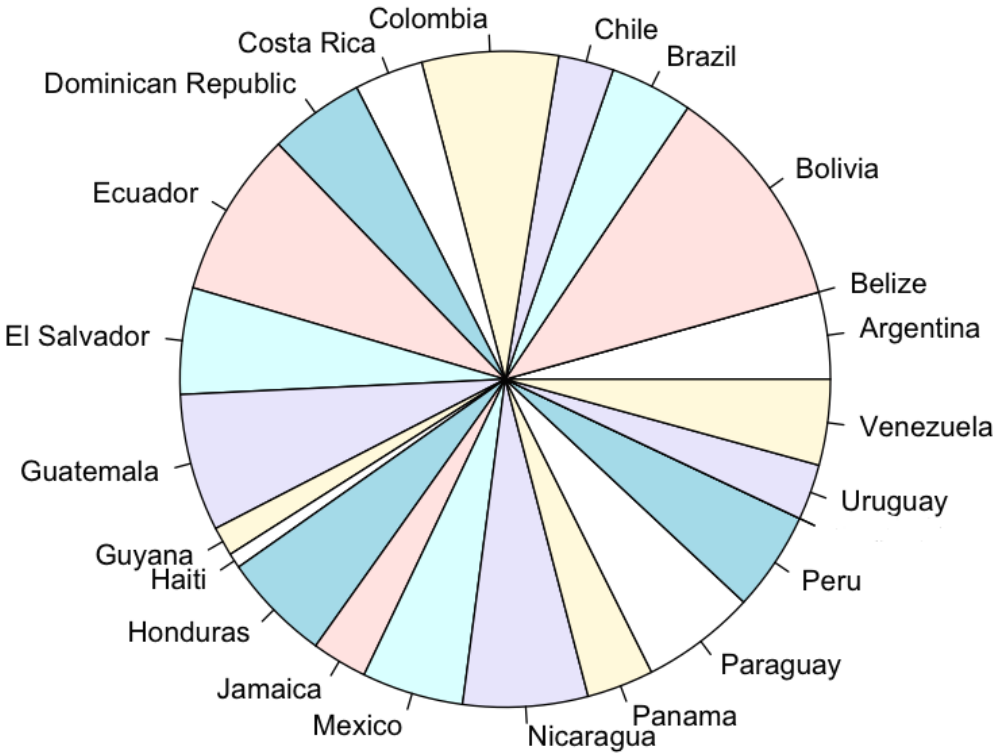


Table 2: Descriptive statistics for key variables:

Variable	Mean	Median	Standard deviation
Education (years)	8.34	9	4.37
Tax revenue per capita (dollars)	1151.83	730.34	1009.73
Age	40.42	39	13.71
Children	2.53	2	2.31
Vehicles	1.31	1	.58

Logistic Regressions

Table 3 reports the results of two fixed effects logistic regressions with different specifications. The first model reports the effects of the independent variables of interest: Education and tax revenue per capita. The second model includes full controls.

Table 3: Individual and state-level effects on professional association participation in Latin America, 2006-2014

	Fixed Effects Logit	Fixed Effects Logit (Full Controls)
Education	.03*	.06*
	(.00)	(.00)
Tax revenue per capita	-.0002*	-.0002*
	(.00)	(.00)
Female		-.38*
		(.04)
Age		.01*
		(.00)
Rural		.47*
		(.04)
Political Interest		.21*
		(.04)
Children		.01
		(.01)
Religious Meeting		.36*
		(.04)
School Meeting		.30*
		(.04)
Community Meeting		.95*
		(.04)
Political Meeting		.75*
		(.04)
Non-voter		-.26
		(.05)
TV		.12
		(.06)
Fridge		-.13*
		(.05)
Landline		-.02
		(.04)
Vehicles		.31*
		(.10)
	N = 28,184	N = 26,304

Year and country fixed effects suppressed; reported in appendix.
Standard errors in parentheses below coefficients. All tests are two-tailed.
*$p \leq .05$

The estimates are in line with the theory's observable implications. Tax revenue per capita—a revenue-based proxy for state capacity (Hendrix 2010)—is consistently negative and significant, suggesting that self-employed workers in lower capacity states are more likely to participate in professional associations than their counterparts in higher capacity states. Similarly, living in a rural area, where states tend to have less control relative to urban areas, increases the chance that a worker participates. Both results support the expectations of the first theoretical mechanism: Lower capacity states encourage poor workers to organize.

Individual-level resources also matter: The more educated a worker is, the more likely they are to participate. Likewise, owning vehicles, a proxy for wealth, boosts the likelihood of participation. These results support the expectations of the second theoretical mechanism: people use preexisting resources to participate. Supporting past work on civil society participation, people who are more interested in politics are more likely to participate in work-based organizations and participation in any other type of organization greatly increases the likelihood of engaging in a professional association.

Figure 2 plots the predicted probabilities of participation at different levels of education as tax revenue per capita increases. Figure 2's first takeaway is that as tax revenue increases, the likelihood of participation for people at all education levels decreases. For example, a person with nine years of formal schooling—the sample's median level of education—who lives in a country with very low tax revenue per capita has a 24% chance of participating in a professional association in a given year. By contrast, a person at the median education level who lives in a country with high tax revenue has a 12% chance of participating. In other words, a person in a high capacity country is 50% less likely to participate than a person with the same level of education in a low capacity country.

Figure 2: Predicted Probabilities of Participation

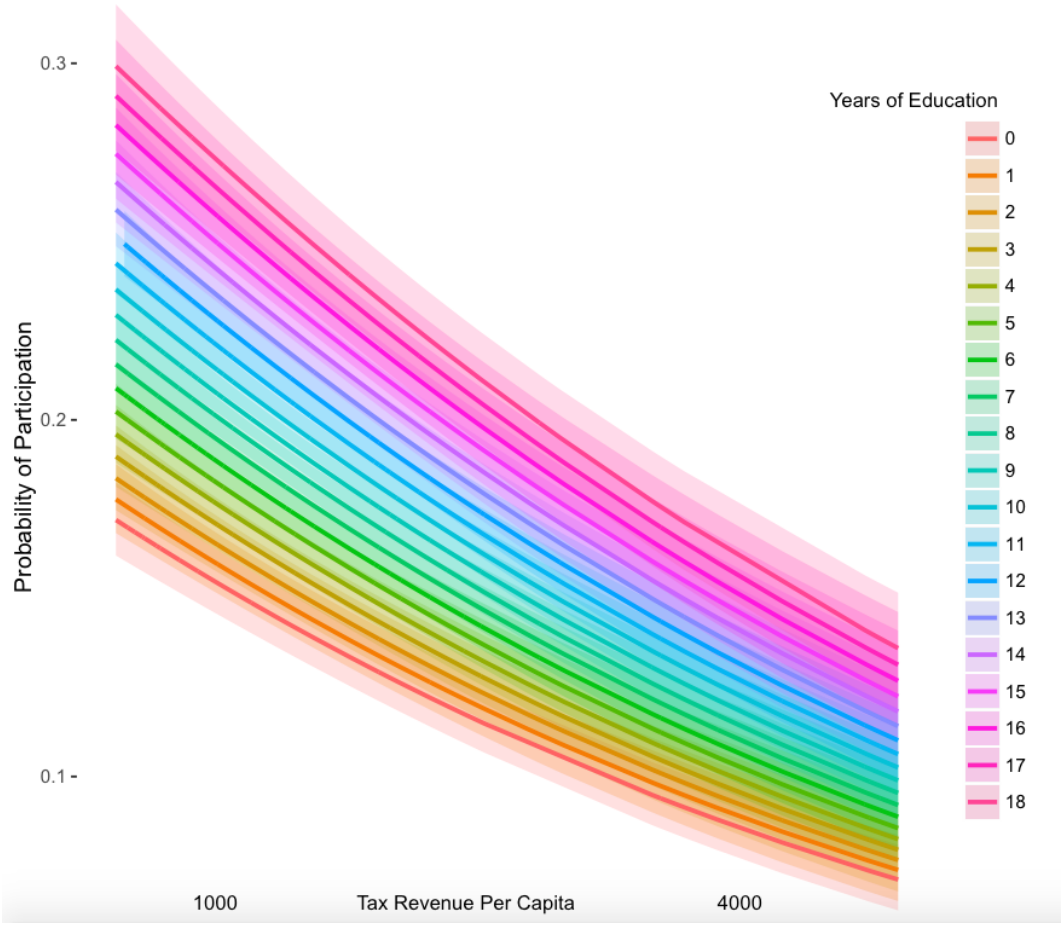


Figure 2's second takeaway is that the more education a person has, the more likely they are to participate at any revenue level. However, as tax revenue increases, all respondents converge towards nonparticipation and the differences between more or less privileged people shrink. For example, at the sample's median of \$730 in tax revenue per capita, a person with no schooling has a 15% likelihood of participation while a person with a graduate degree has a 30% chance of participation, an increase in likelihood of 100%. Combining the education and tax revenue results, a person without formal education in a high capacity country has a 5% likelihood of participating, compared to the 30% likelihood of a highly educated person in a low capacity country; in other words, the second individual is six times

more likely to participate in civil society. Combining these dimensions, one in 50 people with no formal education participate in high revenue countries, but in low revenue countries, the least educated workers are just as likely to participate as the most educated workers in high revenue states: one in six in each condition participate. For the least educated workers, this is an increase of 830%.

Machine Learning

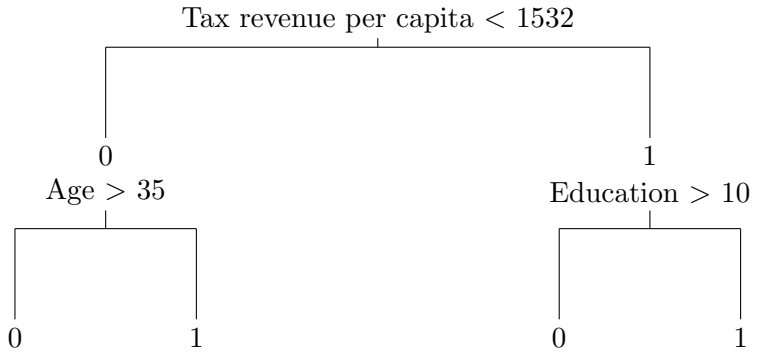
The machine learning approach adds to and supports the logistic regression analysis by demonstrating that proxies for state capacity and individual resources matter more than most other variables in predicting participation, even without the assumptions necessary for the logistic models. Additionally, the complex combinations that this machine learning technique creates approximate the proposed theoretical process better than the additive effects of the regression models. Finally, prediction can be a valuable endeavor in and of itself; for example, governments that want to delegate to civil society may need to predict future participation to assess if the policy change is worth the time and effort.

In a frequentist statistics approach, researchers specify a model and then evaluate it with data, as in the previous section's logistic regressions. In a machine learning approach, researchers feed data into an algorithm that learns a model to predict the output (Breiman 2001b). To nonparametrically analyze the dataset, I use a random forest classifier, which creates a predictive model from n decision trees.[3] Random forest is one technique in the field of machine learning methods (Breiman 2001a). Machine learning methods like random forest classifiers typically outperform OLS and logistic regression in making predictions, *but machine learning methods make no causal assumptions or claims* (Cantú and Saiegh 2011).

[3]Specifically, I use the off-the-shelf random forest classifier in R's caret package. Details in the replication code and caret documentation. See Muchlinski et al. (2016) for an excellent comparison of random forests and logistic regression in R using the caret and randomForest packages.

Random forest classifiers create decision trees to partition the data. As the stylized example in Figure 3 illustrates, decision trees partition data to classify observations, creating conditional relationships between the variables. Random forest classifiers are particularly useful for social scientists because, unlike several other machine learning methods, they can handle continuous and discrete variables, missing data, and unbalanced classes, and produce useful metrics like error rates and variable importance measures (Muchlinski et al. 2016).

Figure 3: Stylized example of a decision tree classifying participants and nonparticipants:



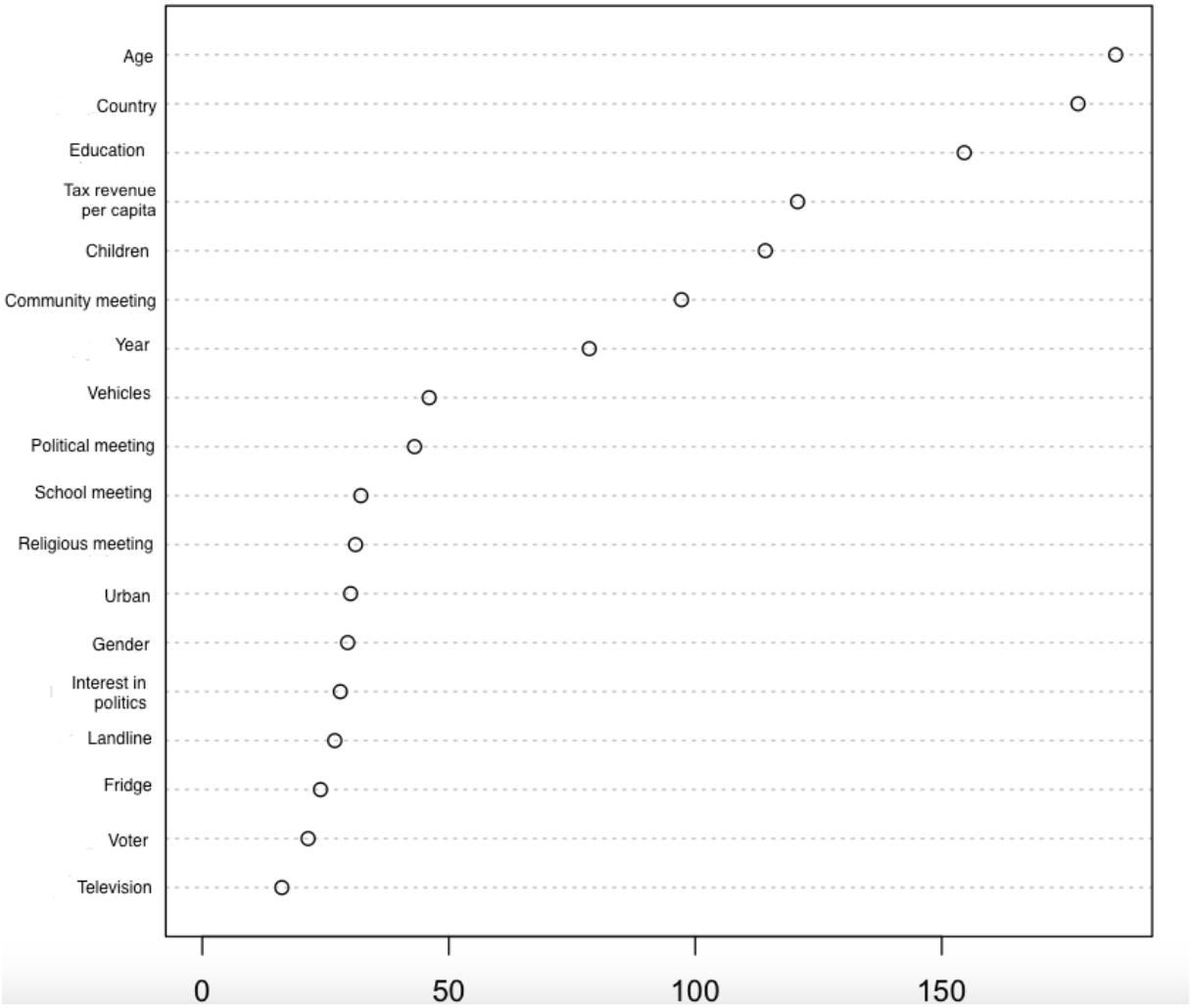
Decision trees are analogous to flow charts: The highly stylized decision tree in Figure 3 illustrates how a decision tree partitions data into increasingly smaller groups in order to make a prediction. Each terminal node in the decision tree is a prediction. In this example, if a respondent lives in a place where tax revenue per capita is less than $1,532 a year (Figure 3's first split, to the left) but the respondent is younger than 35 (Figure 3's second split to the left), the tree ends in 0, which means that it predicts that the respondent did not participate. Conversely, if tax revenue per capita is less than $1,532 a year, but the respondent has more than 10 years of schooling, the tree predicts that they did participate. Variables further up in the decision tree carry more weight because they contribute to more partitioning. For instance, tax revenue per capita partitions all observations in this example and is therefore more important to the model than education, which partitions many but not all observations.

Random Forest Results

Random forest techniques grow a large number of decision trees—this project used 1,000, which is typical in the literature (see Muchlinski et al. 2016)—from randomly selected variables in a dataset. The model randomly samples variables at every node, making each decision tree different. The model learns by finding the optimal local split or value of the sampled variable at that node. After growing a forest of decision trees, the random forest technique bundles and averages decision tree predictions to create an internal model of the data (Breiman 2001a,b).

Figure 4 plots each variable's contribution to the random forest model. The measure on the x-axis is the mean decrease in GINI score for each variable. The GINI score measures predictive accuracy by assessing how the model worsens when a given variable is removed (for a more thorough discussion, see Muchlinski et al. 2016. Note that the GINI score is unrelated to the Gini index of inequality). Therefore, the higher a variable's decrease in GINI score, the more important it is to the model's accuracy.

Figure 4: Variable importance in the random forest model, ranked from highest to lowest predictive power, as measured by GINI score:



Again, random forest models predict data but make no causal claims. Figure 4 supports the logistic results and the theory by showing that education and tax revenue per capita remain strong predictors of professional association participation patterns even without making any strong assumptions about the data.

Additionally, Figure 4 has interesting implications for collective action research. The variable importance plot confirms some established findings: The country a person lives in

greatly impacts their collective action decision, as does year of survey, education, experience as proxied by age, and other types of participation. However, the graph runs counter to many established findings. For example, number of children, a variable that researchers rarely discuss, strongly predicts participation patterns, suggesting that family structure greatly impacts civil society participation. Surprisingly, several indicators of political engagement and participation, like voting in past elections and reported interest in politics, do not contribute much to the model.

Comparing Predictions from Logistic and Random Forest Models

The random forest model readily predicts nonparticipation: The model correctly classifies a person as a nonparticipant 89% of the time (see the appendix for the error matrices that calculate these numbers and for ROC plots visualizing the true positive rates). On the other hand, it correctly predicts participation in a professional association 41% of the time. Overall, it makes a correct prediction for 79% of the data. In comparison, the logistic model in Table 4 with full controls correctly predicts nonparticipation 97% of the time, at the expense of participation, which it correctly predicts 15% of the time.

Separation plots visualize the models' utility by plotting how well models sort classes within the data (Muchlinski et al. 2016). The separation plots in Figure 5 contrast Table 3's full logistic model with the random forest model's classification. Participants appear as black lines and nonparticipants appear as white lines. The horizontal black line plots predicted probability. The triangle indicates the number of participants that the model predicts. A model that perfectly classifies the data would have all white to the left of the triangle and all black to the right. Any black lines to the left of the triangle are participants misclassified as nonparticipants and vice versa.

Figure 5: Separation plots for models predicting participation, where black lines are participants, the triangle is expected participants, and the horizontal line plots predicted probabilities:

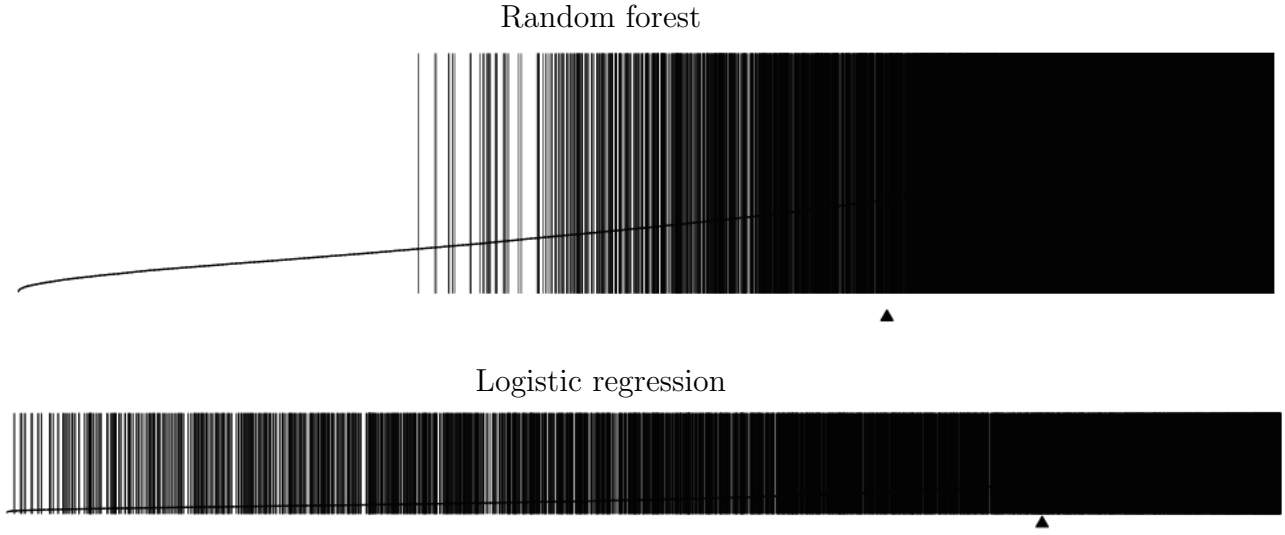


Figure 5 shows that both models separate the data but that the random forest classifier performs better in both classes and accurately predicts more participation. In the random forest plot, most participants are correctly classified to the right of the triangle, but a number of participants are misclassified as nonparticipants (any black lines to the left of the triangle represent misclassified participants). Conversely, the logistic plot shows that the model sorts nonparticipants to the left of the triangle. However, the random forest model performs better because it accurately predicts both participation and nonparticipation, instead of excelling at one.

To summarize, the logistic regressions suggest that more education and a lower capacity state encourage self-employed workers to participate in work-based organizations. Moving away from parametric data assumptions, the machine learning analysis supports the theory by showing that conditional relationships between education and other individual-level proxies for resources and tax revenue per capita as a proxy for state capacity predict self-employed

people's participation in work-based collective action.

Conclusion

Globally, most adults work and most are poor. Available jobs tend to be informal, precarious, and bring in low wages with few if any benefits (Neuwirth 2012). Many workers experience poverty, informality, and precariousness in other parts of their lives as well: In informal housing, transportation, and unregulated healthcare (Desmond 2012, Holland 2014, Goodfellow 2015). Existing theory predicts that the working poor rarely participate in civil society (King and Rueda 2008). Scholars and policymakers assume that informal or self-employed workers in particular rarely participate because of additional barriers to collective action like high turnover and uncertain legal statuses (Perry 2007). Contrary to this assumption, poor workers around the world participate in civil society and frequently improve their working and living conditions when they do (Agarwala 2013, Bhowmik 2012, Hondagneu-Sotelo 2001).

I argue that states and poor workers interact to encourage civil society participation in some places but not others. I suggest that where states do not have the capacity to enforce regulations, they offer incentives to workers to form and join civil society organizations that regulate daily life. Workers who have the education and other resources to harness these incentives may then opt to participate and negotiate collectively with the state. However, states with more capacity enforce laws against activities like street vending, and these punitive strategies take resources away from the working poor (Goffman 2015, Holland 2016). Punitive enforcement strategies create considerable barriers to organizing and as a result, the working poor participate less in high capacity contexts. In support of the theory, I have presented three original, mixed method case studies of street markets in La Paz and El Alto, Bolivia and São Paulo, Brazil, as well as out-of-sample logistic and machine learning analyses

on survey data from self-employed workers across Latin America.

If these dynamics hold more generally, then states with lower capacity can encourage participatory civil societies while higher capacity states may track the working poor into law enforcement systems. Broadly participatory civil societies may in fact return resources to the state over time (Amengual 2013), in the form of tax revenue, savings on law enforcement, and trained personnel. Therefore, states could build capacity over time by making investments in civil society instead of state-based enforcement mechanisms. The civil society actors that emerge from these processes may be more likely to represent less privileged people than the civil societies in high capacity states. Finally, the theory implies that higher capacity states track the working poor into the criminal justice system more frequently than their lower capacity counterparts, precisely because higher capacity states can effectively enforce even minor laws. This implication supports recent reports in the U.S. on modern debtors' prisons (DOJ 2015) and ethnographic work in urban sociology which finds that heavy enforcement for minor infractions like driving without a license or falling behind on payment plans can trap people in poverty and the justice system (Desmond 2016, Goffman 2015). Additionally, the case studies support research in the American context which finds that increased interaction with criminal justice systems decreases political engagement (Weaver and Lerman 2010).

The theory's major policy-relevant implication is that delegation to civil society can increase compliance with local laws while also promoting political engagement, particularly within vulnerable groups. On the other hand, increasing enforcement for minor laws increases alienation and decreases local resources. Many lower capacity governments already delegate to civil society; policymakers in higher capacity contexts may want to consider following their lead as a way to increase engagement, decrease incarceration, and save money.

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