Unequal Burden: Colonial Taxation and Living Standard Disparities Within Minorities.*

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Abstract

While the economic toll of European colonialism is well-documented, its distribution *within* indigenous communities themselves is not. Exploiting across and within-country variation, I show that indigenous communities in Peru subjected to more regressive colonial taxation exhibit more socioeconomic sorting. Namely, the selective "exit" of lower-status members via lower fertility, higher mortality or more out-migration, which shaped the social composition and living of the communities we observe today. Indeed, current surname data in Peru reveals a disproportionate presence of Inca nobility surnames and population in communities exposed to regressive taxation. This pattern is not new, as already in the 19th century they exhibit relatively higher literacy rates and propensity for collective action. In contrast, no similar pattern emerges for Guatemala, a more uniformly extractive colonial regime. These findings document the key role of within-indigenous sorting in distributing the burden of colonialism and in shaping the nature of indigenous communities we observe today.

Keywords: Inequality, identity taxation, sorting, colonialism, indigenous peoples, Spanish America.

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1 Introduction

European colonialism in the Americas entailed a host of extractive activities targeting indigenous populations. In their most egregious form, such as that of slavery (Acemoglu et al., 2012), forced labor (Dell, 2010), debt-peonage (Acosta, 2019), surplus appropriation by colonial officials (Guardado, 2018), land dispossession (Saffon Sanin, 2015), and political disenfranchisement (Bruhn and Gallego, 2012), it led to persistent spatial segregation (Guardado, 2024b), disadvantages in human capital and asset accumulation, limited access to credit, lack of public goods and curtailed political representation among the targeted populations, on average.

Yet, the burden of colonial extraction was not equally distributed *within* indigenous communities themselves. To start, the type of taxation implemented by the Spanish in colonial times was, by design and implementation, extremely regressive in their incidence, such that their costs were disproportionately borne by lower status members of the community. For example, requirements to fulfill a certain number of laborers and (or) the lump-sum nature of key colonial taxes meant that, *all else equal*, those with less income, connections and (or) land in the first place would find it relatively harder to fulfill these payments or less able to bribe themselves out of it. Thereby experiencing relatively more income and asset loss than those in a better position to pay.

Moreover, the effect of regressive colonial taxation was also exacerbated by partiality towards preexisting social hierarchies within indigenous societies themselves.[1] Given a key part of many colonization strategies was the preservation of these hierarchies, differences in social and economic status persisted in the colonial era. Chief examples are those of Princely states in British India or Native Chief status in parts of sub-Saharan Africa. In the Spanish case, the families of the last emperors of the Aztec – Moctezuma II (Mexico) – and Inca Empires – Sapa Inka Atauhualpa (Peru) – early on received Spanish nobility titles, ruling privileges, and exemption from key taxes. These privileges were

[1] At the eve of conquest, the income GINI coefficient in the Aztec Empire was 50.4 (Alfani and Carballo, 2023), similar to Mexico's income GINI coefficient today (2023) and higher than that of other contemporaneous Empires.

also extended to lesser rulers, known as *caciques* in Mexico or *kurakas* in Peru, who could retain their succession rights as well as their tax-exemption status and larger landholdings, provided they converted to Catholicism and became vassals to the Crown.

This paper argues that the combination of (1) regressive taxation and (2) preexisting social hierarchies led to a greater incidence of colonial taxes among low-status members within indigenous societies at the time. Based on the case of forced labor drafts for mining in Peru and Bolivia – an extremely regressive tax in both its design and implementation – I first show it led to sorting within subjected indigenous communities along social status dimensiones. Because forced labor drafts were implemented by community leaders partial to these hierarchies, these drafts were disproportionately drawn from lower-status members. Resulting in their higher likelihood of "exiting" the community due to excessive mortality, lower fertility and higher out-migration. In contrast, areas of the Spanish Empire where colonial taxation was uniformly extractive (i.e. Guatemala), this type of socioeconomic sorting within indigenous populations would be absent or even reversed.

The main empirical concern to identify the sorting consequences of different types of colonial taxation is that of selection. Namely, that the type of extraction in Peru and Guatemala is driven by preexisting indigenous wealth, social composition, or community strength that has carried on until the present. To reduce this concern, I use two variations of a geographic regression discontinuity design (GRDD) for the case of Peru with additional evidence from Guatemala. The first one has been used in previous research to show the long-run negative developmental effects of forced labor to the mines in a subset of Peruvian colonial provinces Dell (2010), while correcting for issues flagged in Abad and Maurer (2022). The second, used in Guardado (2024b) for Guatemala, also exploits the discontinuous assignment of different taxes but in a sample of all colonial jurisdictions of these countries.

By focusing on a narrow band of individuals and (or) communities along former borders with similar pre-treatment characteristics, I trace the social composition and living standards of indigenous communities inhabiting them today. Because early colonial data on pre-treatment characteristics show that these demographic and social differences did

not exist prior to the establishment of these taxes, it is possible to identify its compositional consequences. For example, censuses prior to the taxes implemented show that the share of tax payments to high status rulers (*caciques* or *kurakas*) – a way to measure their prevalence – was very similar across the newly created towns (*reducciones*).

Results. Using this design and an array of historical and contemporary data in Peru and supportive evidence from Guatemala, I document three findings.

First, while indigenous populations across these settings exhibit systematically lower living standards vis-a-vis non-indigenous ones, the gap is relatively smaller in areas with extremely regressive colonial taxation in the form of forced labor[2] in Peru. This result is robust to different markers of indigenous identity (language, surnames, self-identification), as well as to different levels of aggregation (individuals, communities or districts). In contrast, in Guatemala, where colonial taxes targeted the richer to all members of the community there is no variation in the living standard gaps by tax treatment status.

Second, these relatively higher living standards in no way meant that forced labor was "good" for indigenous communities. Instead, it reflects the selective "exit" of lower-status members along socioeconomic lines. Focusing on the case of Peru and using current surnames associated with high social status at the time of Conquest – namely, descendants of the royal Incan nobility identified by historians (Elward Haagsma, 2018) – I first show from parish baptism records from the 16th to 17th century that the presence of Inca noble surnames is higher in areas with more regressive taxation (forced labor) at the height of this practice. Thus consistent with their ability to avoid mining drafts and suffer from its devastating consequences. Because surnames represent a lasting marker of social status and ancestry (Clark, 2015); are relatively new in the Peruvian context; are less sensitive to short-lived changes in migration, fertility or mortality dynamics (Carpio and Guerrero, 2021); and were reinforced by the high prevalence of endogemous marriage within social clans (*ayllus*), they are a good marker of the social composition of indigenous communities.

Indeed, results show that individuals associated with the Inca nobility are relatively

[2]Known as the mining *mita*.

more frequent today in areas more exposed to regressive taxation in the past. I find these surnames and population overrepresented in the 2011 electoral role; the local governing councils (2002-2022); and among school children population enrolled in schools in 2005, precisely in the places where forced labor was in place. Further analysis of Inca noble baptism records spanning the 16th to 20th century suggests these compositional differences arose in colonial times and not after. To assuage concerns of mismeasurement of the Inca nobility measures, I show that nobility surnames are a meaningful marker of economic and living standard differences vis-a-vis other indigenous populations – that is, the surname carries economic and social weight within their communities.

Mechanisms. But how does surname composition and higher living standards relate? I find evidence for two channels. One is a mechanical effect driven simply by the higher share of better-off individuals vis-a-vis communities lacking them. Since individuals with high-status surnames are less stunted than other indigenous populations, their overrepresentation could automatically increase the community's average.

The second is a community-wide-effect driven by the higher levels of cohesion and collective action ability of these populations. If sorting led to smaller but richer and more socially and economically homogeneous communities, it could have facilitated their ability to act collectively in the provision of public goods. For example, I find that more indigenous communities subject to more regressive taxation already exhibit relatively higher literacy rates than indigenous communities in areas outside the forced labor catchment as early as 1876. Consistent with a greater ability to lobby and provide for public goods. These communities also exhibit more uprisings related to community issues in the early 20th century (1900-1960 period). In all, the exposure to regressive taxation in the 16th to 19th centuries exacerbated socioeconomic sorting where implemented but raising the living standards of those remaining, at least since the 19th century.

Contribution. Overall, these results document an overlooked consequence of Spanish colonization among indigenous communities: compositional effects induced by sorting. While studies documenting the economic consequences of colonialism (Acemoglu et al., 2001, 2002; Dell, 2010; Bruhn and Gallego, 2012; Guardado, 2018), invariably do so terms

of the effects it had on the places where implemented (territories), this paper instead examines how it changed the *populations* it targeted. Thus in-line with seminal studies showing how tax-induced changes led to religious conversion and occupational differences among religious groups (Saleh, 2018; Saleh and Tirole, 2021). Yet, to the best of my knowledge, this is the first paper to show long-term social differences induced by colonial taxation in the indigenous populations of Peru with implications for Guatemala.

Second, this paper also documents the role of colonial taxation for the persistence of social status within indigenous societies. While there is strong evidence of the persistence of elites in England, the United States and Sweden, to name a few (Clark, 2015), it is unclear to what extent public policies can later these patterns at all. For example, the experience of British colonialism in Sierra Leone (Dupraz and Simson, 2024) or the communist regime in China (Alesina et al., 2020) or Hungary (Bukowski et al., 2021) did little to dislodge the privileged status of certain groups. This paper shows that for the case of Peru, the nature of taxation aided in the persistence of social status within indigenous communities.

In doing so, I move away from an unitary view of indigenous populations. For example, extant studies focus on characteristics and behavior of indigenous groups as a whole, for example, whether they have non-replicable and non-expropriable skills (Diaz-Cayeros et al., 2022; Diaz-Cayeros and Jha, 2016), pre-colonial institutional complexity (Angeles and Elizalde, 2017; Elizalde, 2020; Arias et al., 2011), or greater collective action ability due to extraction episodes (Carter, 2021). By focusing on *within* indigenous inequalities and social hierarchies it is possible to undercover the *distributional* consequences of colonialism[3].

These findings also raise questions as to whether the well-known demographic collapse in the Americas (Acuna-Soto et al., 2002; Cook and Simpson, 1948; Cook and Borah, 1971; Noble, 1981) and (or) the recovery from it (Covey et al., 2011) might have diverged along socioeconomic lines, with some indigenous classes weathering better the shock than others. Therefore adding to existing studies on the long-term consequences of this type

[3]See (Guardado, 2024a) for a summary of this literature

of shock (Sellars and Alix-Garcia, 2018; Voigtländer and Voth, 2013).

Methodologically, this paper has implications for long-run legacies studies and its surrounding debates in political science and economics (Marbach, 2021). By presenting empirical evidence of socioeconomic sorting within the indigenous population of Peru over the long-run – it documents a phenomenon that eludes easy quantification but that has long been noted by historians and anthropologists studying them.[4]

Finally, findings here could help explain why the preservation of sociopolitical hierarchies has also led to relatively better long-run economic outcomes in other settings. For example, areas under *Native* or *Princely* rule in British India have outperformed others in the long-run (Iyer, 2010). The same is true in sub-Saharan Africa with the system of *Native Authorities* (Gardner, 2012; Bolt and Gardner, 2020; Bolt et al., 2022), associated with better economic outcomes today (i.e. see British Cameroon Lee and Schultz (2012)). To the extent that these imperial enterprises were also accompanied with extreme regressive taxation, the mechanisms put forward here could help explain these findings.

2 Context

Two features of the historical context in these territories are key to understand the short (and long-run) effects of Spanish tax impositions. First, the preexisting social and income distribution prior to the Spanish. Second, the type of colonial exactions collected from the indigenous population.

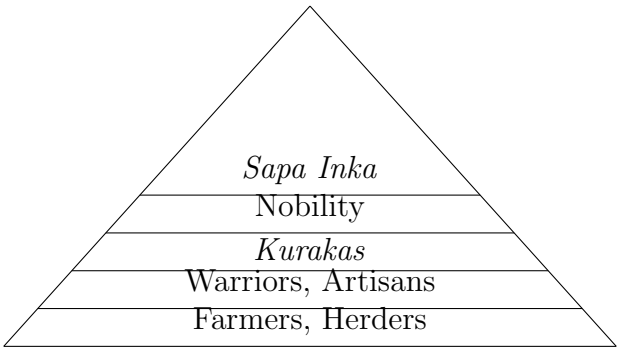
2.1 Pre-Hispanic Incan Society

Prior to the arrival of the Spanish in the early 16th century, the Incan empire was the largest indigenous regime in the Western Hemisphere which covered around 2 million square kilometers at its peak. In terms of territory, it was larger than the Aztec empire, and its reach extended from parts of what today is Colombia until central Chile – with

[4]I thank David Stasavage for this comment.

the indigenous Mapuches in southern Chile largely excluded from their rule. See Figure A1 in the Appendix.

Figure 1: Incan Social Structure Pre-Conquest



This Empire – known as a whole as *Tawantinsuyu* – encompassed numerous ethnic groups over which the Incas ruled (directly and through intermediaries) and from whom they obtained taxes and labor. The Empire as a whole was organized in provinces, which were still in place by the time of the Spanish conquest (1532). Each province was ruled by a *kuraka* and sought to encompass a single ethnic group. However, in some cases, provincial rulers needed not be from the ethnic group they ruled, particularly if Incan authorities sought to put the province under direct control. This form of intense (direct) form of rule was mostly limited to the first realm, which covered current Peru and Bolivia.

In terms of organization, the Incan Empire was highly hierarchical (see Figure 1). At the top sat the *Sapa Inka*, the Inca monarch and its nobility organized in family groups or clans constituting the topmost ranks. Next in line stood the *Kurakas*, or provincial leaders, followed by those "occupational specialists" (*kamayuq*), who served community leader roles, artisans and that of warriors. Finally, at the bottom of the social structure stood the rest of the population, around 95 to 98 percent of the total, composed of commoners generally devoted to agriculture (d'Altroy, 2014, p.293).

A key actor was the *Kuraka*, an hereditary position which was in charge of settle disputes, establish tax contributions, serve as religious authorities, and be the main interlocutor with Incan and subsequently Spanish authorities. The position of *kuraka* included privileges such as having more than one wife, and therefore higher land allocation. These

elites were also entitled to services from others on their land and household.

Provinces were each subdivided in groups of 10,000 to 10 (d'Altroy, 2014, p.351)[5] with households conforming the basic tax units. This hierarchical organization facilitated military drafts and taxation, with leaders at each level responsible for the delivery of those under his control. At the bottom of the organization stood the household, with household heads responsible for tax payments, generally in the form of labor and (or) artisan and agricultural produce. This atomized structure was a response to the ecological landscape of the Empire: a rugged terrain with pockets of dispersed populations distributed all along the Andean range.

Socially, the population was organized in *ayllus* (clan), a largely endogamous group of several extended families which varied in size and ethnic origin. Membership to the *ayllus* was thus determined by birth. The largest one could reach the size of hundreds of households. This is the realm around which most Incans' life revolved around and that formed the basis of their shared social and economic ties. For example, land ownership in the *ayllu* was communal with each individual having a right to land depending on their status, size of their family, and number of descendants. While most of the structure of the Empire would be reorganized by the Spanish in the 16th century, the preservation of the *ayllu* by the Spanish meant that its social, political and economic distinctions carried into the colonial era.

Nobility and Leadership Privileges. Along with retaining the *ayllu*, conquest also meant the preservation of a special status for the indigenous nobility and local rulers hierarchies along with their privileges. As early as 1557, King Phillip II of Spain recognized that indigenous individuals that had been *caciques* or *kurakas* prior to the conquest could retain their privileges and succession rights provided they converted and became vassals of the Crown (de Trazegníes Granda, 2010, p.666). Among these privileges was the exemption from head taxes and from the *mita* (forced labor) obligations. In Mexico and Peru, royal families immediately received Spanish nobility titles and tax-exemption status in recognition of their higher status. This was formally recognized by

[5] 10 was the basis of Incan accounting

King Charles II in 1697, who established the legal equivalence of title and privileges of the indigenous nobility with those of Spanish origin (Luque, 2004, p.11). The colonial regime also ordered the provision of schools for the children of *caciques* and *kurakas*, often at hands of Jesuits (Caballero et al., 2020, p.98) to be raised in the Catholic faith to fulfill their future authority roles within the indigenous communities. All nobility titles (indigenous and Spanish) in Peru and Bolivia would only be abolished in 1825 by Simon Bolivar during the wars for Independence.

2.2 Colonial Tax Impositions

The official conquest date of Peru is 1532, with the capture by conquistador Pizarro of the *Sapa Inka* Atahuallpa and the earlier capture of the latter's brother, Huascar. Once the Empire was officially beheaded, the Spanish were able to retool the preexisting hierarchical and nested organization for the delivery of taxes and labor, now to themselves.

Yet, despite the hierarchical structure, the dispersed settlement patterns the Spanish found – characteristic of the Incan period – made tribute and religious conversion a difficult task after the Spanish conquest. Moreover, the demographic collapse that ensued meant that each "level" had much less population than before. Thus prompting the Spanish to resettle the indigenous populations into jurisdictions overseen by a parish (*reducciones* and *doctrinas*) and the compression of the social hierarchy into "flatter units". For example, provinces instead of overseeing 20,000 households, in theory 200,000 people, as in Incan times, would contain a much reduced number.[6] These jurisdictions were foreign to the pre-colonial economic and political organization based on ethnicity, but conformed to the Spanish understanding of units and territories. In exchange for granting these lands and legal standing, the community (*ayllu*) as a whole had to pay the Spanish Crown tribute in the form of taxes and labor, which the *Kuraka* would then deliver to the new authorities (as it did in Inca times).

Forced Labor Taxes (*Mita*). In addition to territorial reorganization, the discovery

[6]Using data from 1572, I calculate that a province had on average 13,000 indigenous people, counting taxpaying males (tributarios), boys, old men and women.

of silver in Potosi (Bolivia) and of mercury in Huancavelica (Peru) led to an exponential increase in the need for labor to work in the mines. For this reason, around the 1570s the Spanish repurposed the labor drafts existing in pre-colonial times known as the *mit'a*, and required indigenous communities (*ayllus*) to send one seventh of their adult male population to work in the mines of Potosi and Huancavelica. The recruited men (around 13,500 in the first years) had to engage in a two months walking journey across the Andean *altiplano* to reach the Potosi mines and work for a year every 7 years. The arrangement involved one week of labor as part of the *mita* payment, while the other two weeks were given to rest although such time was usually spent as an employee of the mines under a wage scheme (Brading and Cross, 1972, p.558).

Initially, the *mita* was established on a population estimated at around 91,000 men in 1572, but by the 1680's this population has been reduced to only 33,423 (Stavig, 2000, p.535) due to disease, mortality and migration. Yet, even if the population was shrinking, the *mita* demands were not reduced which obliged Indian villages to pay their *mita* duties in money as a way to gain exemption from this burdensome task and also compensated miners for those who left. Mine owners often used this additional income to pay wages to "free" Indians, of course at a lower cost (Brading and Cross, 1972, p.560) and constituted an important source of income, making up for reduced output in the mines.

The best-known short-run effects of forced labor drafts was the depopulation of the communities subject to it (Abad and Maurer, 2022; Carpio and Guerrero, 2021), particularly in the 16th and 17th centuries, at the height of the silver economy in the viceroyalty in a context of indigenous demographic decline (Abad and Maurer, 2022). Contemporary reports from Cuzco parishes in 1689 (Villanueva Urtega, 1982) also decry the onerous requirements of serving in the Potosi mines. Yet, this depopulation and migration subsided towards the mid-17th century with the decline of silver production and the rise of "free" wage labor around the mines.

However, it is likely that this out-migration and depopulation caused by the mita was driven by the exit of lower socioeconomic status indigenous populations. Historians have noted how, within these communities not all members contributed equally to the

fulfillment of their *mita* obligations. Rather, "wealth, influence and *ayllu* affiliation" (Stavig 2000: 539) in the community mattered to be assigned by the local *kuraka* (Indian mobility) to serve, which often used its power to "exempt" individuals in exchange for a fee. "Rich" individuals paid for the forced labor service in cash or by hiring a substitute (Rowe, 1957; Bakewell 1984). It therefore comes as no surprise that often *Kurakas* themselves (along with the Spanish authorities) became the target of hatred and uprisings in colonial times.

Panel (a) of Figure 2 presents the geographic distribution of the colonial provinces assigned to provide labor in the silver mines of Potosi in Bolivia or in the mercury mines in Huancavelica, as well as those temporarily assigned to the mines of Cailloma in the area of Arequipa. While these were the broad territories from which the *mita* generally drew workers in the late colonial period, there is variation within province as not all settlements were subjected to it (see Abad and Maurer (2022)).[7] In addition, the ability of local communities to limit these labor drafts by buying out exemptions meant the effective tax rate varied within the province. However, for the purposes of this paper, what matters is the extent to which, when applied (in person or money) this exaction disproportionately affected those of lower socioeconomic status in the community.

Repartimientos de Mercancias. In addition to labor drafts and poll taxes, colonial officials in the 18th century popularized the practice known as *repartimiento de mercancias*, which meant the coerced distribution of "goods" to indigenous communities, particularly those with the greater ability to pay, at markup prices. As recounted by historians, these were not voluntary purchases but instead "forced" in the sense that these were not goods (in number, quality or price) that the indigenous population would have bought in the absence of these officials. Moreover, their payment was often forcefully collected or would be automatically added to the tax bill of an individual or the community as a whole owed to the official.

In Guatemala, while some commodities were forcibly sold, *repartimiento* there most commonly involved distributing cotton or maguey for women to weave cloth for colonial

[7]Silver production of Potosi peaked in the 16th century and saw a steady decline afterwards.

(a) Forced Labor in Peru and Bolivia

(b) Office Prices

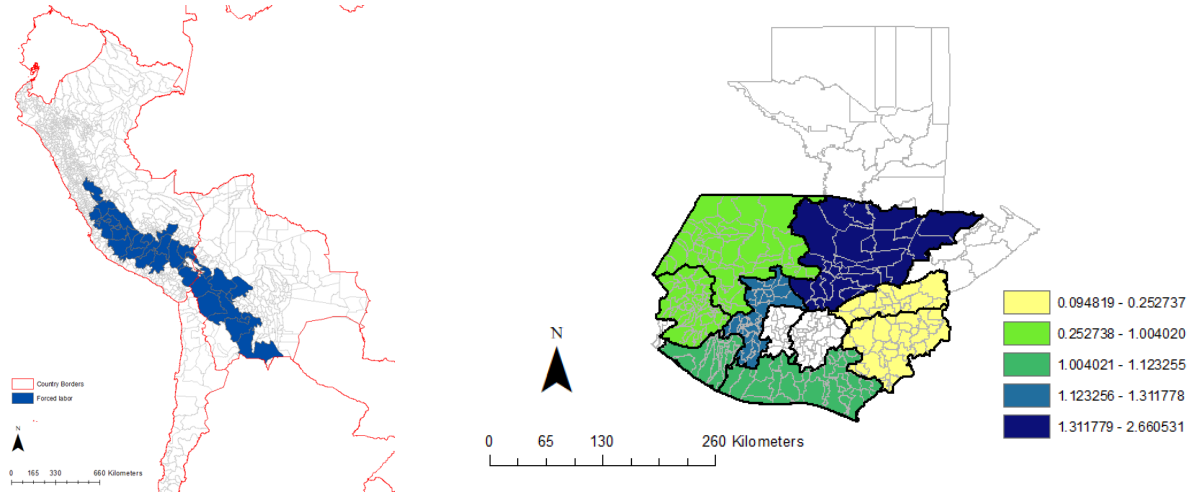


Figure 2: Key Exactions 16th to 18th century

officials, known as the *repartimiento del algodon*. Profits came from the price differential between the finished cloth at market prices and the minimal payment to these women and for raw materials (Lovell, 2015, p.108). According to Fonseca (1985), the profits to colonial officials during their five-year term would be around half of the total amount of head taxes collected for the Crown in the same province. Panel (b) shows the distribution of the willingness to pay for these positions in the 18th century from Guardado (2024b). Although the exact quotas for the *repartimiento* quotas are unavailable for Guatemala, evidence compiled by Fonseca (1985) shows that jurisdictions with the largest profits (Solola, San Antonio Suchitepequez and Quetzaltenango) were also the ones with the highest office prices in the period.

The main feature of this type of extraction is that it provided strong incentives for colonial officials to target individuals of higher economic status, as they would be more able to fulfill more rapidly these quotas in their five year terms. For example, including Spanish and mestizos in the distribution of goods – normally exempt from any of these activities – or to target the indigenous leader himself and his family for the payment of these goods. Targeting the "richest" sectors in society could have had arguably different effects than those exactions that were intrinsically regressive. By limiting capital accumulation and discouraging production, this type of exaction likely had a uniformly negative

impact on the development prospects of indigenous communities (see Nunn (2007) for a formal example).

Table 1 summarizes the key exactions drawn from indigenous populations and which social classes might be more burdened by it (assuming a preexisting unequal distribution of income and hierarchical organization in the population).

Table 1: Key Indigenous Taxes in Spanish America– 16th to 19th centuries

Type	**Name**	**Description**	**Incidence**
Poll Tax	*Tributo*	Lump-sum payment	Lower SES
Forced Labor Drafts	*Mit'a, Repartimiento de Indios*	Fixed number of draftees	Lower SES
Fixed Quotas	*Repartimientos de Mercancias*	Forced sale of goods at markup prices	Prob High SES

While these are not the only taxes paid by the indigenous population, as it excludes those paid to the Church and those more circumstantial in nature, it focuses on the ones recurrently mentioned in historical accounts. For example, other taxes on consumption, particularly of goods considered luxury such as salt, tobacco, alcohol and even playing cards could have an outsize role among those of lower income, yet, depended on their levels of consumption. In the case of sales taxes, the indigenous population were initially exempt[8]. They also did not pay mining taxes known as the *quinto real* (20% of silver production), for example.

The main takeaway from Table 1 is that while all of these exactions were burdensome, some indigenous classes were more burdened than others.

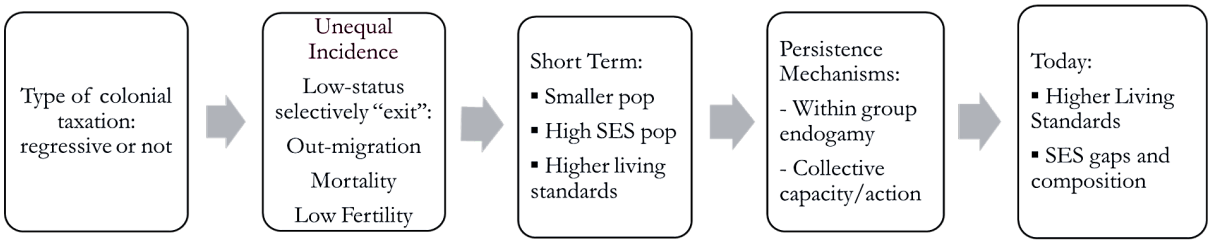
2.3 Summary of Argument and Implications

The combination of unequal social status and regressive taxation means that individuals of lower socioeconomic status would be more likely to "exit" either by migration to

[8]Later attempts to levy *alcabalas* via customs (*aduanas*) was met with widespread resistance (O'Phelan Godoy, 1988).

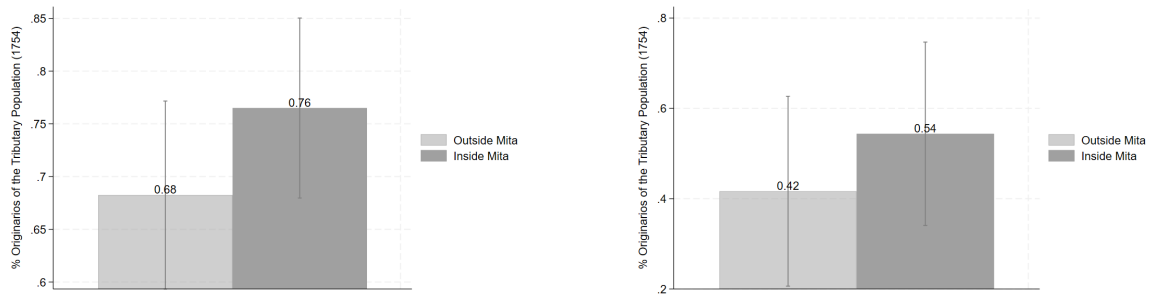
avoid the drafts. Or, if recruited to the mines, suffer the long-term health and mortality consequences it entailed. Figure 3 provides a visual summary of the argument.

Figure 3: Summary of Argument



The short-run effect of this extremely regressive tax was a visible decline in the population size of affected areas – a well-documented fact in both contemporaneous records (Villanueva Urtega, 1982) of priests as well as in population counts (Abad and Maurer, 2022) and number of surnames (Carpio and Guerrero, 2021). In contrast, depopulation in Guatemala was more uniformly distributed and driven by epidemics.

Yet, the depopulation of forced labor areas also mechanically increased assets per capita (land) and the share of individuals belonging to the community vis-a-vis other indigenous populations (for example, migrants), at least in the short-term. Indeed, descriptive evidence from the 18th century in Figure 4 shows a higher rate of *originarios* – individuals belonging to the community – as a share of the tax-paying and (or) other indigenous populations in the provinces of Peru and Bolivia subjected to forced labor.



(a) Peru (b) Bolivia

Figure 4: Provincial % of Indigenous Population *Originarios* (1754)

Less well-understood is the extent to which those remaining were of a particular "type". Are originarios a cross-section of indigenous society or were they drawn from

a specific class? While it is difficult to measure, since population counts often do not distinguish by class or status, one important source are the contemporaneous baptism records (16th-17th centuries) collected by these areas. Albeit their coverage naturally varies with the pace and extent of evangelization, I use the reported surname of the baptized individuals to identify the prevalence of higher-status ones.[9] As shown in Figure 11 of section 5.2, there is descriptive evidence that Inca nobles were much more likely to be baptized in districts under forced labor at the height of its importance.

But what are the implications of this argument for contemporary outcomes? First, if i) sorting led to a disproportionate share of high-status individuals and ii) other shocks did not fundamentally alter the composition of these communities, their descendants should be relatively more prevalent today than in those where it was absent. For example, they could be more numerous in terms of surnames, an identifier much less sensitive to slow changes in mortality, fertility or migration. As shown by (Carpio and Guerrero, 2021), only episodes of mass mortality, migrations and fertility – such as that caused by forced labor in Peru and Bolivia – could permanently change the number and geographic distribution of surnames. Moreover, the prevalence of endogamous marriage within indigenous communities could help cement historical surname patterns.

Second, even if those mass exiting had less assets on average, the land-to-labor ratios in forced labor areas would increase, leading to higher incomes and relatively higher living standards than communities where labor is more abundant. In fact, these exposed communities often employed indigenous individuals from outside it to work their lands – typically landless indigenous migrants – in exchange for a payment or share of output. Higher land per capita could have made them better able to weather natural and human-made shocks throughout time, improving their relative standing vis-a-vis other indigenous communities. The observable implication being the relatively higher living standards in areas exposed to regressive taxation vis-a-vis those outside it.

Finally, in terms of mechanisms linking socioeconomic sorting and higher living stan-

[9]High-status individuals were particularly encouraged (coerced?) to baptize and signal their conversion, therefore more representative by this measure. Moreover, the question here is whether they did so differently in areas with forced labor vis-a-vis those not subjected.

dards I focus on two. First, the overrepresentation of the Inca nobility at the top of the community could mean better leadership if they are seen more legitimate by the population or possess higher human capital. Or, second, the greater economic and social homogeneity of these communities could facilitate their collective ability to bargain for certain public goods, or oppose policies that did not necessarily benefit them, to name a few possibilities.

In what follows, I focus on three observable implications of this argument. First, is it indeed the case that indigenous communities in areas with regressive colonial taxation exhibit higher living standards vis-a-vis those areas that narrowly missed this treatment? Second, is sorting – measured by surname composition of indigenous – a mechanism that can explain these higher living standards? Finally, focusing on the timing of this pattern: is this a colonial or a post-colonial (post-1827) development?

3 Data and Empirical Approach

Throughout the paper, I focus on compare outcomes in areas historically assigned to the regressive colonial taxation treatment *vis-a-vis* similar areas prior that narrowly missed the treatment.

I first show results within a simple OLS framework with basic controls and then examine whether (and how) do the results change in a geographic regression discontinuity design. The main concern this design alleviates is that of selection. Namely, that the Spanish may be assigning a particular type of taxes to areas where the indigenous population is relatively richer and (or) with more nobility descendants such that it appears they are relatively better off today, when it was just driven by initial selection.

The main exercises rely on the sample of districts and provinces used in Dell (2010) and exploits the discrete change in requirements to provide forced labor to the Potosi or Huancavelica mines in Peru along a subset of districts with similar geographic and demographic characteristics. I also show robustness of these results to the assignments

flagged in Abad and Maurer (2022)[10]. The second design is a generalized version examining a broader set of Peruvian provinces (as well as that of Guatemala), but limiting the comparisons to border segments that exhibit a discontinuous change in their provincial assignment to *repartimientos* captured by office prices (Guatemala), but are otherwise very similar. In either case, the GRDD estimates can be best represented by Equation 1:

$$y_{i,s,b} = \alpha_b + \beta_1 TaxType_{s,b} + \beta_2 Borderdistance_{i,s,b} + \boldsymbol{X}_{i,s,b} + \epsilon_{i,s,b} \tag{1}$$

Where $y_{i,s,b}$ is the outcome of interest for individual or locality i of side s of border region b. α_b is a border- region fixed effect, with their exact number depending on the number of historical jurisdictions neighboring each other (Peru had 50 and Guatemala 11 provinces). $Tax_{s,b}$ is an indicator equal to 1 for the side s of border region b that has the particular type of tax under study. $bordist_{i,s,b}$ is a control for distance to the border. Finally, $X_{i,s,b}$ is a vector of locality level controls that always include latitude, longitude, altitude and in the case of Peru, distance to the former Inca capital (Cusco). It should be noted that unlike other geographic regression discontinuity designs (Dell, 2010; Keele and Titiunik, 2015, 2016), this is not a single border moving east-west or north-south but multiple ones. A similar design is used in Henn (2022) and Cantoni (2020), to name some recent applications.[11]

The main identification assumption is that along this narrow band of localities and *centros poblados*[12] from the border, (1) other factors vary smoothly and (2) there is no sorting of individuals *prior* to the treatment. Due to the proximity of the observations, all estimates are based on comparing adjacent units that are very similar on geographic fundamentals but nonetheless belong to different historical jurisdictions. Moreover, these similarities can be shown in the data - Tables A1 and A2 in the Appendix show the

[10]Specifically those of Figure A.2, p.36 of link

[11]In this setup, Dell (2010) is the case where a locality or district d can only take one value of s (on the forced labor side or not), and latitude and longitude have different functional forms, equivalent to: $y_{i,d,b} = \alpha_b + \beta_1 f(geographiclocation_d) + \beta_2 Mita_i + \mathbf{X_i} + v_i + \epsilon_{i,d,b}$

[12]Below the level of municipalities or districts.

lack of preexisting discontinuities in the samples used to estimate Equation (1) in Peru.[13] The second assumption of no sorting *prior* to the assignment would imply similar (on average) social, economic and demographic configurations in bordering settlements across these provinces. Using data on the demographic and social composition of settlements prior to the treatment in 1572 (see Table A1) it is possible to show little difference in the rates of payments to *Kurakas*, higher status individuals in charge of indigenous tax collection as well as in the composition of the population. Instead, the claim of the paper is that sorting occurred *after* the assignment. Finally, while borders do not have the same meaning as they do today, it is possible to know which communities belong to which jurisdictions as of 1600 in Peru.

3.1 Key Data

The main variables of interest are the historical and contemporary measures of living standards, ethnicity markers, tax assignments and socioeconomic composition of indigenous communities based on surnames.

Living Standards and Ethnicity Indicators. Contemporary sources of living standards include 2005 measures of standardized height for children from the Ministry of Education of Peru. Because the raw data does not include ethnicity indicators, these were assigned depending on the maternal language (indigenous or not) of the students attending the school from which sample was collected. I also use indigenous surnames (see below) as an alternative marker of ethnicity as well as the self-reported identification from the 2017 Peruvian Census. This is complemented with a database on the location and access to public goods of *centros poblados* coming from the 2017 Peruvian Census paired with that of indigenous communities (*Base de Datos de Pueblos Indigenas*) from 2018. The latter provides an alternative measure of living standards among indigenous communities. For Guatemala, I focus on the share of the Maya-speaking population and the share of the population literate and with access to basic public goods (water, electricity and sewage) in the locality from the 2002 Census.

[13]There are no comparable pre-treatment datasets for Guatemala.

In terms of historical living standards and behavioral outcomes, I use literacy rates from the 1876 census at the district level as well as the share of indigenous population at the time to examine literacy levels in more (or less) heavily indigenous districts. As a measure of collective action ability I focus on the presence of rural uprisings for land, autonomy or tax reduction from 1900 until 1960 in Peru (Kammann, 1982). Finally, land tenure patterns – particularly communal – from the 1972 and 1994 agricultural censuses complement this analysis.

Tax Assignments. The key independent variables are the historical assignments to two different types of exactions depending on their design and implementation. For regressive taxes, I use the forced labor assignment in Peru and Bolivia in two samples, (1) that of Dell (2010) based on a narrow section of the southern Andes as well as (2) a more general one based on a broader set of provinces from Guardado (2024b). To capture less regressive exactions coming from *repartimiento*, I use the office prices paid for each of the provinces of Guatemala – as a proxy of taxes targeting most productive sectors (see Guardado (2024b)).[14] These provinces in turn were mapped to their contemporary boundaries using the historical GIS of the Indias (HGIS) for Guatemala, corroborated with historical sources used in Guardado (2018). Additional controls always include latitude, longitude and altitude of the *centro poblado* or locality (below district and municipio level).

Surname Data. To examine socioeconomic sorting across these provinces, I use the presence of surnames associated with the Incan nobility identified by historians[15] .As a control group, I also coded the subset of the most common surnames in Peru of clearly Quechua or Aymara[16] origin coded from thesauri of indigenous last names for the region studied (Solís et al., 2012)[17], itself based on Garcilaso de la Vega (1960). Identification of the common indigenous surnames comes from the forebears.io https://forebears.io/surnames.

[14]Figure A2 in the Appendix show the main source of geographic variation in the two samples used.

[15]Namely, Elward Haagsma (2018), some of it cited in the press here

[16]Many surnames have since been Hispanicized, so they are likely an under count of their actual prevalence.

[17]Source: Here

Once the relevant set of surnames are identified I use three main datasets: (1) the last names of around 1.8 million school-aged children included in the 2005 Education Census; (2) the complete set of surnames of the 2011 Electoral Roll used in Carpio and Guerrero (2021) for five departments (Arequipa, Cusco, Apurimac, Ayacucho and Puno), which are nonetheless the core areas of design in Dell (2010); as well as (3) the surnames of all members of local government councils from 2002 to 2022 from the *Jurado Nacional de Elecciones* (infogob). Additional sources and variables will be described in the text.

4 Within-Indigenous Living Standards

Childhood Stunting. Figure 5 starts by showing the results from estimating Equation (1) for contemporary childhood stunting using different markers of indigenous ethnicity (language, surnames). In general, I find that even though indigenous populations have lower living standards on average, they perform *relatively* better in areas that had been historically assigned to provide forced labor vis-a-vis current indigenous populations in areas not assigned to this treatment. This, despite the fact that the former are indisputably poorer locations.

Specifically, Figure 5 shows that children that speak an indigenous language (Panel a)[18] or hold a surname of Quechua / Aymara origin (Panel b) have a lower standardized height z-score on average, but this is less pronounced for schools located within districts historically assigned to provide forced labor. All of the above results already account for an array of controls, and are based on the most stringent specification (cubic polynomial) on a narrow sample of districts used in Dell (2010). However, these findings are broadly similar when using assignment to forced labor among provinces in a simple OLS regression with basic geographic controls in Panel (c) or when instead using measures of self-identification at the district level (fig. A3 in the Appendix). Bottomline, while indigenous children exhibit a higher degree of stunting, this is less pronounced in more indigenous communities within former forced labor areas.

[18] Defined as those where a 100% of children reported speaking an indigenous language in addition (or in lieu) of Spanish, according to the 2005 School Census.

Further analysis shows that the patterns above are not driven by any anomaly in this particular set of data, as the results from Dell (2010) replicate perfectly as shown in figures A4 and A5 of the Appendix. Moreover, these results are in the same direction when using the alternative coding of Abad and Maurer (2022) as shown in Figure A6, particularly for individual and school level markers of indigenous ethnicity. In turn, Figure A7 in the Appendix also shows the robustness of the results to limiting the analysis to only those districts present in 1572, a quite stringent test since it reduces the sample to a third of the original size, increasing standard errors.

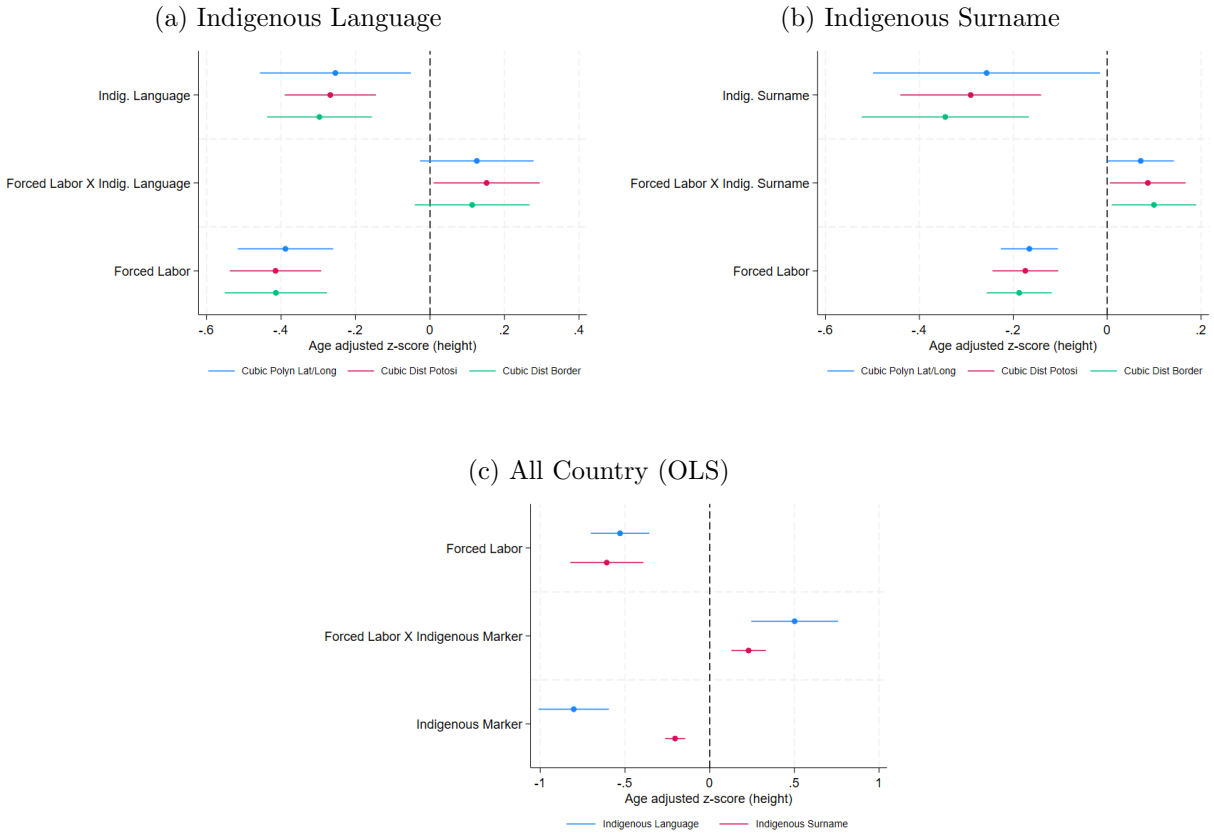


Figure 5: Forced Labor and Indigenous Children Stunting

If, as hypothesized, these relative differences are driven by the selective exit of individuals with lower income and assets, then we should expect that communities in which historically most of the population was *originario* – with rights to the commonly held land – be the main driver of these patterns. [19] Indeed, as shown in Figure 6, the positive outcomes of these communities are largely driven by locations where the share of *origi-*

[19] Community land is collectively held, the right to which individuals forfeited by "exiting".

narios relative to the number of indigenous population is above the median vis-a-vis the places where they were a clear minority.

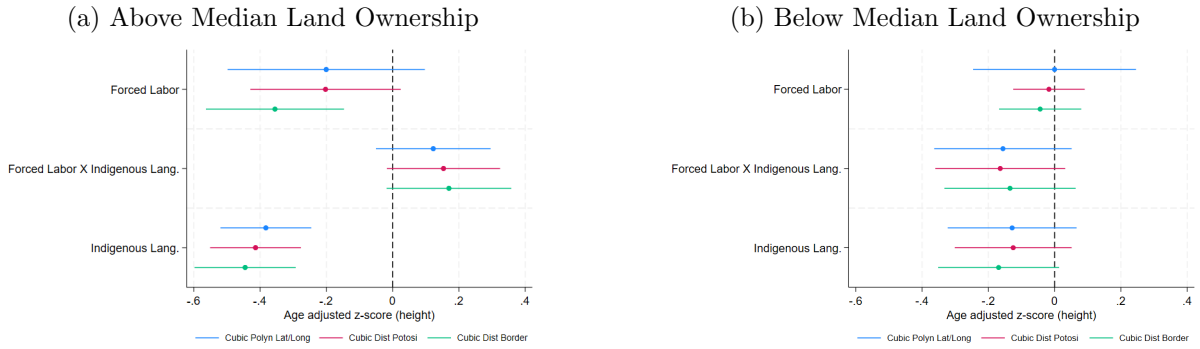


Figure 6: 18th Century Land Indigenous Land Ownership

Public Good Provision. If land ownership and the selective exit of low SES individuals indeed strengthened the community and its ability to lobby-for or supply public goods themselves, then we should observe a relatively larger presence of them. Figure 7 examines the share of the population in *centros poblados* – small localities, there are 32,000 of such localities in Peru with a mean of 163 inhabitants and a median of 93 – lacking access to potable water and sewage and whether these are more prevalent in areas with certain historical treatments.[20]

Potable water is an important public good that could reduce the prevalence of disease thus translating into better health and less stunting among indigenous children. As shown, the share of households lacking access to water is lower in areas assigned to provide forced labor (Panel a), driven by communities where all of its inhabitants speak an indigenous language (Panel b) while no different among the not-so-indigenous communities (Panel c). Because these estimates include all sides of the forced labor border across the entire country, with very different characteristics between them, it is even more remarkable to find a difference on this long gone border.

[20]Full estimates in table A3 of the Appendix.

(a) All Localities (b) Only 100% Indigenous (c) Less 100% Indigenous

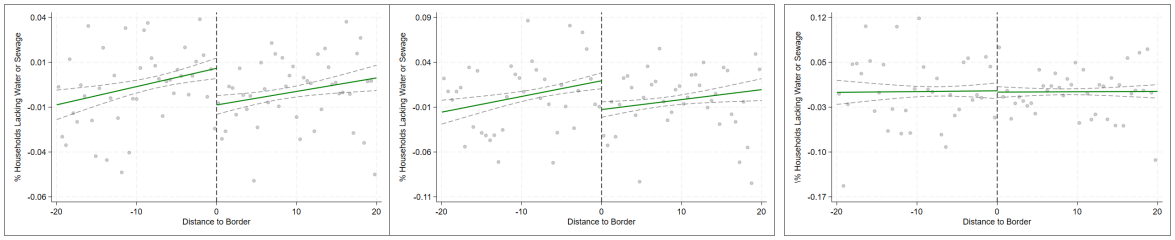


Figure 7: Forced Labor and Public Good Provision Among Indigenous Communities

In all, the living standards of more indigenous communities today is relatively better in forced labor areas vis-a-vis their counterparts located outside it. One facile interpretation of these estimates is that forced labor was "good" for the indigenous populations living there. Instead, as explored below, its effect was so devastating as to reduce the prevalence of an entire social class within indigenous communities.

5 Socioeconomic Sorting

The above results show that current indigenous populations (individuals, communities, or districts) living in former forced labor areas in Peru are performing *relatively* better than similar indigenous communities outside it. This is the case even though these territories are indisputable poorer (see Dell (2010)). But are they driven by the particular social composition of Peruvian indigenous populations?

In principle, the results above need not be due to sorting – whereby a particular socioeconomic class was singularly burdened by exactions and disproportionately decides to migrate; or perishes at higher rates; or exhibits steeper fertility declines as a result of these treatments. If the mere fact of constituting smaller populations led to greater asset availability (land) or greater bargaining power vis-a-vis landowners or agents of the State (colonial or post-colonial), these locations may have rebounded, and even thrived, thus explaining the pattern above.

To examine whether these results are driven by compositional differences induced sorting, I use evidence from the current surname composition of districts that had forced labor in the past vis-a-vis those that narrowly missed it. Given surnames were a Span-

ish introduction in the 16th century, had no precedent in Peru, and were imposed on a preexisting system of *ayllus* (family clans), many of the initial surnames chosen or assigned by groups referred to a common or mythical ancestor thus identifying ancestry or groups of families (Artiles, 2022; Carpio and Guerrero, 2021; Garcilaso de la Vega, 1960; Solís et al., 2012). Prior to the introduction of surnames, individuals identified with a single name (Garcilaso de la Vega, 1960, p.28). Examples of common surnames referring to these mythical ancestors include variations of Quechua words (their meaning in parenthesis): Condori (Condor), Puma (puma), (G)Huaman (hawk), Quispe (mountain), Mallco (llama herder), huillca (yellow), Mayta (meeting), among others.

Figure 8: Example of Noble *Ayllus* and their Surnames

Ayllu	Casa	Surnames
Capac	Tupac Yupanqui	Alferez Poma Orcosupa, Alferes Poma Orcosupa
Sucsco	Viracocha	Amancay, Amanccai, Hamanccai, Hamancay
...	...	Antitupa, Antittupa
Aucaylle	Yahuar Huacac	Atayupanqui
Sucso	Viracocha	Atao Yupanqui, Atauyupanqui, Atayupanqui
Hatun	Pachacutec	Auquiguaman Tupaguallpa
Sucso	Viracocha	Auquimaita, Auquimayta
..	..	Cahuapasa
Collana	Huayna Capac (maybe)	Callanaupa
..	Huayna Capac	Canatupa
Caytan	Mayta Capac	Caytan
Sucso	Viracocha	Ccayohuallpa, Cayo Guallpa, Ccayo Huallpa

In contrast, historians have traced the surnames adopted by the descendants of Incan nobility upon evangelization. Figure 8 presents a sample of the *ayllus* and *casa* (family) associated with key members of the Inca nobility and their adopted surnames. To the extent that these surnames refer to higher status Incas at the time of conquest, it is possible to examine the ancestry of the current population that remained in forced labor areas vis-a-vis non-forced labor ones. While this is only one dimension of social status, the expectation is that there would more deference towards them or they would be better able to bribe themselves out of the drafts.

On aggregate, Figure 9 shows that nobility surnames represent at most 1.54% of all surnames in the Electoral Roll of 2011 for five key departments in Peru, but around 2.43% in the Peruvian department of Cusco. Because the latter only represents surnames,

not population, I complement the analysis with the share of school-aged children with nobility vs non-nobility surnames reported in the 2005 School Census across the whole country (around 2 million observations).[21] Again, children with nobility surnames are a small proportion of the population, ranging from 5.8% of children in Cusco to 2.07% in Ayacucho. Finally, when looking at the surnames of the members of the district authority councils (*junta de gobierno local*) from 2002 to 2022, I find a lower prevalence of Incan nobility descendants in these positions vis-a-vis their overall share of surnames in the population. However, how do these differ when examining areas slated to provide forced labor in the mines or not?

	2011			2005		2002-2022	
	Tot Surnames	Tot Nobility	% Nobility	Tot Children in Census (Nobility)	% Nobility Children	District Authorities (Nobility)	% Nobility Surnames
Apurimac	24,282	325	1.32	38,690 (999)	2.52	3,712 (35)	0.93
Arequipa	87,382	921	1.04	75,729 (1,604)	2.07	5,374 (43)	0.79
Ayacucho	33,971	372	1.08	52,778(1,095)	2.03	4,814 (51)	1.05
Cusco	75,188	1,874	2.43	89,013(5,508)	5.83	5,089(201)	3.8
Puno	41,051	611	1.47	94,363(2,170)	2.25	4,415 (66)	1.47
Total	261,874	4,103	1.54	Total Nobility Children: 11,376	3.20%	Total Nobility Members: 396	1.60%

Figure 9: Distribution of Inca Nobility Surnames and Population in Key Departments of Peru

Table 2 starts by examining the composition of surnames in communities most heavily indigenous in *mita* areas vis-a-vis non-*mita* ones, using Equation (1). [22] Column 1 starts by showing that on average heavily indigenous districts have less surnames, yet, this gap is smaller in forced labor areas. Columns 2 and 3 in turn document how part of this effect is driven by a greater number of nobility surnames in these areas. While column 4 finds a positive but very small coefficient of noble surnames vis-a-vis all other surnames, the ratio (column 5) or share (column 6) of noble to indigenous surnames is higher in *mita* areas vis-a-vis other indigenous surnames (column 6).[23] In other words, while districts most heavily indigenous exhibit *lower* surname heterogeneity on average – a measure of less ethnic diversity (Artiles, 2022) – this gap is smaller in *mita* areas, driven by more

[21] These are publicly available data from Dell (2010).

[22] The reason to focus on more versus less indigenous is because these are the areas showing relatively higher living standards in the previous section.

[23] Results in Table A4 in the Appendix show robustness of this result to using a corrected version of the *mita* treatment status in Abad and Maurer (2022) while Table A5 shows robustness to including the share of these surnames in the school-age population.

nobility surnames.[24]

Table 2: Indigenous Districts Surname Composition by Forced Labor Treatment: 2011 Electoral Roll.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Log(Tot Surname)	Log(Nobles)	Tot Nobles	$\frac{Noble}{All}$	$\frac{Noble}{Indigenous}$	$\frac{Noble}{Indigenous+Noble}$
Mita X High % Indigenous	0.513**	0.528**	13.277***	0.002	0.207***	0.078**
	(0.259)	(0.252)	(4.370)	(0.003)	(0.074)	(0.035)
Observations	96,152	96,152	96,152	96,152	96,152	96,152
R-squared	0.808	0.746	0.775	0.741	0.795	0.781
Border Segment FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean DV	870.2	2.263	14.79	0.0189	0.436	0.274
Clusters	289	289	289	289	289	289
Weight type	Pop	Total Surnames				

Data: 2011 Electoral Roll (*padron electoral*) from Carpio and Guerrero (2021). Robust standard errors clustered at the district level in parentheses. All specifications exclude Cusco and its metropolitan area and include distance to Cuzco as control, border segment fixed effects, a cubic polynomial in latitude and longitude, as well as the slope and elevation gradient. p<0.01, ** p<0.05, * p<0.1

While surnames in the Electoral Roll serve as a representative sample of the adult population in these areas,[25] compositional effects could also arise in more selective groups, particularly if high status ancestry conferred lasting social, economic or political advantages. To this purpose, Table 3 examines the surname composition of local governing councils between 2002 and 2022 formed by the mayor and council members (*regidores*). These *juntas* or councils are elected for 4 years and deal with municipal affairs such as approving local laws and the yearly budget, approve local taxes, authorize building and development plans, etc. Table 3 shows that while Inca nobility surnames are in general underrepresented in this body on aggregate, this is less true for municipalities (districts) that provided forced labor in the past, even after controlling for their current share in the population.

[24]Table A6 in the Appendix shows there is little variation in the share or total number of common indigenous surnames by treatment status.

[25]In fact, Table A7 in the Appendix shows the same patterns in set of surnames of school age children in 2005.

Table 3: Indigenous Districts Surname Composition by Forced Labor Treatment: Governing Councils.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Log(Nobles)	Tot Nobles	$\frac{Noble}{All}$	$\frac{Noble}{Indigenous}$	$\frac{Noble}{Indigenous+Noble}$
Mita X High % Indigenous	0.427**	1.182***	0.024***	0.296**	0.113**
	(0.166)	(0.377)	(0.007)	(0.138)	(0.052)
% Current Noble Population	6.975***	15.854***	0.330***	2.594***	1.584***
	(0.876)	(2.264)	(0.047)	(0.608)	(0.252)
Observations	12,740	12,740	12,740	12,729	12,729
R-squared	0.539	0.526	0.544	0.318	0.409
Border Segment FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Mean DV	0.483	50.55	50.55	50.58	50.58
Clusters	259	259	259	258	258
Weight type	Pop		Total Surnames		

Share of current noble population comes from the share of district population in the 2005 School Census that have a nobility last name. Data: 2002-2022 District Authorities from the *Jurado Nacional de Elecciones* (infogob). Robust standard errors clustered at the district level in parentheses. All specifications exclude Cusco and its metropolitan area and include distance to Cuzco as control, border segment fixed effects, a cubic polynomial in latitude and longitude, as well as the slope and elevation gradient. p<0.01, ** p<0.05, * p<0.1

To the extent that these surnames accurately reflect ancestry and prior social status, it shows that the socioeconomic composition of heavily indigenous districts is different in former forced labor treatment areas than heavily indigenous district outside it. In particular, it exhibits a relatively higher share of descendants of higher status individuals consistent with sorting: either these elites did not out-migrate (or not all of them did). Or, they were relatively shielded from the effects of mortality in the colonial period, for example, by being exempted from the health consequences of working in the mines. Or, they exhibited higher fertility rates due to their status within the *ayllu* thus explaining their disproportionate presence today, to name some channels.

Given belonging to the Incan nobility came with privileges recognized by the Spanish Crown – it is likely individuals did not relinquish these lightly, and even legally fought to be recognized as such. The presence of this nobility also represented a social and cultural connection of indigenous communities to the Inca past which could have helped maintain the cohesion, identity, and collective action ability to challenge / accommodate / resist Spanish rule. It is no coincidence that the greatest threat to the Spanish Empire came from a rebellion initiated by a *Kuraka* – Jose Gabriel Condorcanqui – who claimed to be

direct descendant from the last Sapa Inca (*Tupac Amaru*).[26]

5.1 Socioeconomic or Human Capital Sorting?

While the results above are consistent with a particular type of sorting – along socioeconomic lines – this is only one dimension of sorting. In fact, historians have suggested that forced labor in Peru and Bolivia could have led to a different type of self-selection: one based on skills and human capital and not on socioeconomic status. Namely, that those most likely to leave due to the *mita* are those with greater skills, for example in artisan crafts, and at an economically productive age (Noble, 1981, p.250) cited in (Carpio and Guerrero, 2021, p.1049), as they would see higher returns in the cities.[27] [28]

Ideally we would have historical snapshots on the human capital levels of those remaining vs those leaving. Instead, the earliest census to capture this dimension is that of 1876, which examines illiteracy rates in the population. Albeit this is taken 50 years after the abolition of the *mit'a* in the 1820s, if sorting took place along human capital lines, these should be lower in areas with forced labor and high indigenous presence.

As shown in Panel (a) of Figure 10, using the baseline specification in Equation (1), towards the late 19th century, more heavily indigenous districts of Peru exhibited higher levels of illiteracy. However, this was more muted if historically assigned to forced labor. The pattern is the same, but with larger standard errors when examining provincial assignments with OLS in Panel (b), and still visible in the illiteracy rates of 1961 and 1972 in Panel (c). Throughout the figures it is clear that illiteracy is not relatively higher in heavily indigenous districts slated to forced labor as of 1876, if anything, they have been relatively better off vis-a-vis other indigenous districts outside the *mita*.

To fix ideas, the average rate of illiteracy in 1876 is 94% in the sample of panel (a) of Figure 10. In turn, on average, a district with a greater share of indigenous

[26] It should also be noted that he himself was mestizo and his claim to nobility was rejected in the colonial court (audiencia), a potential factor in his uprising (Cahill, 2003).

[27] (Dell, 2010, p.1876) also mentions this possibility.

[28] Indeed, half of the population of the city of Cuzco ca. 1730 was composed by *forasteros*, people who left their communities (see Gölte (1980)) to work for Spaniards' households or in artisan crafts.

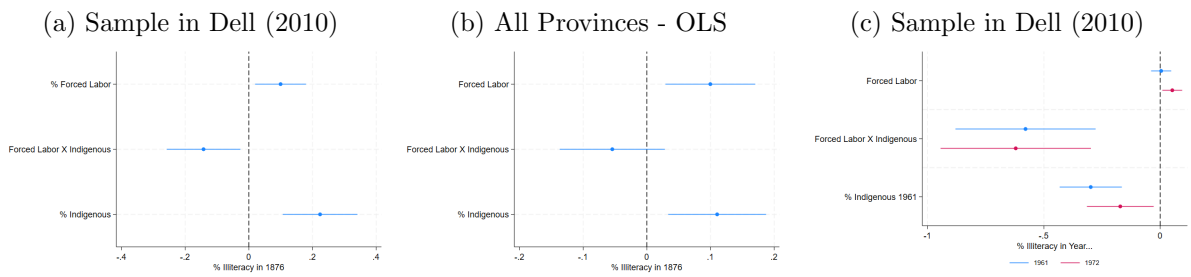


Figure 10: Indigenous Districts and Literacy in 1876, 1961 and 1972

(in 1876, the median share indigenous per district is 80% with a mean of 73%) and located in areas formerly assigned to provide forced labor exhibit around 12-15 percentage points smaller illiteracy gap in 1876, on average. Moreover, the lower illiteracy in heavily indigenous areas is again visible both in the census of 1961 and 1972 available from Albertus (2020): an additional 10 percentage point increase in the share of indigenous population in the district reduced the illiteracy gap in 6 percentage points in both 1961 and 1972. To the extent that literacy captures a dimension of human capital, it does not seem that communities in the *mita* is necessarily lacking in it vis-a-vis heavily indigenous communities outside it.

These results also show that the *relatively* higher living standards of indigenous communities in forced labor areas is not recent, since as early as 1876 there is some evidence of its presence. However, the next section more clearly addresses the possibility that these patterns arose in post-colonial times.

5.2 Post-Colonial Sorting?

In principle, it is possible that this sorting might have happened after Independence in 1827 as mobility restrictions eased. However, for this to happen the share of noble surnames (or population) – namely the ratio of $\frac{noble}{allsurnames}$ – two things must have occurred: either i) the number of noble surnames of population starts increasing rapidly in indigenous districts of former forced labor areas (mita). Or, ii) all other surnames differentially decrease (exit) these areas.[29] However, what Table 11 shows is that today,

[29]Or both are happening at the same time, but in that case we must observe at least i) or ii).

more nobility surnames are baptized outside of the *mita* districts than inside it and is reflective of a downward trend in the total number of noble surnames since the 16th century. Although I do not have the trend for all other surnames (denominator), I can at least rule out option i). If anything, noble surnames have been declining in *mita* districts over time (and not increasing). The alternative then is that non-noble surnames and population have disproportionately exited the area after independence and in recent times (and not during the early period of demographic collapse of 16th and 17th century). While plausible, to alter surname patterns in the long-run, entire families need to exit and not be replaced by new surnames entering (Carpio and Guerrero, 2021). In the case of Peru, there has definitely been migration in and out the region after Independence, however, Abad and Maurer (2022) find stability in population sizes between *mita* and non-*mita* areas by 1800, suggesting that population reshuffled (some exit, some arrive), but no drastic declines that would explain the collapse of non-noble surnames. Similarly, fertility increases of say, nobility surnames would not explain this effect as the ratio of surnames would remain intact. Instead, it is more likely this pattern was cemented in colonial rather than post-colonial times.

	<1600	1600-1700	1700-1800	1800-1900	1900-Today	2011^
	Total Nobility Surnames					
Mita*	0	96	473	986	855	147
%	0	75.6	74.8	63	44.5	47.57
Non-Mita	1	31	159	578	1067	162
%	100	24.4	25.2	34	55.5	52.43
Mita§	0	77	265	663	526	117
%	0	60.6	41.9	42.4	27.4	37.86
Non-Mita	1	50	367	901	1396	192
%	100	39.4	58.1	57.6	72.6	62.14

^ Surnames from Carpio and Guerrero (2021); * defined by Dell (2010); § identified by Arroyo-Abad and Maurer (2022)

Figure 11: Temporal Distribution of Nobility Surnames

This, combined with the relatively better (or at the least not worse-off) living standards of the indigenous districts of forced labor districts since 1876, suggests this was not a 20th century phenomenon.

5.3 Inca Noble Surnames and social Status Today

While results using surnames are supportive of historical sorting taking place, they presume the surnames identified are indeed reflective of social status. To cross-check the validity of this claim, I examine within-indigenous differences in height – namely, the degree of stunting among those with Inca nobility surnames vis-a-vis other indigenous surnames.

By comparing only indigenous surnames it is possible to control for potential selection into Hispanicization of surnames or not – as both set of surnames have not hispanicized. Thanks to the richness of the 1.8 million observations in the census data I include district fixed effects[30] – which accounts for factors common to children in the same district – to examine differences in their height and likelihood of malnutrition.

Table 4: Indigenous Surnames and Living Standards: District Fixed Effect Estimates.

	(1)	(2)	(3)	(4)
DV:	Age Adjusted Height Z-Score			
	All Provinces	Mita Provinces	Non-Mita Provinces	Only Cuzco
Indigenous %	All	Only High	Only High	All
Nobility Surnames	-0.079***	-0.023	-0.100***	-0.173***
	(0.011)	(0.018)	(0.037)	(0.040)
"Commoner" Surnames	-0.118***	-0.066***	-0.104***	-0.313***
	(0.006)	(0.010)	(0.018)	(0.017)
Indig=Noble (p-value)	0.00	0.032	0.871	0.012
Observations	1,749,537	249,652	166,229	25,841
R-squared	0.270	0.124	0.150	0.059
School FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Mean DV	-1.079	-1.704	-1.629	-1.025
Clusters	1631	427	297	7
Weight type	Pop			
Total Surnames				

Data: 2005 School Census Data. Robust standard errors clustered at the district level in parentheses. Columns 2 and 3 excludes Cuzco province. All specifications control for sex and year of birth fixed effects. p<0.01, ** p<0.05, * p<0.1

The negative coefficients throughout Table 4 reflect the generalized degree of stunting among children with indigenous surnames vis-a-vis non-indigenous children (mainly white

[30] Which absorbs other sources of institutional variation, such as the *mita*. Table A8 in the Appendix shows the pattern is similar when comparing within schools.

or mestizo). Specifically, column (1) shows that vis-a-vis non-indigenous children, those with Inca noble surnames are on average 0.08 standard deviations shorter while those with a common indigenous surname are so in 0.118 standard deviations (7.4% and 11.1% of the mean respectively), with the difference between these two coefficient statistically significant at the 99% level. In other words, across the country, children with indigenous surnames exhibit stunting vis-a-vis others, yet, this difference is smaller for those with noble surnames than for other common indigenous surnames.

When looking at highly indigenous[31] areas within the *mita* (column 2) – our group of interest – it is clear that the gap between indigenous populations and others weakens (coefficients are smaller and for noble surnames statistically insignificant). Yet, the gap between noble and commoner surnames remain, with a statistically significant difference between the two coefficients. These results provide evidence for both: the relative higher living standards of indigenous populations there but also for how those with noble surnames still outperform those with commoner surnames.

In contrast, column 3 shows how indigenous communities outside the forced labor catchment exhibit a smaller difference between those of noble origin or not, but a larger one with the non-indigenous population. Again, this result appears consistent with limited within-indigenous socioeconomic outside forced labor areas. Finally, these differences are starker in Cuzco (column 4) – the former capital of the Inca Empire – whereby children associated with the nobility are significantly less stunted than other indigenous children.[32]

To the extent that nobility surnames reflect a higher social status within indigenous communities, with tangible (land, income) and intangible (recognition, legitimacy) advantages, that could explain both why they are individually relatively better off as well as the communities in which they are overrepresented.

One key reason why social and economic advantages often remained within communities was through endogamous marriage patterns, common within the indigenous *ayllu*.

[31] In the sample of all districts, the 75th percentile are those districts where indigenous population represent more than 23%.

[32] Estimates from columns (2) exclude Cuzco, for example.

In fact, a papal bull by Paul III and further resolutions from the Lima Concilium in 1567 were made to allow indigenous populations to marry in the third or fourth degree of consanguinity – likely in recognition of extant practice in colonial times – yet, in direct opposition to the resolution of the 1563 Trento Concilio prohibiting marriage within the fourth degree (Martínez, 1981, p.296). Thus potentially explaining why nobility surnames are still overrepresented in communities – while other common indigenous surnames are not.

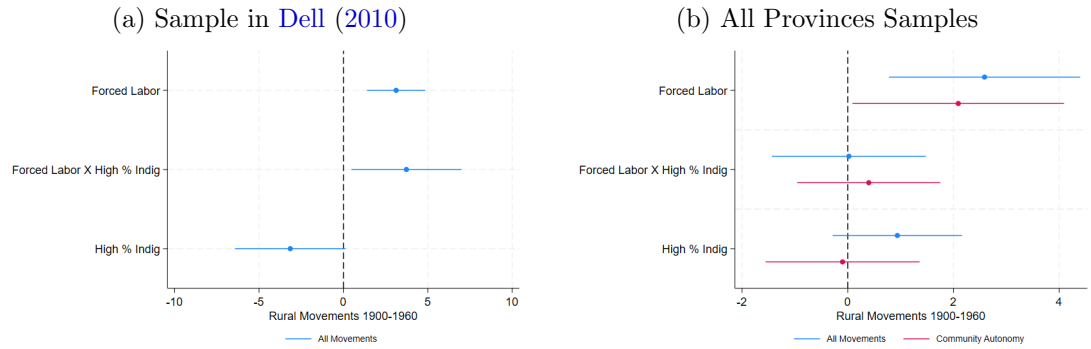
5.4 Organizational and Collective Action Capacity

Aside from a overrepresentation of higher-status individuals, communities more exposed to forced labor could exhibit higher living standards due to their collective action ability. For example, relatively richer and socially homogeneous societies are better able to lobby and negotiate for greater autonomy and public good provision. It is also possible that leadership in these communities is perceived as more legitimate due to their direct connection to their Inca past, thereby improving their mobilization capacity. For example, other studies (Huaroto and Gallego, 2023) find greater levels of indigenous unrest and indigenous identification in forced labor areas, consistent with the sorting process outlined above.

Using data from Kammann (1982) available from Albertus (2020) covering from 1900 until 1960, – with some cases in the 19th century – I find that heavily indigenous districts in *mita* areas were more likely to organize protests for land access and distribution, contest tax obligations, and seek better labor conditions. For example, one of the main reasons behind uprisings was to seek greater communal rights and autonomy for peasant and indigenous communities; greater educational opportunities; to put an end to land dispossession and seek greater land redistribution; improvement in rural wages and working conditions among others (Kammann, 1982).

As shown in figure 12, there is indicative evidence that the areas with the highest shares of indigenous presence and a forced labor past exhibit a higher probability of also

Figure 12: Forced Labor Assignment and 20th century peasant movements (Source: Kammann (1982) and Albertus (2020)



having a movement of this type in the 1900 until 1960 period. Although the confidence intervals in the whole province sample (panel (b)) are wider, this is likely due to the reduced number of uprisings. Moreover, it appears that these communities were also successful in maintaining the prevalence of communal land in 1972 and 1994 (see Figure A10 in the Appendix).

In sum, there is empirical evidence that the over representation of better-off individuals together with their greater collective action ability explain some of the living standards differences observe today. But how do these patterns apply beyond Peru? Although the surname analysis cannot be applied in Guatemala due to data availability, the living standards implications can be examined.

6 Guatemala: Uniformly Extractive Colonialism

While the case of forced labor drafts in Peru (and Bolivia) is an example of regressive taxation, other colonial taxes likely had more mixed effects. Such is the case of Guatemala, one in which there was a large indigenous (generally Mayan) population in colonial times organized around self-subsistence communities, but where mining was not a major economic activity. Instead, the main source of profits for colonial officials came from the infamous *repartimientos* – forced sale of merchandise – as well as the *reparto de algodon* targeting female labor (Fonseca, 1985).

Labor drafts did take place in Guatemala – particularly from the 17th to late the end

of the colonial era – and were meant to provide haciendas with workers for the export of highly valuable cochineal, wheat and cotton. Yet, their recruitment was seasonal and concentrated around the capital, due to the ease of implementation and therefore less intensive elsewhere in the country. Other regressive taxes, such as poll taxes were important in this context, but there is scant historical evidence that this tax induced the type of massive migration and depopulation documented for forced labor in the mines of Peru and Bolivia. All major demographic crises in Guatemala were instead caused by epidemics and there is little reason to think they may have affected the indigenous population selectively.

For these reasons, I regard Guatemala as a case in which colonial taxation was uniformly-to-progressively extractive, such that the burden within indigenous communities might have been less concentrated on lower-status members. Or, they may have even targeted those with greater assets in the community. Due to the lack of information on tax quotas or *repartimiento* rates in Guatemala, I use the office values for each of the colonial provinces of Guatemala in the 18th century as a proxy for the differences in the amount of indigenous surplus appropriation at the time (see Figure 2 for a geographic depiction of their distribution). Because these prices reflect expected returns, generally coming from targeting the most productive sectors of Indigenous (or even Spanish) society (Guardado, 2018, 2024b), they can be considered a less regressive tax.

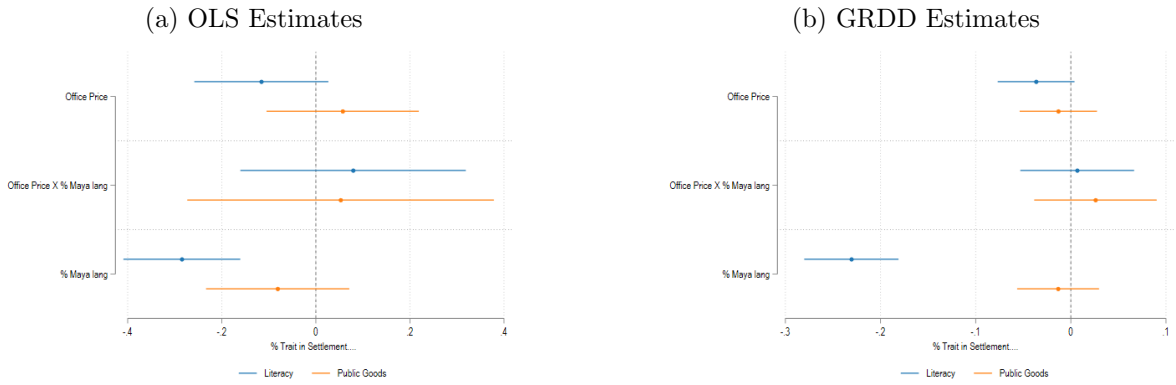


Figure 13: Colonial Extraction and Contemporary Living Standards in Guatemala

As shown in Figure 13, more heavily indigenous communities do not perform better in the long-run in areas more intensely targeted with this activity. If anything, more

indigenous areas on average exhibit lower literacy (although not necessarily lower levels of other public good availability). Thereby contrasting with the case of Peru and conforming to the expectations of purely extractive taxes: the gap between-groups is maintained across former colonial jurisdictions subjected to different taxation policies.

7 Conclusion

The paper is motivated by the idea that historical identity taxation – exactions based on ones' group membership – can be a plausible explanation for the living standards differences between indigenous and non-indigenous populations today. For example, in Spanish America, colonial practices of forced labor in the mines, excessive tax collection, and general discrimination of individuals of indigenous descent loom large as a reason behind current between-group inequities.

However, I first show that the effect of colonial taxation is heterogenous within indigenous communities themselves. In Peru, indigenous children in areas formerly subjected to forced labor today have relatively less stunting than indigenous children in areas that narrowly missed this treatment. Moving from individuals to communities, I also find indigenous communities (*comunidades indigenas*) in forced labor areas have a higher coverage of public services than more mixed communities. In contrast, in Guatemala, a setting where other colonial exactions (not mining labor drafts) were more popular, the between-group gap is similar regardless of the colonial jurisdictions.

Based on the case of Peru, I then show that a key reason behind these differences is the unequal burden that colonial taxes had on the indigenous communities they were implemented in. For example, forced labor in Peru and Bolivia was an extremely regressive tax – both by design and in its implementation – which often fell squarely on the shoulders of those of lower socioeconomic status within the indigenous community. These members in turn were more likely to selectively "exit" in the long-run through migration, mortality, declined fertility or all of the above.

Consistent with this sorting mechanism, I find that former forced labor areas have a

higher share of surnames and population associated with the Incan Nobility in the electoral and governing councils than areas not subjected to this treatment. Because of their higher social status their presence could explain some of the relatively better outcomes observed. Or, their historical legitimacy could have improved their government and help maintain the cohesion, identity, and collective action ability of their communities.

For example, indigenous communities in forced labor areas have mounted a stronger defense of their land, autonomy, and labor conditions throughout the 19th century until 1960 than areas historically not under forced labor. This ability to contest likely helped them retain their land: by 1876 indigenous communities in forced labor areas were more likely to work their own land (as opposed to serve as wage laborers elsewhere). They were also more likely to retain – through lobbying and concessions – their communal land tenure arrangement in the 1970s and 1990s. These communities also had lower illiteracy rates already in the 19th century – even if illiteracy in forced labor areas was high.

Put together, these findings call for a more nuanced understanding of the different ways colonial tax burdens shaped the social composition of the indigenous population today. The communities we observe today is a reflection of their differential ability to weather the burden of colonization.

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Online Appendix For

Unequal Burden: Colonial Taxation and Living Standard Disparities Within Minorities

A1 Additional Tables and Figures

Figure A1: Incan Empire in 16th C by (Davidson et al., 2021, p.2)

Table A1: Covariate Balance in 1572 Census: Sample of Dell (2010)

	(1)	(2)	(3)	(4)
VARIABLES	% Encomenderos	% Priest	% Corregidor	% Kuraka
Forced Labor Side	-0.010	0.004	0.004	0.003
	(0.030)	(0.019)	(0.010)	(0.005)
Observations	65	65	65	65
R-squared	0.109	0.090	0.228	0.266
Mean DV	0.625	0.625	0.625	0.625
VARIABLES	% Tributary Pop	% Corregidor	% Kuraka	% Encomendero
Forced Labor Side	-0.006	0.011	-0.009	0.005
	(0.009)	(0.012)	(0.016)	(0.005)
Observations	65	65	65	65
R-squared	0.596	0.377	0.599	0.782
Mean DV	0.195	0.204	0.548	0.0529

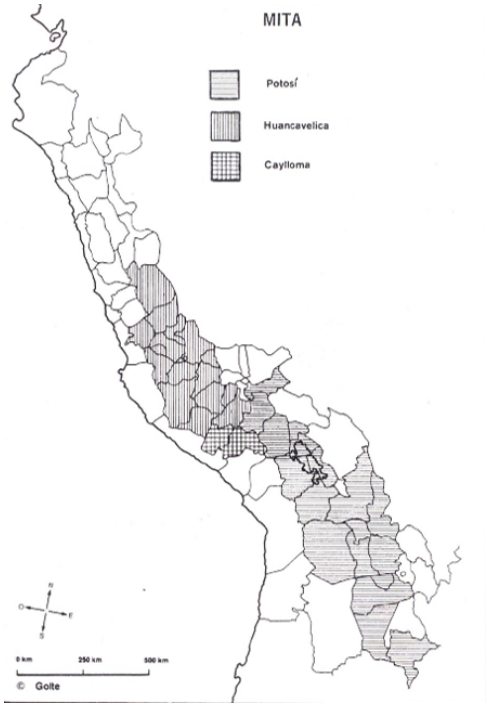
Robust standard errors clustered at the district in parentheses. All specifications are based on the cubic polynomial of latitude and longitude in the sample of districts within 100 kilometers from the border and include controls for elevation, slope, border segment fixed effects and exclude the Metropolitan region of Cusco. p<0.01, ** p<0.05, * p<0.1

Table A2: Covariate Balance in 1572 Census: All Provinces of Peru

	(1)	(2)	(3)	(4)
VARIABLES	Elevation	Log(Tribute Paying)	Total Population	Log(Tribute Rate)
Forced Labor Side	54.872	0.077	827.218	-0.039
	(78.897)	(0.280)	(1,028.718)	(0.058)
Observations	5,526	1,179	1,022	1,022
R-squared	0.733	0.584	0.537	0.812
Border Segment FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Mean DV	3552	6.051	3454	1.593
Clusters	329	67	53	55
VARIABLES	% Tributary Pop	% Corregidor	% Kuraka	% Encomendero
Forced Labor Side	54.872	0.077	827.218	-0.039
	(78.897)	(0.280)	(1,028.718)	(0.058)
Observations	5,526	1,179	1,022	1,022
R-squared	0.733	0.584	0.537	0.812
Border Segment FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Mean DV	3552	6.051	3454	1.593
Clusters	329	67	53	55

Robust standard errors clustered at the border segment level in parentheses. All specifications include distance to the border, distance to the border interacted with forced labor, latitude, longitude, squared, elevation (exception column 1), as well as border segment fixed effects. p<0.01, ** p<0.05, * p<0.1

(a) All Provinces Samples



(b) Sample in Dell (2010)

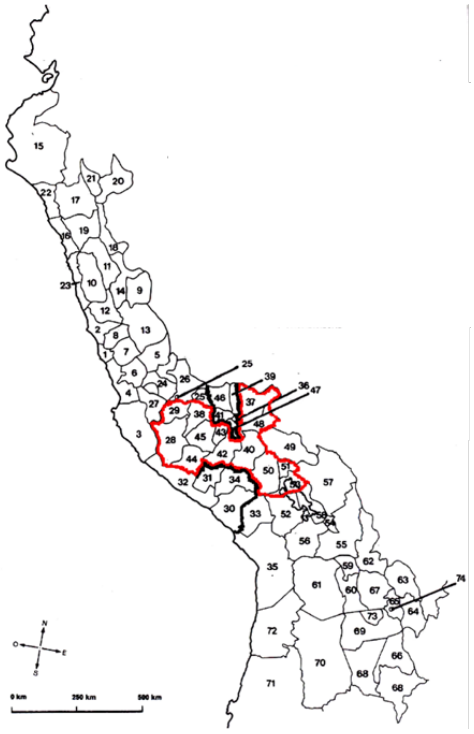
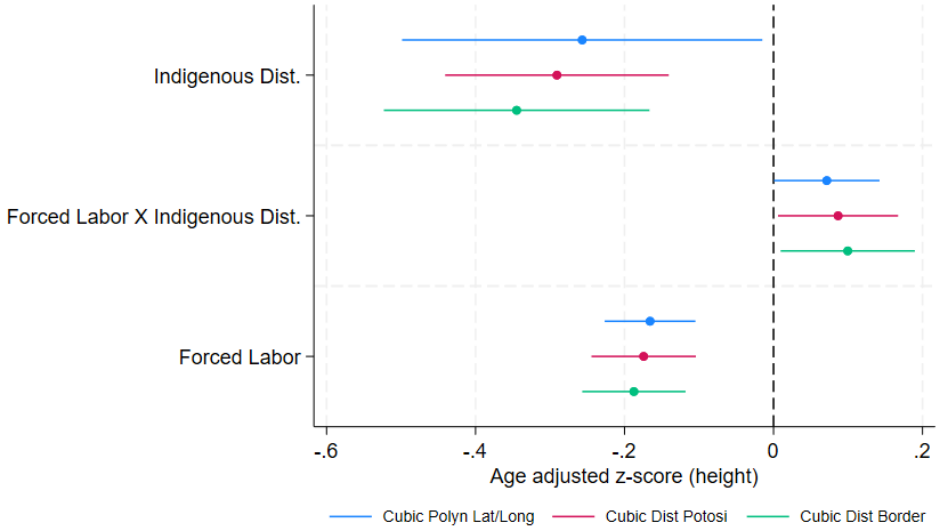


Figure A2: Forced Labor Assignment 16th to 18th c (Source: Gölte (1980) and Dell (2010))

Figure A3: 2017 District Indigenous Self-ID in Dell (2010) Sample



(a) Lat/Lon Cubic Polynomial (b) Cubic Distance Potosi (c) Cubic Distance Border

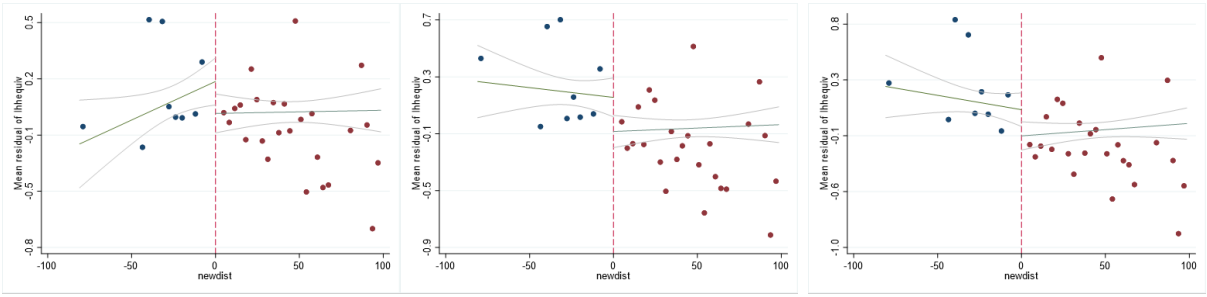


Figure A4: Forced Labor Treatment and Log Household Consumption in Dell (2010)

(a) Lat/Lon Cubic Polynomial (b) Cubic Distance Potosi (c) Cubic Distance Border

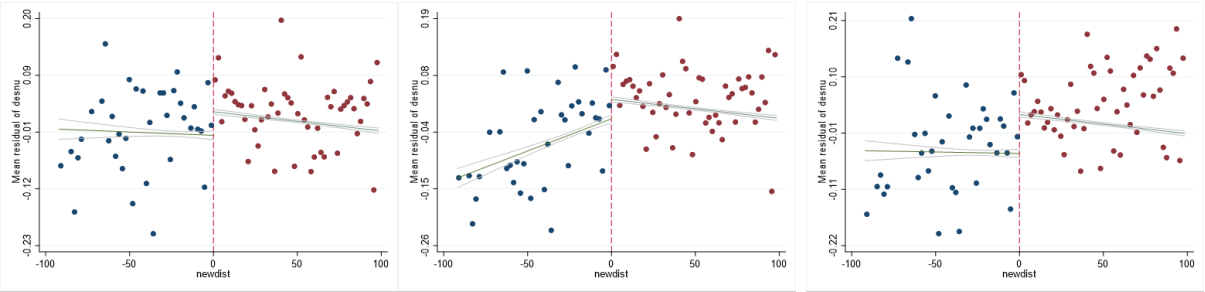


Figure A5: Replication of Forced Labor Treatment and Childhood Stunting Result in Dell (2010)

Figure A6: Results Correcting Assignments Flagged in Abad and Maurer (2022)

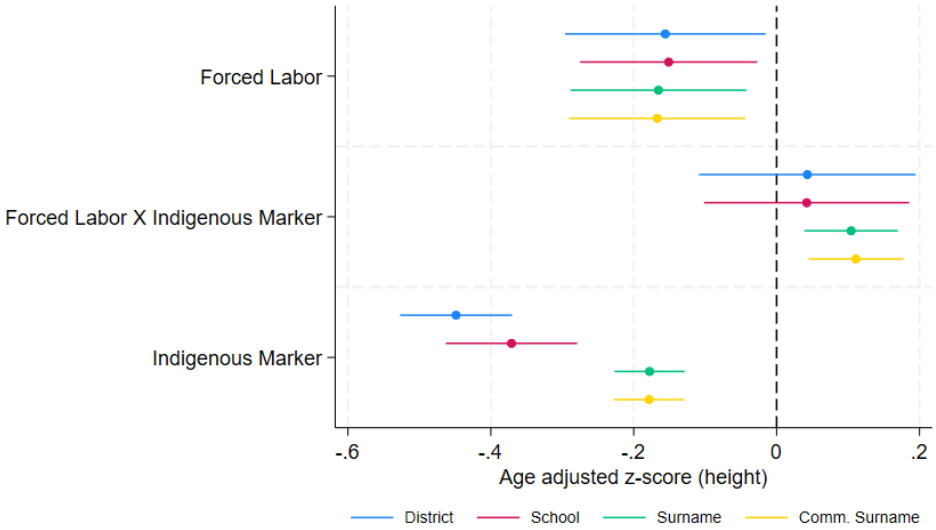
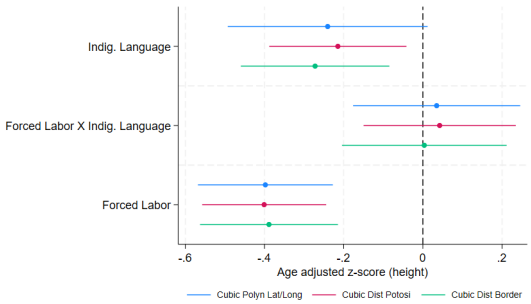
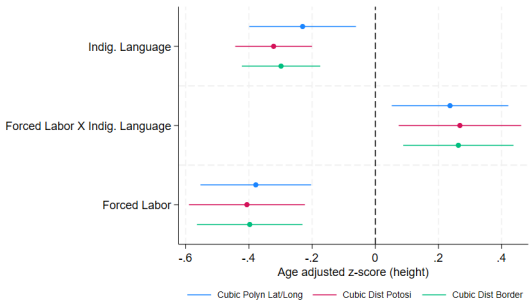


Figure A7: Robustness to 1572 Settlements: Indigenous Language

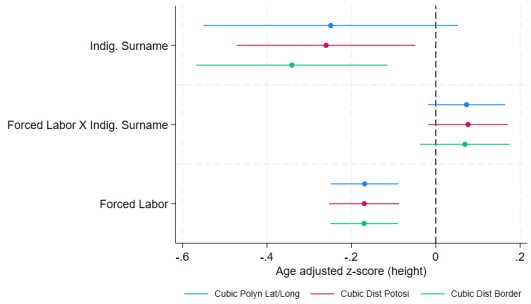


(a) 1572 Settlements

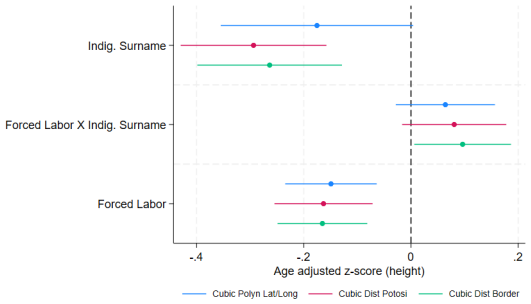


(b) Post-1572 Settlements

Figure A8: Robustness to 1572 Settlements: Indigenous Surnames



(a) 1572 Settlements



(b) Post-1572 Settlements

Table A3: Access to Potable Water and Sewage: All Provinces of Peru GRDD Estimates

	(1)	(2)	(3)
VARIABLES	Average % of HH Lacking Access to Water		
Forced Labor Side	-0.081*	-0.135***	-0.065
	(0.041)	(0.035)	(0.072)
Observations	5,526	1,331	1,409
R-squared	0.196	0.324	0.211
Border Segment FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Mean DV	0.783	0.814	3469
Clusters	39	36	38

Robust standard errors clustered at the border segment level in parentheses. All specifications weight by population size of the *centro poblado* and include distance to the border, distance to the border interacted with forced labor, latitude, longitude, squared, elevation, as well as border segment fixed effects. p<0.01, ** p<0.05, * p<0.1

Table A4: Surname Composition in 2011 by Forced Labor Treatment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Log(Tot Surname)	Log(Nobles)	Tot Nobles	$\frac{Noble}{All}$	$\frac{Noble}{Indigenous}$	$\frac{Noble}{Indigenous+Noble}$
Mita	-0.992***	-0.967***	-18.209***	-0.001	-0.241***	-0.107***
	(0.218)	(0.247)	(4.471)	(0.001)	(0.065)	(0.029)
Mita X High % Indigenous	0.513**	0.528**	13.277***	0.002	0.207***	0.078**
	(0.259)	(0.252)	(4.370)	(0.003)	(0.074)	(0.035)
High % Indigenous	-1.500***	-1.301***	-27.073***	0.000	-0.416***	-0.169***
	(0.245)	(0.236)	(4.064)	(0.003)	(0.069)	(0.032)
Observations	96,152	96,152	96,152	96,152	96,152	96,152
R-squared	0.808	0.746	0.775	0.741	0.795	0.781
Border Segment FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean DV	870.2	2.263	14.79	0.0189	0.436	0.274
Clusters	289	289	289	289	289	289
Weight type	Pop	Total Surnames				

Robust standard errors clustered at the district level in parentheses. All include distance to Cuzco, distance to Huancavelica, and distance to Potosi as controls, latitude, longitude, elevation gradient, slope and border segment fixed effects. p<0.01, ** p<0.05, * p<0.1

Table A5: Surname Composition in 2011 by Forced Labor Treatment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Log(Tot Surname)	Log(Nobles)	Tot Nobles	$\frac{Noble}{All}$	$\frac{Noble}{Indigenous}$	$\frac{Noble}{Indigenous+Noble}$
Mita	-1.001***	-1.058***	-19.105***	-0.002	-0.278***	-0.125***
	(0.229)	(0.249)	(4.598)	(0.002)	(0.065)	(0.029)
Mita X High % Indigenous	0.505*	0.452*	12.530***	0.000	0.177**	0.063*
	(0.264)	(0.266)	(4.520)	(0.003)	(0.076)	(0.036)
High % Indigenous	-1.491***	-1.206***	-26.139***	0.002	-0.378***	-0.151***
	(0.252)	(0.251)	(4.271)	(0.003)	(0.072)	(0.034)
% Noble Surnames Pop	0.444	3.800*	37.432	0.071***	1.535***	0.746***
	(2.720)	(2.001)	(40.382)	(0.023)	(0.569)	(0.241)
Observations	96,152	96,152	96,152	96,152	96,152	96,152
R-squared	0.808	0.751	0.776	0.759	0.802	0.790
Border Segment FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean DV	870.2	2.263	14.79	0.0189	0.436	0.274
Clusters	289	289	289	289	289	289
Weight type	Pop	Total Surnames				

Robust standard errors clustered at the district level in parentheses. All specifications exclude Cusco and its metropolitan area and include distance to Cuzco as control, border segment fixed effects, a cubic polynomial in latitude and longitude, as well as the slope and elevation gradient. p<0.01, ** p<0.05, * p<0.1

Table A6: Surname Composition in 2011 by Forced Labor Treatment

	(1)	(2)	(3)	(4)
VARIABLES	Log(Indigenous)	Tot Indigenous	$\frac{Indigenous}{All}$	$\frac{Indigenous}{Indigenous+Noble}$
Mita	-0.518***	-17.057***	0.011**	0.107***
	(0.139)	(4.455)	(0.005)	(0.029)
Mita X High % Indigenous	0.189	7.272*	-0.004	-0.078**
	(0.123)	(3.983)	(0.006)	(0.035)
High % Indigenous	-0.582***	-20.049***	0.028***	0.169***
	(0.117)	(3.722)	(0.005)	(0.032)
Observations	96,152	96,152	96,152	96,152
R-squared	0.645	0.685	0.680	0.781
Border Segment FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Mean DV	2.263	14.79	0.0189	0.436
Clusters	289	289	289	289
Weight type	Total Surnames			

Robust standard errors clustered at the district level in parentheses. All specifications exclude Cusco and its metropolitan area and include distance to Cuzco as control, border segment fixed effects, a cubic polynomial in latitude and longitude, as well as the slope and elevation gradient. p<0.01, ** p<0.05, * p<0.1

Table A7: Surname Composition in 2011 by Forced Labor Treatment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Log(Tot Surname)	Log(Nobles)	Tot Nobles	$\frac{Noble}{All}$	$\frac{Noble}{Indigenous}$	$\frac{Noble}{Indigenous+Noble}$
Mita	-1.071***	-1.100***	-14.281***	-0.001	-0.203***	-0.102***
	(0.212)	(0.261)	(3.159)	(0.002)	(0.061)	(0.031)
Mita X High % Indigenous	0.592**	0.692***	11.482***	0.003	0.243***	0.098***
	(0.259)	(0.216)	(2.921)	(0.004)	(0.062)	(0.031)
High % Indigenous	-1.694***	-1.566***	-22.148***	-0.003	-0.441***	-0.197***
	(0.252)	(0.211)	(2.954)	(0.004)	(0.064)	(0.030)
Observations	58,855	58,855	58,855	58,855	58,855	58,855
R-squared	0.802	0.671	0.695	0.734	0.660	0.646
Border Segment FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean DV	5.771	1.850	9.052	0.0182	0.336	0.229
Clusters	289	289	289	289	289	289
Weight type	Pop	Total Surnames				

Robust standard errors clustered at the district level in parentheses. All specifications exclude Cusco and its metropolitan area and include distance to Cuzco as control, border segment fixed effects, a cubic polynomial in latitude and longitude, as well as the slope and elevation gradient. p<0.01, ** p<0.05, * p<0.1

Table A8: Indigenous Surnames and Living Standards: School Fixed Effect Estimates.

	(1)	(2)	(3)	(4)
DV:	Age Adjusted Height Z-Score			
	All Provinces	Mita Province	Non-Mita Province	Only Cusco Province
Indigenous %	All	Only High	Only High	All
Nobility Surnames	-0.030***	-0.016	-0.049**	-0.054**
	(0.007)	(0.013)	(0.021)	(0.025)
"Commoner" Surname	-0.053***	-0.035***	-0.056***	-0.114***
	(0.002)	(0.005)	(0.007)	(0.015)
Indig=Noble	0.002	0.17	0.72	0.02
Observations	1,749,537	249,652	166,229	25,841
R-squared	0.369	0.229	0.269	0.225
School FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Mean DV	-1.079	-1.704	-1.629	-1.025
	27591	5678	3765	172

Data: 2005 School Census Data. Robust standard errors clustered at the school level in parentheses. Columns 2 and 3 excludes Cuzco province. All specifications control for sex and year of birth fixed effects. p<0.01, ** p<0.05, * p<0.1

(a) % Agricultural Population (b) % Wage Laborer (c) % Illiteracy

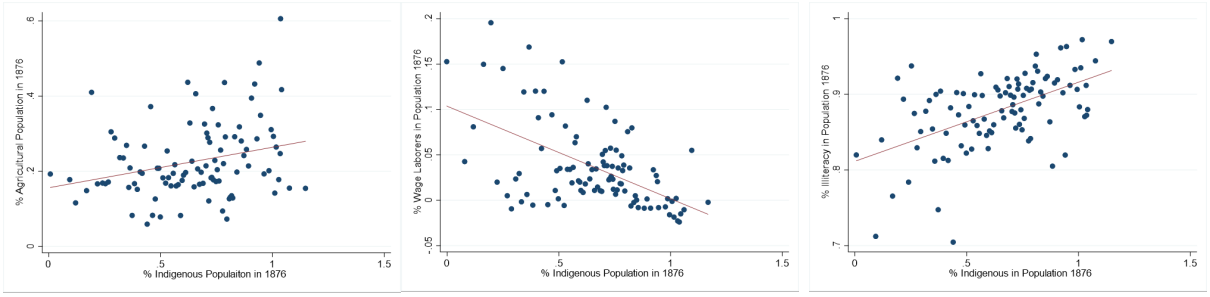
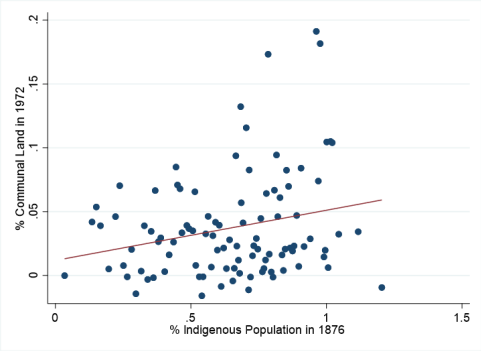


Figure A9: Share of Population in Agriculture, Wage Laborers and Illiteracy by Indigenous Presence in 1876

(a) Communal Land 1972



(b) Communal Land 1994

Figure A10: Communal Land Distribution in 1972, 1994 by Indigenous Presence in 1876

(a) Landless Peasants 1972

(b) Landless Peasants 1994

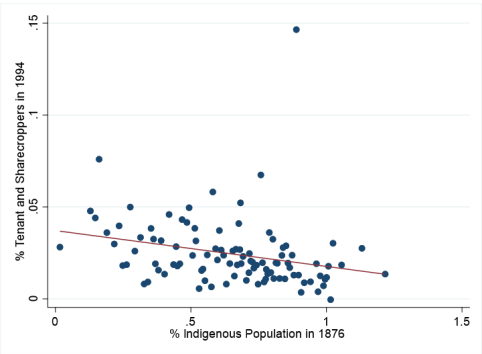


Figure A11: Sharecropper and Tenant Distribution in 1972, 1994 by Indigenous Presence in 1876

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