# The Legacy of Indian Missions in the United States [*]

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## Abstract

During the colonial era, Christian missions operated throughout colonial states with the intention of converting local populations to Christianity. This paper examines the long-run impact of these Christian missions in the United States. We combine a variety of historical sources to construct a dataset on the location of over 300 missions across the US, which we combine with other publicly available sources to study the effects of missionary presence in cultural homelands on education, income, and cultural outcomes. In line with previous research on missionary presence in the developing world, we find historical missionary activity to be positively correlated with contemporary education and income. Distinct from previous literature, we explore the possible political and land status ramifications of missionary contact. Preliminary results are generally consistent with early missionary contact increasing the political and land base intactness of Indigenous people in the United States during the colonial era.

Keywords: Indigenous peoples, Christian missions, Native Americans, Colonization

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During the colonial era, Christian missions operated throughout the world with the intention of converting local populations to Christianity. This process was largely based on the understanding among Western states that God gave Christian nations the right to colonize unknown lands, so long as they were converting souls to Christianity in the process. Historical missionary presence has been associated with a variety of economic outcomes across developing nations, including increases in educational attainment (Nunn, 2014a; Bai and sing Kung, 2014; Waldinger, 2017; Caicedo, 2018), mixed effects on health (Cagé and Rueda, 2018; Calvi and Mantovanelli, 2018),[1] the rise of democracy (Woodberry, 2012), and the persistence of cultural norms (Mantovanelli, 2016; Okoye, 2018; Caicedo, 2018). Some scholars have suggested that missionaries were well-received by native populations in developing countries, as the promise of education generated a favorable climate for religious conversion (Horton, 1971); however, instances of violent opposition to missionaries throughout Indigenous North America suggest that Christianity, and consequently missionaries, may have been received differently in North America.[2]

This paper focuses on the legacy of Indian missions in the United States. We begin by establishing whether the findings of the previous literature on the impact of Christian missions hold in the American context – in particular whether we see similar correlations between missionary presence and long run outcomes like income and education. We then explore whether the correlations vary by denomination as suggested by the literature (Nunn, 2014a). Finally, we explore the possible political ramifications of missionary contact by exploring the relationship between historical missionary presence and the contemporary political status of tribes, as well as the correlation between missionary presence and current Indigenous land bases.

Our primary measures of historical missionary presence are constructed by overlaying maps of tribes' ancestral territories (Gerlach, 1970; Sturtevant, 1981) with a map of the location of early missions (Fisher and Fisher, 2004). We also incorporate reservation-era missions from the 1897 Annual Report to the Commissioner of Indian Affairs (United States, 1897). Together, this allows us to compute the number of missions per 1,000 square-kilometers in a tribe's ancestral territory as is customary in the literature examining the long-run consequences of missionary presence in African nations. We also have information on the denomination of missions–to differentiate between religions that placed more or less em-

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[1]While Calvi and Mantovanelli (2018) find large positive effects related to historical missions that promoted hygiene and health in India, Cagé and Rueda (2018) find an increase in HIV related to the presence of missions in sub-Saharan Africa, possibly due to less knowledge about condom use.

[2]An example of missionary opposition can be found from the Acoma Pueblo, where the local Pueblans murdered the Spanish priest in an act of resistance to the church and to the Spanish Requirement (Higham, 2016).

phasis on education, health, assimilation, or who were open to incorporating aspects of Indigenous spirituality into their practices–and the year in which the mission occupied a given area–to assess whether the timing of missionary presence is important.[3]

We combine our measures of missionary presence with several outcomes that have been shown to be important channels of persistence of missionary presence in the developing world, like educational attainment, health outcomes, and income per capita. These data are from the 2013-2017 American Community Survey and are available for all current Tribal Statistical areas, including both state and federal reservations. In addition to education, these data include median income on reservation by race, and include the total population living on the reservation, as well as the total Native American population. We construct various historical and cultural controls starting from the foundational data in Dippel (2014) and Feir, Gillezeau, and Jones (2019)

In line with previous research, our preliminary findings suggest that historical missionary presence is correlated with higher contemporary levels of education and income among Indigenous Americans. That being said, the impact of missionary presence on median household income is not fully explained by increases in education, meaning that for Indigenous peoples in America, education is not the only channel through which historical missionary activities have increased present-day standards of living.

Our preliminary measure of missionary contact is also associated with the population size of non-Indigenous people living on the reservation, the political outcomes of Native nations–such as presence of the railway in traditional territories, the distance relocated, whether they were forced onto a reservation with a distinct political tribe, and whether they were ever involved in a major war with the United States–as well as factors associated with Native Americans' land base–such as whether they have a federally recognized reservation, the quality of soil on the reservation, and the extent of allotment through the Dawes Act by 1900. Generally speaking, these patterns are consistent with a historical narrative where Catholic missions acted to support the political and land base position of Native Americans.

Since it is possible that the decision of missions to locate in particular areas may be correlated with other factors that influence integration and development, in future drafts we will address endogeneity in three ways. First, as we do in the current version of the paper, we will include as controls a number of factors that have been suggested by historians to influence the likelihood of a mission locating in a particular area. These include the country of the early colonizer of the territory,[4] and geographic conditions of the ancestral territories.

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[3]We also consider specifications using the distance between a reservation and the closest historical mission.

[4]For example, Catholic missions would have been more likely to show up in lands under Spanish or French control, whereas Protestant missions would have been more likely to appear in lands under British

Second, we will examine the sensitivity of our results using the methodology of Oster (2018) which incorporates movements in both coefficients and the R-squared arising from the addition of controls in order to infer the degree of selection on unobservables that would be required to eliminate the correlation between missionary presence and outcomes. Finally, we leverage the unique institutional history of American Indian reservations to construct an instrumental variable for missionary presence based on the geography of ancestral territories which are typically distinct from the geography of reservation land.

In addition to furthering our understanding of the impacts of missionary presence across former colonial states, our paper contributes to a growing body of work stemming from the historical persistence literature (see, e.g., Nunn (2009)) that has traced differences in the contemporary outcomes of Indigenous and non-Indigenous groups to historical episodes that have adversely affected Indigenous populations. Examples include the forced integration of tribes without a shared system of political coordination in the United States (Dippel, 2014), the forced labour of Indigenous men by the Spanish government in Peru in the late 1500s (Dell, 2010), land fractionation on American Indian reservations generated by the Dawes Act (Russ and Stratmann, 2014; Leonard et al., 2018), and the slaughter of the North American bison at the end of the nineteenth century (Feir et al., 2019). While it may not be surprising that historical policies aimed at subjugating Indigenous populations have had undesirable long-run consequences, a priori, it is not obvious why some nations were able to resist such colonial impositions. Our results on the political implications of missions provide evidence that through missionary contact, Indigenous groups may have gained an understanding of European institutions that allowed for a more advantageous political position throughout the nineteenth and twentieth centuries.

The remainder of the paper proceeds as follows. We present a very brief background on the history of Christian missions in the United States in Section 2. Next, we discuss how our data was constructed and the empirical strategies we implement in Section 3. We present our results in Section 4 and conclude in Section 5 with a discussion of our plans for expanding this paper.

## 2   A Brief History of Christian Missions in the United States

Christian missionaries arrived in the Americas with the first Europeans, drawn to the prospect of converting and "saving the souls" of the Indigenous people. The centuries long process that ensued left an indelible mark on Indigenous peoples, the missionary churches themselves, and the wider settler populations. This process involves many separate and

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control.

individually complex elements, and this brief overview is intended only to paint with a very broad brush some of the most significant distinctions.[5] The complexity stems from many factors. The missionaries came from many denominations and orders, diverse in their specific goals and methods of conversion. Missionaries varied their independence and the source of their financial support, and so the extent to which they were constrained by the non-spiritual goals of colonization. Missionary work took place in a context created by traders, armies, governments and settlers, who sometimes supported and often interfered with the goals of the missions. The early colonization of the Americas happened at the time of religious struggle in Europe. The hunt for heresy was intense, as were the debates over proper Christian conduct. Indigenous peoples were, perhaps unwittingly, drawn into this contest between good and evil[6]. These variations played out within Indigenous populations who were themselves highly culturally distinct.[7]

The earliest missionaries were Catholics, including Franciscans among the Pueblos of modern New Mexico and Arizona, and Jesuits in what would become Texas, Florida and Canada. No uniform approach to conversion was followed. For example, the Franciscans among the Pueblos rarely learned local dialects, stayed relatively briefly in one location, and concerned themselves with enforcing behavior and contesting the power of Spanish magistrates. The fact that the individual Pueblos were relatively self sufficient and did not even share a common language no doubt complicated matters. But in the end, despite the large number of missions and violent support of an army, the missionaries had limited impact. Jesuits, at least in early years, viewed conversion as an intellectual exercise, and moreover took a more pragmatic approach: Jean de Brebeuf, for example, lived among the Wendat peoples he aimed to convert, learned the language, gave explicit roles in the religion to Indigenous converts, and introduced elements of his faith in a judicious manner to avoid unnecessary conflicts with the underlying Indigenous world view, and spiritual and cultural practices.

On the Eastern seaboard early Protestant missionaries also took a variety of approaches. The general requirement among Protestant denominations for personal study of scripture did lead missionaries to emphasize literacy, at least among men, and several missionaries worked to develop written materials in an Indigenous language. The world view of the missionaries equated proper Christianity with the social habits of their own European nations.

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[5]The history of missionary activity in the colonization of the Americas has been extensively studied. This section draws particularly on Martin and Nicholas (2010) and Bowden (1985).

[6]At least among early Catholic missionaries, Indigenous practices were cast in the most dangerous light. "Folk superstitions that priests regarded as merely misguided in Europe became barbaric rites when they were practiced by Natives" de Fátima (2008, p. 33)

[7]In particular, cultures varied in the extent to which their cultural and spiritual lives overlapped with the Christian ideals missionaries sought to instill, which were always a blend of belief and behavior.

This battle for souls was set against a steadily rising tide of settlers, and sporadic warfare among the French, British and eventually, Americans and British. Some notable conversions were obtained: the Brotherton and Stockbridge missions, for example, relied on Indigenous pastors, and at times attracted many adherents.

As colonization progressed, missionaries played an ambiguous role in the acquisition and disposition of Indigenous land. After finally defeating the French, the British made some promises of containing settlers, but this imperfect restraint was removed after the Revolutionary War and the subsequent battles and treaties of the late 18th and early 19th centuries. Following the Louisiana Purchase in 1803, American policy turned to a general effort to displace all Indigenous nations to the new land, west of the Mississippi. This did not end the objective of assimilation, particularly for missionaries who saw this as a necessary step to salvation.

Despite the separation of church and state, by the 1820s the Federal government had established a "civilization fund" to support the educational aspects of missionary work. This support flowed mainly through a number of missionary societies, in some cases multi-denominational and in all cases competitive with each other. Between President Jackson's election in 1831 and President Grant's election in 1869, the twin goals of assimilation and removal were carried out with brutal force. Some missionaries spoke against the bloodshed, but few or none against assimilation. Educational programs supported by the "civilization fund" spread across the west.

The policy and role of missionaries changed again with Grant's Peace Policy in 1869, developed at the suggestion of the Society of Friends. This overhauled the "Indian Agency" structure, placing control in the hands of nominees from the churches. Despite the involvement of church groups, competition for the lucrative role of Indian Agent was not removed. As the century closed, Government policy swung decisively toward assimilation, emphasizing the indirect approach of breaking up the common land of Indigenous nations. This "allotment" regime lasted until the 1930s. Missionaries remained directly involved in education and the number of missions continued to increase. It is likely that the dissatisfaction among missionaries played a role in ending the destruction of the Indigenous land base, but throughout most of the 20th century missionaries remained decidedly assimilationist.

The end result of missionary activities has been described as cultural genocide Tinker (1993). Indigenous economic systems were certainly transformed as well as cultural practices. Nevertheless, despite the upheavals of dispossession and relocation, Indigenous peoples were able to retain many elements of their pre-contact cultures and economic and spiritual practices.

# 3  Data and Empirical Methodology

## 3.1  Measuring Exposure to Historical Missions

We measure historical missionary presence using a variety of sources. First, we obtain a list of missions, including date of establishment, denomination, and the geocoded location of the institution by digitizing the map of Indian missions between 1567 and 1861 from the Atlas of the Historical Geography of the United States (Fisher and Fisher, 2004). Figure 1 shows the original map. Second, we construct an additional dataset of missions and religious societies from the 1897 Annual Report to the Commissioner of Indian Affairs (United States, 1897). An example of the information included in this report can be found in Figure 2. Since the report simply lists out missions, rather than displaying them geographically, we match the reservation for which the mission was intended to the centroid of that reservation using either the 1840, 1875 ,1900, or 1930 reservation map from the Atlas of the Historical Geography of the United States. If the date a mission was established was closest to 1840, then we locate the reservation in the 1840 file and use the centroid of the reservation in that year. If the date a mission was established was closer to 1875, 1900, or 1930, then we use these reservation files instead.[8]. We overlay digitized maps of the reservations in 1840, 1875, 1900, and 1930 in Figure 3. This depiction highlights the degree of land lost over time as federal policy continued to appropriate Native lands.

Figure 4 displays the location of pre-1861 missions from the Historical Atlas, as well as religious societies from the 1897 annual report with a map of ancestral tribal territories digitized by Dippel (2014). We categorize religious societies by missions only, "Post-1861 Mission", missions combined with other institutions, e.g., "Chapel and mission house", "Post-1861 Mission and Other", and other types of religious institutions, "Post-1861 Other Institution". In total, there are 324 missions (the sum of pre-1861 missions and post-1861 missions), 84 missions combined with other institutions, and 99 other types of religious societies. Following a common measure of missionary presence in the existing literature (Nunn, 2010, 2014b; Okoye and Pongou, 2014; Okoye, 2018), we use these digital overlays to generate the number of missions per 1,000 $km^2$ in each ancestral territory. We are also able to generate this measure for each denomination, including Baptist, Catholic, Congregationalist, Episcopalian, Friends, Lutheran, Mennonite, Methodist, Moravian, Presbyterian, Protestant, and Unitarian. In the current version of this work, we differentiate between

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[8]We were unable to match a small number of missions using this methodology. These include missions at the following reservations: Torres, Absentee Shawnee, Coahuila, Ponca (sub-agency), and Portrero. We use a combination of the centroid of tribal territories and the location of present day reservations to locate these observations.

Catholic and non-Catholic but plan to explore the denominational heterogeneity in the future. In addition to the number of missions in traditional territories, we are also able to construct an indicator for whether a tribe ever had a mission in their traditional territories, as well as the earliest and latest date that a mission was established within each tribal territory.

Figure 5 summarizes the number of these missions by denomination and shows how non-Catholic missions aggregate over time relative to Catholic missions. The first panel illustrates the timing of different denominational waves of missionary activity. We can see from this figure that the first missions were either French or Spanish Catholic missions starting in the late 1500s, with Congregationalists and Protestant missions beginning in the mid-1600, and a rise in Moravian missions in the mid-1700s. After the American Revolutionary war, we see a steep increase in missionary activity by a number of different Protestant denominations including the Methodists, Presbyterians, and Episcopalians.

Despite this significant amount of missionary activity, we can see in Figure 6 that about 35 percent of the ancestral territories had no reported missions by 1897. We can also see that the size of traditional homelands are generally quite large leading to low mission density per 1,000 $km^2$ in ancestral territories. Table 1 shows that while missions were present in half of the tribal territories in our dataset, with an average of 1.76 missions per tribal territory, the average tribal territory had only 0.09 missions per 1,000 square kilometers. Splitting by denomination reveals that there was an average of 0.05 Catholic missions and 0.03 non-Catholic missions per 1,000 square kilometers within tribal territories. These values increase modestly when we restrict our sample to territories with at least one mission.

There are at least two significant limitations of using this common measure of missionary activity in the American context. The first is the significant displacement of tribes, which interacts with the map of mission locations from the Historical Atlas. Specifically, the map reports at least three separate missions that are associated with the Cherokee; however, it is plausible these are actually not separate missions, rather the same missionaries that followed the Cherokee as they were displaced along Andrew Jackson's Trail of Tears. The second limitation is related to displacement, but is specific to the pre- and post-reservation eras. One could imagine very different impacts of missionary activity if Native communities engaged with missionaries before large numbers of settlers arrived compared to the case where the first contact Native communities had with missionaries was after they were settled on reservations.

Another concern with this measure is that missionary density or the number of missions in a traditional territory may be very poor proxies for "effective" missionary activity. For example, a large number of missions may indicate "failed attempts" at engaging. Alternatively,

one can imagine that a large number of missions composed of different denominations may be less effective advocates for Native communities or have less impact in delivering services to the community itself.

In order to address these issues with the standard measure used in the literature, we are in the process of matching missions directly to Native communities and tracking the type of mission–for example, whether a mission is a secondary mission because of a failed first attempt. We are also constructing indicators for whether the mission was an independent mission or if it was government driven and if a mission to a particular Native community was established before the reservation period or after.[9] Finally, we are constructing indicators of denominational fractionation of missionary contact.

## 3.2 Long-Run Economic Outcomes

The outcomes we consider can be grouped into contemporary and historical outcomes, which we describe separately. We consider all outcomes measured after 2000 as contemporary outcomes. We use information from the American Community Survey (ACS) from 2013-2017 by American Indian Area.[10] We match this list of modern reservations to their ancestral territories beginning with the match from Dippel (2014) and expanded on by Feir et al. (2019). The remaining communities are matched using tribal websites and secondary sources. It is important to note that some reservations include descendants from multiple ancestral territories because of federal policy surrounding the establishment of reservations (Dippel, 2014). Our unit of analysis takes this distinction into account and is therefore measured at the "reservation-tribe" level. While outcomes are reported at the reservation level, the variation in our measure of missionary activity occurs at the level of the ancestral territory.

From the ACS data we extract information on the highest level of education by Native American ancestry, median household income for Native Americans, total population of the reservation, the proportion of the reservation who claim Indigenous ancestry, and the proportion of those claiming Indigenous ancestry who give a single race response to the

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[9]One political outcome we are interested in is whether tribes actually have a reservation and how the nature of their land base evolves over time.

[10]The current draft only includes federally recognized reservations and off-reservation trust lands. Future drafts will include all Tribally Designated Statistical Areas, including Oklahoma Tribal Statistical Areas, and State Recognized Indian reservations and state designated Tribal statistical areas. To our knowledge, all other work in the economics literature only includes Federally recognized reservations in their analysis with the exception of Feir et al. (2019) who include state recognized tribes, but not tribal statistical areas in a robustness exercise. We believe that federal recognition is a political outcome of interest in and of itself. For more information on Tribal Statistical areas, see https://www.census.gov/newsroom/blogs/random-samplings/2014/08/understanding-geographic-relationships-american-indian-areas.html (Last accessed June 23, 2019).

ACS.[11] To be consistent with much of the literature that uses ACS data, we focus on educational and income outcomes for those that report only Native American ancestry.

Table 2 reports summary statistics from the ACS data.[12] The first column is for observations associated with ancestral territories that contained no missions and the second for those that contained at least one. The first four rows report the means for the share of the Indigenous population aged greater than 25 who report the stated level of education as their highest level of education. From here, we can see that Indigenous people who live on reservations comprised of tribes that had contact with missionaries have about a three percentage point higher probability of having a BA and a three percentage point lower probability of having less than a high school degree compared to those with no history of missionary contact. We can also see that median household income on reservations comprised of tribes who had contact with missions is approximately $5,691 higher compared to those with no contact. However, the portion of the population who are Indigenous is about 10 percentage points lower for those with a history of missionary activity. In addition, out of the those identifying as "American Indian" in the ACS, four percentage points fewer report a signal race on missionary-associated reservations relative to those who live on reservations not associated with missions.

The statistics for those that identify as white in the ACS are reported in Table 3. Generally speaking, the characteristics of whites in these areas is statistically equivalent between no missionary presence and missionary presence, with the two exceptions being a slightly higher likelihood of having an associates degree and lower likelihood of having a college degree in reservations associated with a historical missionary presence. Although not statistically significant, reservations associated with historical missions have almost twice the population of whites in areas with no missions. The larger white population size is consistent with what we observe in Table 2 regarding the proportion of people living on reservation that identify as "American Indian." These descriptive observations may suggest an assimilative role of missions.

## 3.3 Pre-Contract Controls and Colonial Experiences

Table 4 shows the summary statistics for a set of controls that we think are important correlates of either Native American economic development or missionary presence. The

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[11]This can be taken as a measure of self-identification with groups that are not of Native American descent.

[12]Note that we only report the results for communities that are large enough to have both white and Indigenous education and income data. This restriction is not overly demanding: we only lose 13 observations if we restrict to having white and Indigenous populations. However we lose 43 observations when we focus on only those communities that are large enough to have income data reported. In specifications that consider population as an outcome, we include these observations in the sample.

share of traditional territory covered by the bison's range as of 1730 is generated from a map of the bison's range from Hornaday (1889) which we have overlaid with the ancestral territories maps discussed above. The timing of railway expansion into traditional territories is generated from Atack (2016). We construct estimates of population and population density in traditional territories using the HYDE 3.1 database (Goldewijk, Beusen, and Janssen, 2010).[13] To proxy for the degree of involvement in the fur trade, we use the proportion of traditional territory that was covered by the historical range of the beaver.[14] We digitize maps from Hilliard (1972) (which can be seen in Figure **??**) in order to proxy for the timing of land cessions from Indigenous peoples to settlers. All of these variables are constructed from a super-set of those used by Feir et al. (2019). We also construct a measure of whether there is currently a tribal college on a given reservation using data from the American Indian College Fund website.[15] Table 5 include pre-contact variables from Murdock's Ethnographic Atlas. To construct these estimates we have matched the ethnographic group included in Murdock's database to each ancestral territory which are again matched to modern tribal statistical areas in the United States.

The summary statistics presented in Table 4 and Table 5 highlight the notable differences in communities that had some level of missionary presence in their ancestral territories and those without. Reservations that are associated with ancestral territories that had at least one mission are larger and have a higher share of their territories covered by the original bison range or beaver range, implying greater contact with early and late hide and fur traders. We can also see that the population size and density in tribal territories are larger as of 1600 and the timing of railway entry and land cessions are also more likely to occur earlier, providing further evidence that these tribes had earlier contact with settlement compared to those without missionary presence.

We also see reservations that are associated with ancestral territories that had at least one mission were less likely to be nomadic or semi-nomadic, and less likely to have some basic agriculture. They were also more likely to have strictly patrilineal or matrilineal property right decent rules. Thus there are obvious pre-contact factors that need to be controlled for when trying to make causal inferences about missionary activity. The differences in the timing of the roll-out of the railway as well as when land was ceded may be important

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[13]The HYDE database uses a number of historical sources to compile comparable estimates of global population density at a 5 minute resolution, including Denevan (1992), Maddison (2001), Lahmeyer (2004), Livi-Bacci (2007), and McEvedy and Jones (1978).

[14]We digitize a map of the traditional beaver range from the Canadian Geographic: `https://www.canadiangeographic.ca/article/rethinking-beaver`. Beaver pelts were lucrative commodities that were frequently traded between natives and Europeans and could have likely resulted in earlier initial contact.

[15]See `https://collegefund.org/about-us/tribal-college-map/`.

factors influenced by missionary activity and might be seen as a mechanism for the impact of missionary activity, but are also likely correlated with the timing of large-scale white settlement. We are in the process of calculating white population density at different time periods in order to account for these factors separately and will explore how missionary presence before or after this period may have heterogeneous effects on long-run outcomes. We are also in the process of creating indicators of violence in traditional territories.

## 3.4 Indigenous Political Outcomes

In order to gain a sense of the potential political influence of missionaries, we use the log of the Indigenous population on the reservation, the proportion of the reservation population that is of Indigenous identity only, our constructed presence of railway in traditional territories, our indicator for the presence of a tribal college, and an indicator of land being ceded after 1880. We also construct an indicator for whether a tribe identified in the historical atlas actually is associated with a modern tribal statistical area in our data. This last indicator is also important because the associations have implications for the causal interpretation, as discussed below. In addition, we use a number of other indicators of the colonial experience for a sub-sample of reservations constructed by Dippel (2014) and Feir et al. (2019), including an indicator of being forced onto a reservation with a politically distinct group, the distance removed from ancestral homeland, whether the Nation was ever involved in a major war with the United States, and the share of the reservation with good quality soil for agriculture. We also supplement our results using data from the 1910 Historical Oversample from IPUMS (Ruggles et al., 2015) that also contains data that has been linked from the Indian Schedules. We use these data to understand how missionary density may have impacted early literacy rates, inter-marriage and land loss/status during the allotment era.

## 3.5 Empirical Framework

Given that we are in the early stages of this project and are still engaged in the process of constructing our measures of missionary presence and the data necessary for causal identification, we only present correlational analyses here. To determine how missionary contact is associated with long-run educational, economic, and political outcomes, conditional on possible confounding factors, we estimate either OLS or probit regressions at the "reservation-tribe" level. Denote $i$ as a reservation-tribe and $n$ as a nation, then the estimating equation is given as:

$$Y_{in} = \alpha + \beta M_n + X_i \boldsymbol{\theta} + Z_n \boldsymbol{\Psi} + \varepsilon_{in}, \tag{1}$$

where $Y_{in}$ is the outcome of interest.[16] $M_n$ is our primary variable of interest, mission density per 1,000 $km^2$ in ancestral territories. We control for reservation-level characteristics in $X_i$, like the economic characteristics of the white population and surrounding area, cultural controls that vary at the level of the tribe in $Z_n$, such as whether the society was traditionally nomadic, the proportion of their calories derived from agriculture, or whether the society had an aristocracy. Finally, $Z_n$ also includes colonial controls that vary by tribe–such as when land was ceded or when a railway entered their traditional territory. We cluster standard errors at the tribal territory-level, but plan to use Conley (1999) standard errors in the final draft to account for spatial auto-correlation.

In future work we will explore a number of possible identification strategies. The first strategy controls for a number of factors that have been suggested by historians to influence the likelihood of a mission locating in a particular area. These include the country of the early colonizer of the territory,[17] and geographic conditions of the ancestral territories. Second, we will examine the sensitivity of our results using the methodology of Oster (2018) which incorporates movements in coefficients and the R-squared arising from the addition of controls in order to infer the degree of selection on unobservables that would be required to eliminate the correlation between missionary presence and outcomes. Finally, we will leverage the unique institutional history of American Indian reservations to construct an instrumental variable for missionary presence based on the geography of ancestral territories which are typically distinct from the geography of reservation land.

## 4 Results

One political outcome that is also of particular interest in relation to selection bias is whether a tribe identified in the historical atlas is associated with a modern tribal statistical area. Specifically, if tribes that encounter more missionary activity are also more likely to exist in modern tribal statistical areas, then any effects of missionary activity estimated would be the effect for those surviving, assuming that missionary activity was conditionally uncorrelated with factors that would influence both the likelihood of missionary activity and the long-run likelihood of being identified in the data. Thus before looking at other modern outcomes, we first investigate whether missionary activity is correlated with the probability of being

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[16]The equation here assumes a continuous outcome like household income or population, however we also use OLS when we have outcome variables that are proportions (such as highest degree of education). We estimate equation 1 using a probit model when the outcome is binary and report marginal effects.

[17]For example, Catholic missions would have been more likely to show up in lands under Spanish or French control, whereas Protestant missions would have been more likely to appear in lands under British control.

excluded from our modern sample. Our dependent variable is an indicator equal to 1 if the tribe is not included in the modern sample, and 0 otherwise.

Table 6 presents the results of this exercise. In the first row in column (1) and (4) we present the marginal effects from a probit regression for our measure of total missionary density, with and without pre-contact controls. In columns (2) and (5) we show the same specification, but we split missionary density by the era and date it was constructed. In columns (3) and (6) we preform the same exercise by denomination (Catholic vs. non-Catholic). We can see from this table that non-Catholic missions or later period missions that are associated with other institution, are negatively correlated with not being present in our contemporary sample. In other words, communities that were exposed to missionary activity in the post-reservation era are more likely to be included in our sample. This may be due, mechanically, to the fact that communities that existed after the early period of contact would continue to exist into the late 1800s to be exposed to later missions. In future versions of this work, we will deal with this concern around potential selection bias more explicitly.

In Table 7 we present the estimated association between mission density and educational attainment. We estimate our model separately using the share of Indigenous people on the reservation whose highest level of education is less than a high school degree, high school or equivalent, a college or associates degree, or a bachelor's degree or higher. In all specifications, mission density is negatively correlated with having less than a high school degree and is positively correlated with having some college education or an associates degree. In our most restrictive specification, an additional mission per 1000 sq-km is associated with a 4.5 percentage point reduction in the share of the population with less than a high school degree and a 7.21 percentage point increase in the share of the population with a college degree.

Given that other literature has shown that the denomination of missions is important for understanding their long run impact, we break down mission density by the density of Catholic and non-Catholic missions in Table 8.[18] From the results in Table 8 it becomes clear that the positive correlation between historical missionary presence and contemporary education is driven by the presence of Catholic missionaries. Both Jesuit and Franciscan orders existed in North American and work by Caicedo (2018) has shown that Jesuit missions are associated with higher contemporary levels of education in South America, while Franciscan are not. That being said, (Waldinger, 2017) finds the opposite to be true of missions in Mexico. The difference between the two findings has to do with the location

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[18]Since non-Catholic missions tend to be more recent missions, we plan to account for this differential timing more explicitly in future iterations of this work.

of missions, geography of regions, and heterogeneity of local populations, as well as the identification strategies used in each paper. We plan to explore this further denominational breakdown in the North American context in future work.

Nunn et al. (2014) has also shown different outcomes for Catholic and Protestant missions in Africa. While both denominations had a positive impact on educational attainment in the African context, Protestant missions had a larger impact for women than for men, particularly due to the Protestant's emphasis on all genders having to learn to read the bible. We also explore heterogeneous effects by denomination and gender in Table 9. We find that the presence of Catholic missions is positively correlated with the share of the Indigenous population with a college degree and negatively correlated with the share of the population with less than a high school degree; however, non-Catholic missions consistently increase the proportion of women having a bachelors degree or higher, with virtually no statistical correlation with male educational attainment.

Table 10 examines whether the correlation between historical missionary presence and educational attainment also extends to income. We estimate equation 1 using the logarithm of median household income for Indigenous people as the outcome of interest. Here, it is clear that, even conditioning on a rich set of cultural and colonial factors, mission density is positively correlated with income. In the last column of Table 10, we estimate a model which controls for the educational outcomes presented in Table 7. If we take this exercise as being informative regarding whether education is a channel through which missionary activity influences income, it suggests that education is not the primary channel. Conditioning on these educational outcomes only reduces the association between mission density and income by a small degree relative to the size of the coefficient. This result motivates us to consider other possible factors that influence income on reservations: specifically political and land-based factors.

In Table 11 we present the results of estimating equation 1 with the dependent variables of the natural logarithm of the white population on reservation in the first column, the proportion of the population native in the second, and whether the tribe's traditional territory did not have a railway through it. We take these as measures of possible integration of Indigenous and non-Indigenous people. We consider these as political outcomes because they may influence the ability of Native American groups to assert jurisdiction on their lands. The only outcome that is statistically associated with missionary presence in this more inclusive sample is the likelihood of having no railway in a traditional territory.[19] Greater missionary density is associated with a higher probability of having a railway enter a nation's traditional territory at some point, conditional on a set of broad geographic

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[19]The previous tables all required non-missing income and educational data.

controls. However, while these measures may be informative regarding the degree of white presence, they are less informative about some of the more concrete measures of political or land base intactness.

For these measures we turn to the sample of Dippel (2014) and Feir et al. (2019) which contain measures for 196 reservation-tribes on removal, war with the United States, forced co-existence, and soil quality.[20] We present these unconditional and conditional associations with mission density in Table 12. In the first panel without controls, it seems that mission density, particularly Catholic missionary density, is highly negatively correlated with the logarithm of distance removed from a traditional territory, the instance of being involved in a major war with the United States, and being forced on to a reservation with a politically distinct tribe. Conditioning on cultural and geographic controls reduces the coefficients, but they are still large in magnitude and statistically significant for the probability of being in a war or being forced to co-exist with another nation.

## 4.1   Mechanisms

To understand more clearly what factors may be driving these long run correlations, we turn to the IPUMS 1910 Historical Over Samples which has linked a sample of Indigenous people in the 1910 Census with the data from the 1910 Indian Schedules. We are interested in seeing how missionary density is associated with early literacy outcomes, whether missionary presence is associated with "perceived whiteness" as measured by the guessed percentage of white blood by enumerators, and the likelihood that an Indigenous person would have had their land allotted by 1910.[21] It should be noted that is it not clear how recorded literacy and perceived whiteness would be correlated with long run economic outcomes. Perceived assimilation may be correlated with political dis-empowerment and land through processes, like allotment. Missionaries could impact these outcomes in a number of ways: 1) investing in literacy; 2) intermarriage or encouraging intermarriage or increasing white settlement in areas; and 3) impacting the probability of a reservation being allotted.

In Table 13 we show the results from estimating these conditional and unconditional correlations. While the coefficients on total mission density in the first panel are large, they are all statistically insignificant. However, when we break down the density by Catholic and non-Catholic mission density, we see that Catholic missions are negatively associated with an individual having their land allotted. While not statistically significant conditional on cultural, colonial, and regional factors, Catholic mission density is also negatively associated with the enumerate perception of the percentage white. On the other hand, non-Catholic

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[20]We are working to expand these measures into the full sample.

[21]For more on the process of land allotment and the Dawes Act, see Leonard et al. (2018).

Missionary Density is positively associated with an individual having their land allotted, perceived whiteness and recorded literacy rates.

We examine allotment in greater detail in Table 14, where we estimate the relationship between historical missionary presence and the likelihood of having land allotted, conditional on literacy and perceived whiteness. We can see that both literacy and the percentage of white blood recorded by the enumerator are positively correlated with the probability of having your land allotted. In addition, the positive correlation between non-Catholic mission density becomes statistically insignificant but is close in magnitude, while the negative correlation with Catholic missions is reduced in magnitude slightly. This result is consistent with missionary activity affecting allotment through channels beyond literacy and recorded (perceived) whiteness. This may imply that missionaries, depending on their denomination, played an active role in the process of allotment. Previous work has argued that the process of allotment meant that many reservations lost the highest quality soil for agriculture and this is associated with income today (Leonard et al., 2018). The consequences of land allotment and the subsequent legislation that followed also implied that allotted reservations now face a problem of fractionated interests on parcels of land that makes them difficult to use for economic purposes (Shoemaker, 2003).

## 5 Conclusion and Future Work

Since our analysis is still ongoing, we are hesitant to make strong concluding statements; however, we believe that some interesting patterns have emerged from our initial analysis. If the current associations are robust to further investigation, including the implementation of a causal identification strategy, then it would appear that missionary contact with Native Americans in the United States has increased educational outcomes and income for Indigenous people living in tribal statistical areas. However, much of the observed association with income is not explained purely in terms of increased access to education, which is one of the primary channels highlighted in the existing literature on the legacy of missions in colonial states. Preliminary results suggest that Native Americans whose traditional territories are associated with a higher mission density are less likely to have been forced to co-exist on reservation, be removed from their traditional territory, and are also less likely to have been involved in a major Indian war. Preliminary work using data from the IPUMS data integrated with the 1910 Indian Schedules suggests that the channels through which Catholic missions and non-Catholic mission may have influence economic development are along different paths, highlighting a potential avenue for future work.

We are currently compiling more information in order to analyze possible mechanisms, like investments in schools (both boarding schools and day schools), diminished inter-racial

violence, cultural adaption, and missionaries acting as political supports of Indigenous peoples which reduced the the degree of allotment on reservations and increased the prospect of Native nations to control their own affairs.

There is still the obvious concern about reverse causation. Indigenous whom allow missionary activity in their territory (or whom missionaries chose to contact) may be more likely to have the associations we observe in the long run. We will do our best to disentangle this in future drafts.

# References

Atack, J. (2016). Historical geographic information systems (GIS) database of U.S. railroads.

Bai, Y. and J. K. sing Kung (2014). Diffusing knowledge while spreading God's message: Protestantism and economic prosperity in China, 1840-1920. *Journal of the European Economic Association 13*(4), 669–698.

Bowden, H. W. (1985). *American Indians and Christian missions: Studies in cultural conflict.* University of Chicago Press.

Cagé, J. and V. Rueda (2018). Sex and the mission: The conflicting effects of early Christian investments on the HIV epidemic in sub-Saharan Africa. *Working Paper*.

Caicedo, F. V. (2018). The mission: Human capital transmission, economic persistence, and culture in south america. *The Quarterly Journal of Economics 134*(1), 507–558.

Calvi, R. and F. G. Mantovanelli (2018). Long-term effects of access to health care: Medical missions in colonial India. *Journal of Development Economics 135*, 285–303.

Conley, T. G. (1999). GMM estimation with cross sectional dependence. *Journal of Econometrics 92*(1), 1–45.

de Fátima, M. (2008). *Missions, missionaries, and Native Americans: Long-term processes and dialy practices.* University Press of Florida.

Dell, M. (2010). The persistent effects of peru's mining mita. *Econometrica 78*(6), 1863–1903.

Denevan, W. (1992). The pristine myth: The landscape of the Americas in 1492. *Annals of the Association of American Geographers 82*, 369–385.

Dippel, C. (2014). Forced coexistence and economic development: Evidence from Native American reservations. *Econometrica 82*(6), 2131–2165.

Feir, D., R. Gillezeau, and M. Jones (2019). The slaughter of the North American bison and reversal of fortunes on the Great Plains. Technical Report 2019-01, Center for Indian Country Development Working Paper.

Fisher, R. M. and R. Fisher (2004). National geographic historical atlas of the united states. *Washington, DC: National Geographic*.

Gerlach, A. C. (1970). *The National Atlas of the United States of America*.

Goldewijk, K. K., A. Beusen, and P. Janssen (2010). Long-term dynamic modeling of global population and built-up area in a spatially explicit way: HYDE 3.1. *The Holocene 20*(4), 565–573.

Higham, C. L. (2016). Christian missions to american indians. *Oxford Research Encyclopedia of American History*.

Hilliard, S. B. (1972, June). Indian land cessions, map supplement number 16. *Annals of the Association of American Geographers 62*(2).

Hornaday, W. T. (1889). *The Extermination of the American Bison*. Vol. 1. Library of Alexandria.

Horton, R. (1971). African conversion. *Africa: Journal of the Internaitonal African Institute 41*(2), 85–108.

Lahmeyer, J. (2004). Populstat database. Growth of the population per country in a historical perspective, including their administrative divisions and principal towns.

Leonard, B., D. Parker, and T. Anderson (2018). Land quality, land rights, and indigenous poverty. *Working Paper*.

Livi-Bacci, M. (2007). *A Concise History of World Population* (4 ed.). Oxford: Blackwell Publishing.

Maddison, A. (2001). *The World Economy: A Millenial Perspective*. Paris: OECD.

Mantovanelli, F. G. (2016). Christian missions, HIV, and sexual behaviors in sub-Saharan Africa. Technical report, Boston College.

Martin, J. W. and M. A. Nicholas (2010). *Native Americans, Christianity, and the Reshaping of the American Religious Landscape*. Univ of North Carolina Press.

McEvedy, C. and R. Jones (1978). *World Atlas of Population History*. Hammondsworth: Penguin Books Ltd.

Nunn, N. (2009). The importance of history for economic development. *Annual Review of Economics 1*(1), 65–92.

Nunn, N. (2010). Religious conversion in colonial africa. *American Economic Review: Papers & Proceedings 100*(May), 147–152.

Nunn, N. (2014a). *Africa's Development in Historical Perspective*, Chapter Gender and Missionary Influence in Colonial Africa, pp. 489–512. New York: Cambridge University Press.

Nunn, N. (2014b). Historical development. In *Handbook of economic growth*, Volume 2, pp. 347–402. Elsevier.

Nunn, N., E. Akyeampong, R. Bates, and J. A. Robinson (2014). Gender and missionary influence in colonial africa. *African development in historical perspective.*

Okoye, D. (2018). Things fall apart? Missions, institutions, and interpersonal trust. Technical report, Dalhousie University.

Okoye, D. and R. Pongou (2014). Historical missionary activity, schooling, and the reversal of fortunes: Evidence from Nigeria. *Working Paper*.

Oster, E. (2018). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics, Forthcoming.*

Ruggles, S., K. Genadek, R. Goeken, J. Grover, and M. Sobek (2015). *Integrated Public Use Microdata Series: Version 6.0 [dataset].* http://doi.org/10.18128/D010.V6.0.: Minneapolis: University of Minnesota.

Russ, J. and T. Stratmann (2014). Missing sticks: Property institutions and income dissipation in indian country. Technical Report 15-22, GMU Working Paper in Economics.

Shoemaker, J. A. (2003). Like snow in the spring time: Allotment, fractionation, and the Indian land tenure problem. *Wisconsin Law Review*, 729.

Sturtevant, W. C. (Ed.) (1981). *Handbook of the North American Indian.* The Smithsonian Institute.

Tinker, G. E. (1993). *Missionary conquest: The gospel and Native American cultural genocide.* Fortress Press.

United States (1897). *Annual report of the commissioner of Indian affairs, for the year 1897.* Office of Indian Affairs.

Waldinger, M. (2017). The long-run effects of missionary orders in mexico. *Journal of Development Economics 127*, 355–378.

Woodberry, R. D. (2012). The missionary roots of liberal democracy. *American Political Science Review 106*(2), 244–274.
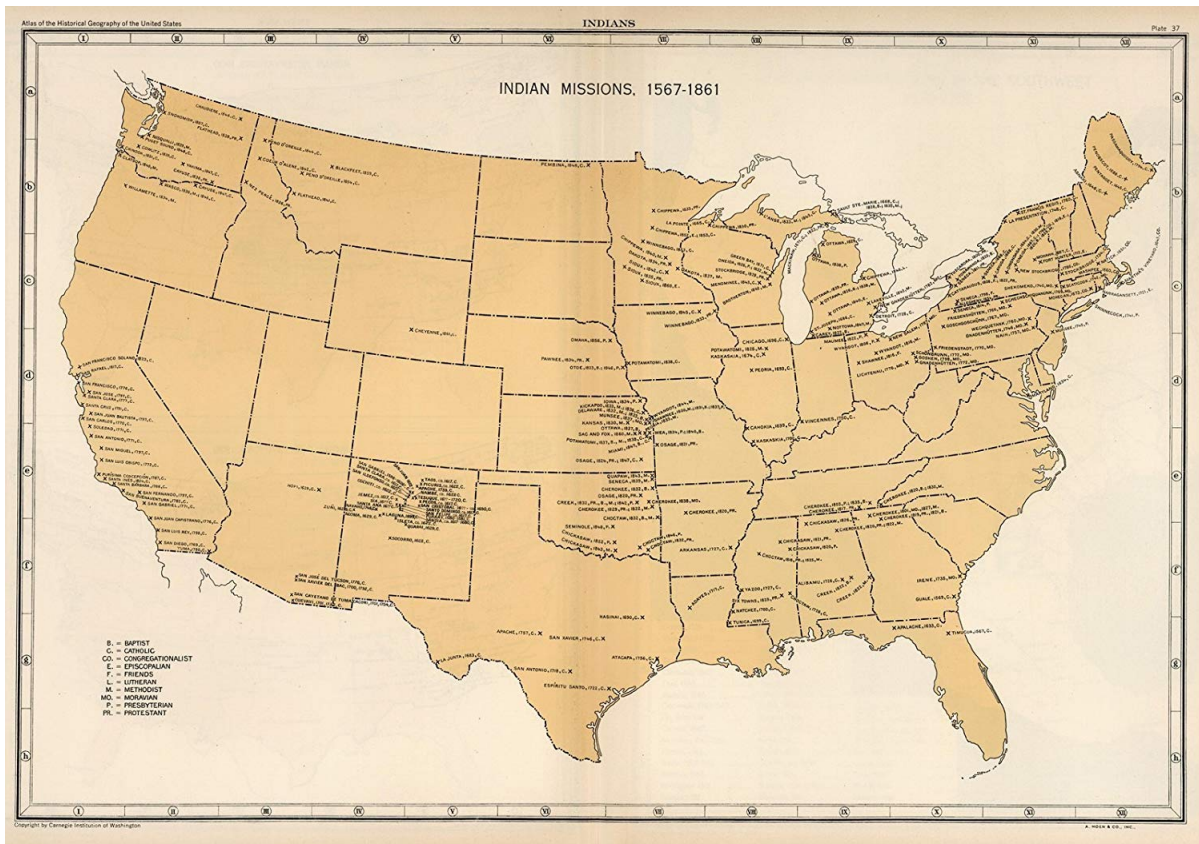
# A    Figures



Figure 1: The location of missions in the United States between 1567 and 1861. This figure is from the Atlas of the Historical Geography of the United States (Fisher and Fisher, 2004) from the Digital Scholarship Lab, University of Richmond.

RESERVATION LANDS OCCUPIED BY RELIGIOUS SOCIETIES.

*Lands upon Indian reservations occupied by religious societies for civilizing, educational, and religious purposes; compiled to August 31, 1897.*

[The grants, except in a few instances, do not convey the fee simple of the property, but the right of occupancy for the purposes indicated; and in some cases the consent of the Indians is still wanting in order to complete the validity of the grants by the Government.]

| Agency. | Reservation. | Organization or church. | For what purpose used. | Date of occupancy. | Authority for occupancy. | Acres granted. | Description of land reserved. | File numbers in Indian Office. |
|---|---|---|---|---|---|---|---|---|
| ARIZONA. | | | | | | | | |
| Colorado River.... | | | | | | | | |
| Pima.... | Gila River.... | Woman's American Baptist Home Mission Society. | School and mission.. | 1890 | Dept., Nov. 22, 1890. | 160 | Located where railroad crosses Gila River on Gila River Reservation. | A. 24989. L. B. 208, pp. 358, 359. 23108/87. |
| Do.... | ....do.... | Board of Home Missions of the Presbyterian Church. | Church and parsonage. | 1867 | Dept., May 25, 1891. | 3 | Located S. of Pima Agency, bounded on N. by a public road, running E. and W. 130 yards along the road and 112 yards S. of said road. | A. 26852. 23108/87. L. B. 217, p. 249; 218, p. 117, 119. |
| Do.... | ....do.... | ....do.... | Church.... | 1867 | ....do.... | 3 | Located about 10 miles ESE. from Pima Agency, near the Blackwater villages. | |
| Do.... | Papago.... | Roman Catholic.... | Mission and church.. | 1692 | Dept., Oct. 24, 1885 Apr. 19, 1891. Dept. approved schedule reserving 14 acres, including the "3 or 4" granted in 1885. | "3 or 4" 11 | NE. ¼ SW. ¼ of SW. ¼, S. 22, T. 15 S., R. 13 E., 10 acres. Also beginning at NE. cor. of said tract; N. 4 chs.; W. 10 chs.; S. 4 chs.; E. 10 chs. to place of beginning, same S. and T., 4 acres. | A. 11417. 23108/87, 15743/91, 25227/95. L. B. 141, p. 453; 154, p. 67; 307, p. 188; 309, p. 200. San Xavier del Bac Mission was established about 1692 under Spanish rule. |
| Navajo.... | Navajo.... | Woman's Home Missionary Society of the Methodist Episcopal Church. | Mission.... | 1887 | Dept., June 28, 1887. | 80 | At some point near Chinalee trading post, at the mouth of Canyon de Chelley. | A. 15697. L. B. 162, pp. 16, 18. |
| Do.... | ....do.... | Missionary Society of the Methodist Episcopal Church, New York City. | Mission and school.. | 1889 | Dept., Sept. 5, 1889. | 160 | At a point on the San Juan River near Jewett, N. Mex. (Reported by agent as never set aside.) | |
| Do.... | ....do.... | ....do.... | ....do.... | 1889 | ....do.... | 160 | At Tse a lee, about 45 miles N. of Fort Defiance, Ariz. (Reported by agent as never set aside.) | A. 20909. L. B. 190, pp. 66, 68; 239, p. 280. 7487/91 and A. 26415. |
| Do.... | ....do.... | "Miss Helen Dodge, as a member of the Episcopal Church." | Mission school.... | 1890 | Dept., Sept. 3, 1890. | 80 | | A. 24159. L. B. 203, pp. 390, 391. |
| Do.... | ....do.... | Women's National Indian Association. | Mission and school.. | 1890 | Dept., Sept. 9, 1890. | 160 | | A. 24213. L. B. 204, pp. 89, 91. |
| Do.... | ....do.... | Missionary Society of the Methodist Episcopal Church. | Mission school and industrial farm. | 1892 | Dept., Apr. 29, 1892. | 640 | Land selected near Red Lake, but Indians refused their consent, and nothing further was done by missionaries. | A. 30687. 28087/92, 34799/92, 39007/93, 6792/94. L. B. 237, pp. 421, 423, 425; 267, p. 318; 239, p. 280; 263, p. 348; 273, pp. 202, 206; 274, p. 309. |
| Do.... | ....do.... | Board of Heathen Missions of the Holland Christian Reformed Church of America. | Chapel and mission house. | 1897 | Dept., Feb. 18, 1897. | 150 by 450 ft. | Located 200 feet from Government schoolhouse at agency. Granted in 1891 to Missionary Society Methodist Episcopal Church, but surrendered to Holland Reformed Church in 1897 | A. 51399, A. 26415. L. B. 348, p. 464; 349, pp 7, 6, 9; 214, pp. 444, 446, 479 (in lieu of A. 20909). |
| Do.... | ....do.... | Protestant Episcopal Church. | Mission hospital.... | 1894 | Dept., Aug. 10, 1894. | Lot. | Commencing at a point on a N. and S. line marked by stone lettered "N. H. M.;" S. 100 yards; E. to Black Creek; up said creek to a point where a line running E. and W. would intersect W. boundary, on N. and S. line, above referred to, 100 yards from the initial point; from said point on Black Creek W. to said N. and S. line; S. to point of beginning. Situated between the field on the east side of the agency and the creek. | A. 40841. L. B. 287, p. 3. 48232/94. |
| Do.... | Moquis.... | Bureau of Catholic Indian Missions. | Mission industrial school. | 1889 | Dept., Apr. 4, 1889. | 160 | 10 miles due W. from Keams Canyon; 7 miles N. of the first mesa of the Moqui villages; 10 miles NE. of second mesa; 8 miles E. of third mesa. The east line of the land extends ¼ mile N. and S. along base of mesa, extending a mile W. | A. 19695. L. B. 183, pp. 467, 470. 20032/89. |
| Do.... | ....do.... | Mennonite Missionary Society. | Mission.... | 1894 | Dept., Feb. 13, 1894. | 40 | Near Oreiba village. W. ½ of NW. ¼ of NE. ¼ and E. ½ of SE. ¼ of NE. ¼, S. 34, T. 29 N., R. 16 E. | A. 38652. L. B. 274, pp. 249, 251. |
| Do.... | ....do.... | Women's Indian Association of New Jersey. | Mission and school.. | 1896 | Dept., Jan. 13, 1896. | 160 | | A. 46892. L. B. 322, pp. 336, 360; 324, p. 22. |
| San Carlos.... | White Mountain. | Women's National Indian Association. | Mission school and cottage. | 1890 | Dept., Sept. 9, 1890. | 160 | | A. 24216. L. B. 204, p. 92. 25358/87. |
| Do.... | ....do.... | Evangelical Lutheran General Synod. | Mission school.... | 1894 | Dept., Mar. 17, 1894. | 10 | Situated in valley of San Carlos River, S. and SW. of so-called "Ten Mile Point," in the division of Chief Cassadore, due W. of farm occupied by said chief and his band, bordering said farm on the E. | A. 39094. L. B. 277, p. 226. |

Figure 2: Example of the list of religious societies from the 1897 Annual Report to the Commissioner of Indian Affairs (United States, 1897).
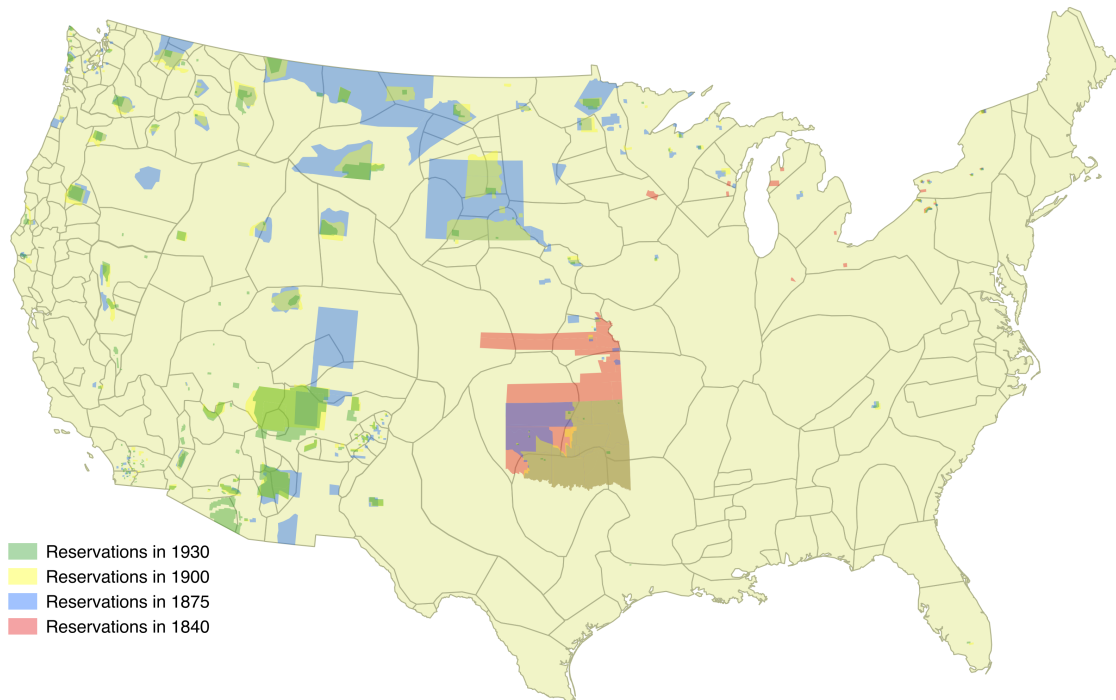
Figure 3: A digital reproduction of the location of Indian Reservations between 1840 and 1930. The original maps are from the Atlas of the Historical Geography of the United States from the Digital Scholarship Lab, University of Richmond.
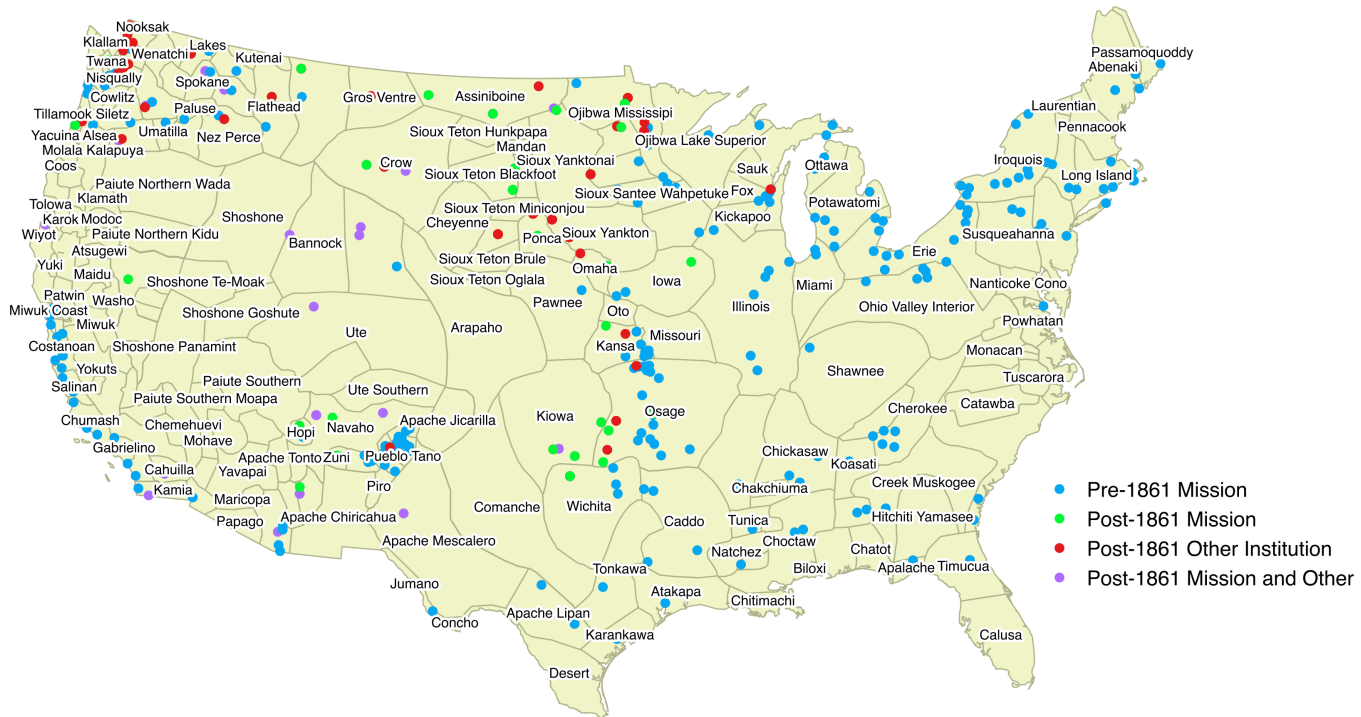
Figure 4: The location of Native American ancestral territories from Gerlach (1970); Sturtevant (1981) overlaid with a geocoded reproduction of the location of missions from the Atlas of the Historical Geography of the United States, as well as those missions and other religious societies included in the 1897 Annual Report to the Commissioner of Indian Affairs.
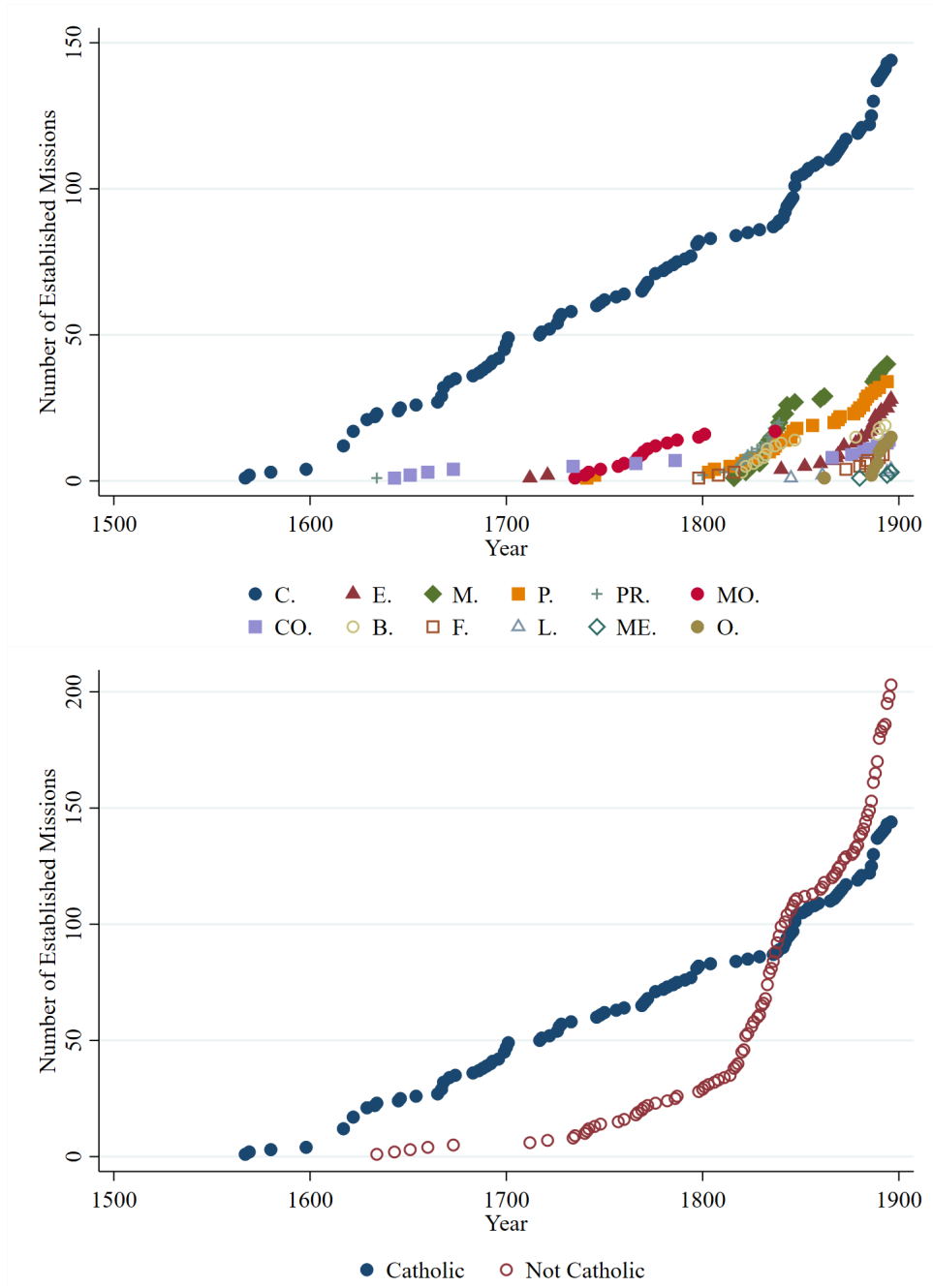
Figure 5: Number of Indian Missions over time by Denomination. Authors calculations from United States (1897) and Fisher and Fisher (2004). C = Catholic; E = Episcopalian; M = Methodist; P = Presbyterian; PR = Protestant; MO = Moravian; CO = Congregationalist; B = Baptist; F = Friends; L = Lutheran; ME = Mennonites ; O= Other
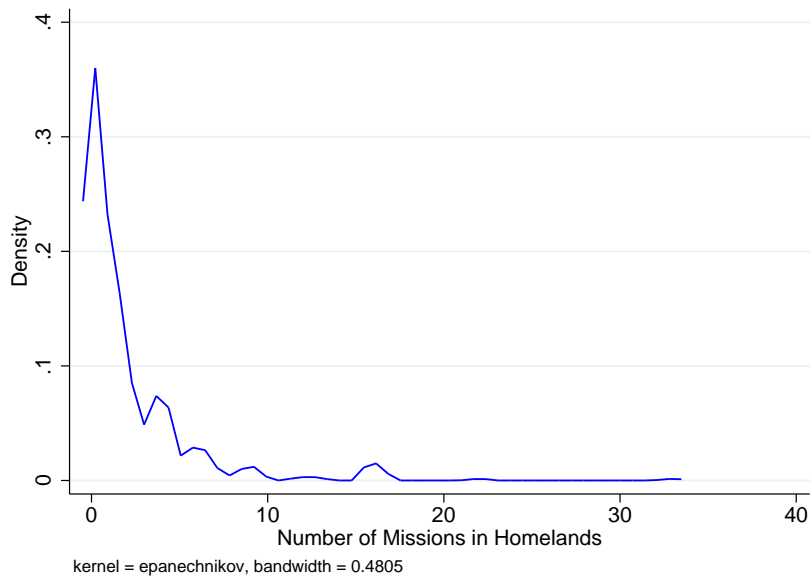
(a) Number of Missions Density
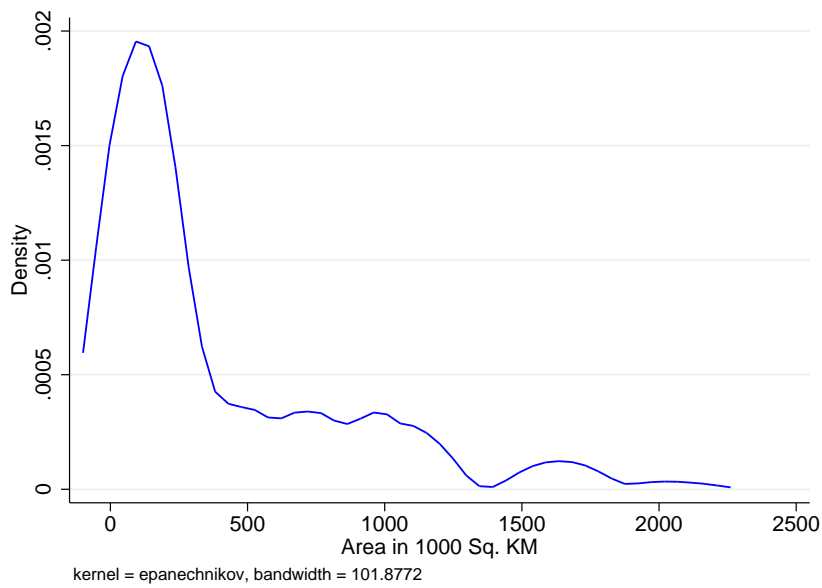


(b) Tribal Area Density

Figure 6: The location of Native American ancestral territories from Gerlach (1970); Sturtevant (1981) overlaid with a geocoded reproduction of the location of missions from the Atlas of the Historical Geography of the United States, as well as those missions and other religious societies included in the 1897 Annual Report to the Commissioner of Indian Affairs.

# B  Tables

Table 1: Summary statistics for missionary contact

|  | Full Sample (1) | At Least One (2) |
|---|---|---|
| At least one mission | 0.50 | 1.00 |
|  | (0.50) | (0.00) |
| # of missions | 1.76 | 3.52 |
|  | (3.58) | (4.42) |
| # of pre-1861 missions | 1.15 | 2.31 |
|  | (2.72) | (3.48) |
| # of post-1861 missions | 0.22 | 0.45 |
|  | (1.12) | (1.55) |
| # of post-1861 missions + other | 0.38 | 0.76 |
|  | (1.23) | (1.65) |
| # of post-1861 other institutions | 0.45 | 0.84 |
|  | (1.51) | (2.03) |
| # of Catholic missions | 0.63 | 1.26 |
|  | (1.23) | (1.49) |
| # of non-Catholic missions | 1.13 | 2.25 |
|  | (3.06) | (4.03) |
| # of missions per 1,000 sq-km | 0.09 | 0.17 |
|  | (0.17) | (0.21) |
| # of pre-1861 missions per 1,000 sq-km | 0.06 | 0.12 |
|  | (0.15) | (0.20) |
| # of post-1861 missions per 1,000 sq-km | 0.01 | 0.02 |
|  | (0.04) | (0.06) |
| # of post-1861 missions + other per 1,000 sq-km | 0.01 | 0.03 |
|  | (0.05) | (0.06) |
| # of post-1861 other institutions per 1,000 sq-km | 0.02 | 0.03 |
|  | (0.09) | (0.08) |
| # of Catholic missions per 1,000 sq-km | 0.05 | 0.10 |
|  | (0.15) | (0.20) |
| # of non-Catholic missions per 1,000 sq-km | 0.03 | 0.07 |
|  | (0.08) | (0.10) |
| Observations | 220 | 110 |

Notes: Means reported with standard deviations in parentheses. The unit of observation is the ancestral territory.

Table 2: Summary statistics on the modern outcomes of communities with and without missions

|  | No Missions (1) | At Least One (2) | Difference (3) |
|---|---|---|---|
| *Panel A: Highest Level of Education Completed* | | | |
| Less than High School | 0.22 | 0.19 | 0.03* |
|  | (0.12) | (0.11) |  |
| HS or GED | 0.36 | 0.35 | 0.01 |
|  | (0.13) | (0.11) |  |
| Some College/Associates | 0.35 | 0.36 | -0.01 |
|  | (0.13) | (0.12) |  |
| BA or more | 0.07 | 0.10 | -0.03*** |
|  | (0.07) | (0.09) |  |
| Observations | 164 | 221 | 385 |
| *Panel B: Other Modern Outcomes* | | | |
| Per Capita Income | 16273.16 | 18736.29 | -2463.13* |
|  | (7958.61) | (13537.81) |  |
| Median Income | 34322.63 | 40013.89 | -5691.25** |
|  | (12444.71) | (20389.29) |  |
| Total Native American Population | 1594.46 | 2668.23 | -1073.77 |
|  | (2818.00) | (11900.99) |  |
| Prop of Population Indigenous | 0.69 | 0.59 | 0.10*** |
|  | (0.22) | (0.28) |  |
| Prop Indigenous with One Race | 0.91 | 0.87 | 0.04** |
|  | (0.10) | (0.14) |  |
| Observations | 141 | 201 | 342 |

Notes: Means reported with the standard deviations in parentheses. These modern outcomes are from the 2013-2017 ACS and include all federally recognized tribes with a land base. The unit of observation is the reservation. The last column includes a difference in means test, where $^*$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$.

Table 3: Summary statistics on the modern outcomes of whites in Indigenous communities with and without missions

| | No Missions (1) | At Least One (2) | Difference (3) |
|---|---|---|---|
| *Panel A: Highest Level of Education Completed* | | | |
| | | | |
| Less than High School | 0.11 | 0.11 | -0.00 |
| | (0.16) | (0.13) | |
| HS or GED | 0.35 | 0.36 | -0.01 |
| | (0.23) | (0.17) | |
| Some College/Associates | 0.40 | 0.34 | 0.06* |
| | (0.25) | (0.18) | |
| BA or more | 0.14 | 0.19 | -0.04* |
| | (0.18) | (0.16) | |
| | | | |
| Observations | 158 | 213 | 371 |
| *Panel B: Other Modern Outcomes* | | | |
| | | | |
| Per Capita Income | 25511.48 | 26401.92 | -890.44 |
| | (8878.29) | (8824.24) | |
| Median Income | 50027.09 | 50883.14 | -856.05 |
| | (18037.57) | (20785.67) | |
| Total White Population | 2413.86 | 4161.84 | -1747.98 |
| | (5778.93) | (9316.82) | |
| | | | |
| Observations | 79 | 144 | 223 |

Notes: Means reported with the standard deviations in parentheses. These modern outcomes are from the 2013-2017 ACS and include all federally recognized tribes with a land base. The unit of observation is the reservation. The last column includes a difference in means test, where * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Summary statistics on additional constructed variables for communities with and without missions

| | No Missions (1) | At Least One (2) | Difference (3) |
|---|---|---|---|
| Population Density in 1600 | 0.05 | 0.13 | -0.08*** |
| | (0.08) | (0.33) | |
| Ln(Ancestral Territory Area) (1000 sq-km) | 2.56 | 3.25 | -0.69*** |
| | (1.28) | (1.12) | |
| Original Bison Share | 0.20 | 0.40 | -0.20*** |
| | (0.38) | (0.44) | |
| No Railway ever in homelands | 0.13 | 0.01 | 0.11*** |
| | (0.34) | (0.12) | |
| Railway by 1830 | 0.00 | 0.11 | -0.11*** |
| | (0.00) | (0.32) | |
| Railway by 1840 | 0.02 | 0.10 | -0.08*** |
| | (0.13) | (0.30) | |
| Railway by 1850 | 0.03 | 0.06 | -0.03 |
| | (0.17) | (0.24) | |
| Railway by 1860 | 0.20 | 0.16 | 0.03 |
| | (0.40) | (0.37) | |
| Railway by 1870 | 0.20 | 0.26 | -0.06 |
| | (0.40) | (0.44) | |
| Railway by 1880 | 0.29 | 0.24 | 0.05 |
| | (0.46) | (0.43) | |
| Railway after 1880 | 0.14 | 0.05 | 0.09** |
| | (0.35) | (0.21) | |
| Share ceded btw 1784 & 1840 | 0.01 | 0.10 | -0.09*** |
| | (0.11) | (0.22) | |
| Share ceded btw 1840 & 1880 | 0.85 | 0.53 | 0.32*** |
| | (0.34) | (0.40) | |
| Share ceded after 1880 | 0.11 | 0.13 | -0.02 |
| | (0.30) | (0.30) | |
| Share Beaver Trapping Territory | 0.49 | 0.73 | -0.23*** |
| | (0.47) | (0.40) | |
| Observations | 164 | 221 | 385 |

Notes: Means reported with the standard deviations in parentheses. These variables were constructed from a variety of sources outlined in the data section. The unit of observation is the reservation. The last column includes a difference in means test, where * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Summary statistics on cultural controls for communities with and without missions

|  | No Missions (1) | At Least One (2) | Difference (3) |
|---|---|---|---|
| Historic Centralization | 0.20 | 0.35 | -0.15** |
|  | (0.40) | (0.48) |  |
| Nomadic or Semi Nomadic | 0.63 | 0.48 | 0.14** |
|  | (0.48) | (0.50) |  |
| Had Agriculture | 0.77 | 0.36 | 0.41*** |
|  | (0.42) | (0.48) |  |
| Patrilineal Descent | 0.13 | 0.26 | -0.13*** |
|  | (0.34) | (0.44) |  |
| Matrilineal Descent | 0.06 | 0.17 | -0.11*** |
|  | (0.24) | (0.38) |  |
| Jurisdictional Hierarchy | 0.55 | 0.66 | -0.11* |
|  | (0.50) | (0.48) |  |
| Missing HC | 0.05 | 0.10 | -0.05 |
|  | (0.22) | (0.29) |  |
| Mission Nomadic | 0.04 | 0.10 | -0.05* |
|  | (0.20) | (0.29) |  |
| Missing Agriculture | 0.04 | 0.10 | -0.05* |
|  | (0.20) | (0.29) |  |
| Missing Jurisdictional Hierarchy | 0.05 | 0.10 | -0.05 |
|  | (0.22) | (0.29) |  |
| Observations | 164 | 221 | 385 |

Notes: Means reported with the standard deviations in parentheses. These variables were constructed from Murdock's Ethnographic Atlas. The unit of observation is the reservation. The last column includes a difference in means test, where * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Probability of being excluded from the modern sample

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Mission Density | -0.219 | | | -0.317 | | |
| | (0.197) | | | (0.232) | | |
| Pre-1861 Mission Density | | 0.00235 | | | -0.154 | |
| | | (0.220) | | | (0.256) | |
| Post-1861 Mission Density | | -0.0159 | | | 0.0430 | |
| | | (0.769) | | | (0.541) | |
| Post-1861 Mission+Other Density | | -2.126** | | | -1.796** | |
| | | (0.930) | | | (0.822) | |
| Post-1861 Other Density | | -0.644 | | | -0.290 | |
| | | (0.455) | | | (0.447) | |
| Catholic Mission Density | | | -0.0353 | | | -0.00816 |
| | | | (0.204) | | | (0.237) |
| Non-Catholic Mission Density | | | -0.883 | | | -1.263** |
| | | | (0.551) | | | (0.583) |
| Population Density in 1600 | | | | 0.0120 | -0.000413 | 0.0207 |
| | | | | (0.175) | (0.168) | (0.165) |
| Historic Centralization | | | | 0.0995 | 0.0969 | 0.0906 |
| | | | | (0.099) | (0.098) | (0.100) |
| Nomadic or Semi Nomadic | | | | -0.0804 | -0.0786 | -0.0785 |
| | | | | (0.109) | (0.110) | (0.110) |
| Ln(Territory Area) (1000 sq-km) | | | | -0.0210 | -0.0201 | -0.0116 |
| | | | | (0.035) | (0.034) | (0.034) |
| Had Agriculture | | | | 0.0796 | 0.0921 | 0.0902 |
| | | | | (0.122) | (0.123) | (0.125) |
| Patrilineal Descent | | | | 0.0223 | 0.0388 | 0.0291 |
| | | | | (0.110) | (0.114) | (0.111) |
| Matrilineal Descent | | | | -0.116 | -0.117 | -0.116 |
| | | | | (0.097) | (0.095) | (0.093) |
| Jurisdictional Hierarchy | | | | 0.0593 | 0.0693 | 0.0853 |
| | | | | (0.089) | (0.084) | (0.085) |
| Original Bison Share | | | | 0.103 | 0.0961 | 0.0905 |
| | | | | (0.100) | (0.098) | (0.098) |
| | | | | | | |
| Missing EA Dummies | | | | X | X | X |
| Region FE | | | | X | X | X |
| Observations | 220 | 220 | 220 | 220 | 220 | 220 |

Notes: The dependent variable is an indicator equal to 1 if the tribe is not found in the modern ACS sample. Marginal effects from a probit are reported. Regional fixed effects include: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Standard errors clustered at the ancestral territory in parentheses, $^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$.

Table 7: The relationship between mission density and the educational attainment of Indigenous people

|  | Less than HS (1) | HS or GED (2) | College (3) | BA or more (4) |
|---|---|---|---|---|
| *Panel A: No controls* | | | | |
| Missions Density | -0.0607** | 0.00447 | 0.0319* | 0.0243 |
|  | (0.024) | (0.018) | (0.019) | (0.021) |
| Constant | 0.205*** | 0.355*** | 0.355*** | 0.0850*** |
|  | (0.007) | (0.008) | (0.008) | (0.006) |
| Adjusted $R^2$ | 0.011 | -0.003 | 0.000 | 0.001 |
| *Panel B: Cultural controls* | | | | |
| Missions Density | -0.0860*** | -0.00332 | 0.0782*** | 0.0112 |
|  | (0.030) | (0.029) | (0.028) | (0.028) |
| Adjusted $R^2$ | 0.053 | -0.013 | -0.010 | 0.065 |
| *Panel C: Cultural and colonial controls* | | | | |
| Missions Density | -0.0714** | -0.0145 | 0.0739** | 0.0120 |
|  | (0.033) | (0.036) | (0.032) | (0.030) |
| Adjusted $R^2$ | 0.066 | -0.015 | -0.014 | 0.053 |
| *Panel D: Cultural, colonial, and modern controls* | | | | |
| Missions Density | -0.0450* | -0.0434 | 0.0721** | 0.0163 |
|  | (0.024) | (0.040) | (0.031) | (0.022) |
| Adjusted $R^2$ | 0.158 | 0.020 | 0.069 | 0.157 |
| Observations | 388 | 388 | 388 | 388 |
| N Clusters | 152 | 152 | 152 | 152 |

Notes: The dependent variable in each column is the share of the population who report the corresponding values as their highest level of education. All specifications estimated using OLS. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Colonial controls include the expansion of the railway, land cessions, and involvement in the fur trade. Modern controls include the per capita income of Native Americans and whites, the population of Native Americans and whites, and whether the reservation has a tribal college. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: The relationship between mission density (by denomination) and the educational attainment of Indigenous people

|  | Less than HS (1) | HS or GED (2) | College (3) | BA or more (4) |
|---|---|---|---|---|
| *Panel A: No controls* | | | | |
| Catholic Mission Density | -0.0696*** | 0.00524 | 0.0531*** | 0.0113 |
|  | (0.025) | (0.018) | (0.019) | (0.022) |
| Non-Catholic Mission Density | -0.0194 | 0.000864 | -0.0666 | 0.0851 |
|  | (0.078) | (0.068) | (0.074) | (0.067) |
| Constant | 0.204*** | 0.355*** | 0.358*** | 0.0833*** |
|  | (0.008) | (0.008) | (0.008) | (0.006) |
| Adjusted $R^2$ | 0.009 | -0.005 | 0.001 | 0.001 |
| *Panel B: Cultural controls* | | | | |
| Catholic Mission Density | -0.107*** | -0.0236 | 0.133*** | -0.00201 |
|  | (0.039) | (0.041) | (0.044) | (0.034) |
| Non-Catholic Mission Density | -0.0225 | 0.0581 | -0.0865 | 0.0510 |
|  | (0.070) | (0.070) | (0.083) | (0.046) |
| Adjusted $R^2$ | 0.053 | -0.014 | -0.004 | 0.064 |
| *Panel C: Cultural and colonial controls* | | | | |
| Catholic Missions Density | -0.0810* | -0.0375 | 0.128*** | -0.00962 |
|  | (0.043) | (0.051) | (0.048) | (0.036) |
| Non-Catholic Mission Density | -0.0448 | 0.0494 | -0.0769 | 0.0723 |
|  | (0.069) | (0.073) | (0.080) | (0.048) |
| Adjusted $R^2$ | 0.063 | -0.016 | -0.010 | 0.052 |
| *Panel D: Cultural, colonial, and modern controls* | | | | |
| Catholic Mission Density | -0.0600* | -0.0664 | 0.124** | 0.00250 |
|  | (0.033) | (0.055) | (0.048) | (0.026) |
| Non-Catholic Mission Density | -0.00453 | 0.0184 | -0.0676 | 0.0536 |
|  | (0.073) | (0.071) | (0.084) | (0.041) |
| Adjusted $R^2$ | 0.157 | 0.018 | 0.074 | 0.156 |
| Observations | 335 | 335 | 335 | 335 |
| N Clusters | 149 | 149 | 149 | 149 |

Notes: The dependent variable in each column is the share of the population who report the corresponding values as their highest level of education. All specifications estimated using OLS. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Colonial controls include the expansion of the railway, land cessions, and involvement in the fur trade. Modern controls include the per capita income of Native Americans and whites, the population of Native Americans and whites, and whether the reservation has a tribal college. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: The relationship between mission density and the educational attainment of Indigenous people by gender

| | Male | | | | Female | | | |
|---|---|---|---|---|---|---|---|---|
| | Less than HS (1) | HS or GED (2) | College (3) | BA or More (4) | Less than HS (5) | HS or GED (6) | College (7) | BA or More (8) |
| *Panel A: No controls* | | | | | | | | |
| Catholic Mission Density | -0.0837*** | 0.0259 | 0.0521** | 0.00573 | -0.0626* | -0.0116 | 0.0554* | 0.0188 |
| | (0.026) | (0.021) | (0.022) | (0.021) | (0.034) | (0.030) | (0.032) | (0.027) |
| Non-Catholic Mission Density | 0.00924 | -0.0536 | 0.0588 | -0.0144 | -0.101 | 0.000203 | -0.0906 | 0.191** |
| | (0.065) | (0.140) | (0.155) | (0.066) | (0.126) | (0.109) | (0.117) | (0.079) |
| Constant | 0.214*** | 0.406*** | 0.308*** | 0.0720*** | 0.200*** | 0.313*** | 0.398*** | 0.0896*** |
| | (0.007) | (0.010) | (0.009) | (0.006) | (0.011) | (0.010) | (0.011) | (0.006) |
| | (0.008) | (0.010) | (0.009) | (0.006) | (0.011) | (0.010) | (0.010) | (0.006) |
| Adjusted $R^2$ | 0.008 | -0.004 | -0.000 | -0.005 | 0.004 | -0.005 | -0.000 | 0.015 |
| *Panel B: Cultural controls* | | | | | | | | |
| Catholic Mission Density | -0.121*** | -0.00103 | 0.118*** | 0.00354 | -0.0961* | -0.0417 | 0.144** | -0.00582 |
| | (0.031) | (0.044) | (0.042) | (0.035) | (0.056) | (0.051) | (0.060) | (0.037) |
| Non-Catholic Mission Density | 0.0213 | 0.0121 | -0.00572 | -0.0277 | -0.0971 | 0.0594 | -0.0845 | 0.122** |
| | (0.065) | (0.120) | (0.117) | (0.049) | (0.115) | (0.090) | (0.106) | (0.054) |
| Adjusted $R^2$ | 0.020 | -0.018 | 0.002 | 0.018 | 0.059 | 0.021 | 0.021 | 0.103 |
| *Panel C: Cultural and colonial controls* | | | | | | | | |
| Catholic Mission Density | -0.116*** | 0.00679 | 0.109** | 0.000228 | -0.0620 | -0.0564 | 0.135** | -0.0162 |
| | (0.037) | (0.056) | (0.047) | (0.036) | (0.064) | (0.057) | (0.066) | (0.039) |
| Non-Catholic Mission Density | 0.0192 | -0.0236 | -0.00463 | 0.00909 | -0.149 | 0.0754 | -0.0531 | 0.127** |
| | (0.064) | (0.118) | (0.119) | (0.051) | (0.103) | (0.082) | (0.105) | (0.056) |
| Adjusted $R^2$ | 0.005 | -0.023 | -0.002 | 0.008 | 0.078 | 0.052 | 0.016 | 0.100 |
| *Panel D: Cultural, colonial, and modern controls* | | | | | | | | |
| Catholic Mission Density | -0.120*** | -0.0142 | 0.141*** | -0.00655 | -0.0318 | -0.0933 | 0.115* | 0.0106 |
| | (0.037) | (0.051) | (0.044) | (0.036) | (0.040) | (0.068) | (0.065) | (0.026) |
| Non-Catholic Mission Density | 0.0822 | -0.0955 | -0.0106 | 0.0240 | -0.112 | 0.0872 | -0.0702 | 0.0954** |
| | (0.090) | (0.090) | (0.104) | (0.063) | (0.074) | (0.077) | (0.081) | (0.047) |
| Adjusted $R^2$ | 0.063 | -0.029 | 0.042 | 0.073 | 0.153 | 0.082 | 0.065 | 0.228 |
| Observations | 335 | 335 | 335 | 335 | 334 | 334 | 334 | 334 |
| N Clusters | 149 | 149 | 149 | 149 | 149 | 149 | 149 | 149 |

Notes: The dependent variable in each column is the share of the population who report the corresponding values as their highest level of education. All specifications estimated using OLS. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Colonial controls include the expansion of the railway, land cessions, and involvement in the fur trade. Modern controls include the per capita income of Native Americans and whites, the population of Native Americans and whites, and whether the reservation has a tribal college. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: The relationship between mission density and income of Indigenous people

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Panel A: Total Density* | | | | | | |
| Mission Density | 0.279*** | 0.243** | 0.356*** | 0.393*** | 0.394*** | 0.361*** |
| | (0.091) | (0.100) | (0.121) | (0.143) | (0.147) | (0.129) |
| Ln(Med. White HH Income) | | 0.162** | | 0.137* | 0.117 | 0.128* |
| | | (0.081) | | (0.074) | (0.074) | (0.076) |
| Adjusted $R^2$ | 0.018 | 0.056 | 0.087 | 0.228 | 0.282 | 0.349 |
| | | | | | | |
| *Panel B: By Denomination* | | | | | | |
| Catholic Mission Density | 0.203** | 0.184* | 0.284* | 0.362** | 0.398* | 0.342* |
| | (0.094) | (0.093) | (0.151) | (0.180) | (0.212) | (0.189) |
| Non-Catholic Mission Density | 0.683* | 0.579 | 0.590* | 0.479 | 0.385 | 0.403 |
| | (0.395) | (0.421) | (0.354) | (0.329) | (0.297) | (0.280) |
| Ln(Med. White HH Income) | | 0.162** | | 0.138* | 0.116 | 0.129* |
| | | (0.080) | | (0.074) | (0.073) | (0.075) |
| Adjusted $R^2$ | 0.020 | 0.057 | 0.085 | 0.224 | 0.278 | 0.345 |
| | | | | | | |
| Cultural Controls | | | X | X | X | X |
| Sub Region FE | | | X | X | X | X |
| Colonial Controls | | | | | X | X |
| Education controls | | | | | | X |
| Observations | 342 | 208 | 342 | 208 | 208 | 208 |
| N Clusters | 151 | 117 | 151 | 117 | 117 | 117 |

Notes: The dependent variable in each column is the natural logarithm of household median income among Native Americans. All specifications estimated using OLS. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Colonial controls include the expansion of the railway, land cessions, and involvement in the fur trade. Education controls include the share of the Native American population with less than a high school degree, with some college, and with a BA or higher. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: The relationship between mission density and political outcomes of tribes

| | ln(White pop) (1) | Prop. Pop. Native (2) | No Railway (3) |
|---|---|---|---|
| *Panel A: Total Density, No Controls* | | | |
| Mission Density | 0.865 | -0.0850 | -0.0839 |
| | (0.931) | (0.144) | (0.060) |
| Constant | 4.656*** | 0.626*** | 0.0747*** |
| | (0.227) | (0.023) | (0.027) |
| Adjusted $R^2$ | 0.003 | 0.002 | 0.003 |
| *Panel B: Total Density, Cultural Controls* | | | |
| Mission Density | -0.644 | -0.0754 | -0.263*** |
| | (0.746) | (0.112) | (0.090) |
| Adjusted $R^2$ | 0.271 | 0.188 | 0.174 |
| *Panel C: By Denomination, No Controls* | | | |
| Catholic Mission Density | 1.064 | -0.0565 | -0.0348 |
| | (1.094) | (0.171) | (0.049) |
| Non-Catholic Mission Density | -0.0365 | -0.213 | -0.305* |
| | (2.377) | (0.253) | (0.170) |
| Constant | 4.682*** | 0.630*** | 0.0812*** |
| | (0.236) | (0.022) | (0.030) |
| Adjusted $R^2$ | 0.001 | 0.001 | 0.006 |
| *Panel D: By Denomination, Cultural Controls* | | | |
| Catholic Mission Density | -0.684 | -0.0417 | -0.264*** |
| | (1.030) | (0.140) | (0.098) |
| Non-Catholic Mission Density | -0.525 | -0.176 | -0.261 |
| | (1.559) | (0.187) | (0.226) |
| Adjusted $R^2$ | 0.269 | 0.187 | 0.172 |
| Observations | 395 | 395 | 395 |
| N Clusters | 152 | 152 | 152 |

Notes: All specifications estimated using OLS. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: The relationship between mission density and political outcomes from Dippel (2014) and Feir et al. (2019)

| | No controls | | | | Cultural Controls | | | |
|---|---|---|---|---|---|---|---|---|
| | Removal (1) | Ever War (2) | FC (3) | Good Soil (4) | Removal (5) | Ever War (6) | FC (7) | Good Soil (8) |
| *Panel A: Total Density* | | | | | | | | |
| Mission Density | -1.198*** | -0.663*** | -0.666*** | 0.0715 | -0.361 | -0.475** | -0.621*** | -0.00625 |
| | (0.309) | (0.189) | (0.160) | (0.222) | (0.262) | (0.183) | (0.187) | (0.346) |
| Adjusted $R^2$ | 0.108 | 0.136 | 0.152 | -0.005 | 0.524 | 0.505 | 0.356 | 0.349 |
| *Panel B: By Denomination* | | | | | | | | |
| Catholic Mission Density | -1.503*** | -0.710*** | -0.807*** | -0.147 | -0.286 | -0.456* | -0.837*** | -0.393 |
| | (0.316) | (0.199) | (0.163) | (0.207) | (0.313) | (0.263) | (0.279) | (0.582) |
| Non-Catholic Mission Density | 0.648 | -0.376 | 0.183 | 1.394 | -0.566 | -0.525 | -0.0317 | 1.049 |
| | (1.421) | (0.634) | (0.539) | (1.314) | (0.816) | (0.451) | (0.318) | (0.980) |
| Adjusted $R^2$ | 0.128 | 0.134 | 0.171 | -0.003 | 0.521 | 0.503 | 0.363 | 0.350 |
| Observations | 196 | 196 | 196 | 196 | 196 | 196 | 196 | 196 |
| N Clusters | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |

Notes: All specifications include cultural controls and are estimated using OLS. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: The relationship between mission density and allotment, % white blood, and literacy (1910 IPUMS Oversample)

| | Land Allotted (1) | % White (2) | Literate (3) | Land Allotted (4) | % White (5) | Literate (6) |
|---|---|---|---|---|---|---|
| *Panel A: Total Density* | | | | | | |
| | | | | | | |
| Mission Density | -0.431 | -9.788 | -0.0237 | -0.0794 | 5.129 | 0.167* |
| | (0.391) | (24.226) | (0.165) | (0.292) | (8.983) | (0.101) |
| | | | | | | |
| *Panel B: By Denomination* | | | | | | |
| | | | | | | |
| Catholic Mission Density | -2.226** | -51.99* | -0.150 | -0.674* | -9.745 | 0.00274 |
| | (1.126) | (29.916) | (0.227) | (0.391) | (9.315) | (0.070) |
| Non-Catholic Mission Density | 0.856 | 86.21 | 0.250 | 0.797* | 53.38** | 0.671*** |
| | (1.057) | (104.425) | (0.764) | (0.464) | (21.014) | (0.148) |
| | | | | | | |
| Sub Region FE | | | | X | X | X |
| Cultural Controls | | | | X | X | X |
| Colonial Controls | | | | X | X | X |
| Observations | 37594 | 37086 | 37594 | 37594 | 37086 | 37594 |
| N Clusters | 107 | 107 | 107 | 107 | 107 | 107 |

Notes: This table displays marginal effects from a probit regression for "land allotted" and "literate", and uses OLS to estimate the relationship between missionary presence and the percentage of white blood on reservations (% White = Percentage of white blood from the Indian schedules). All columns include controls for gender and a 2nd order polynomial in age. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Colonial controls include the expansion of the railway, land cessions, and involvement in the fur trade. Standard errors clustered at the ancestral territory in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: The relationship between mission density and allotment (1910 IPUMS Oversample)

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Catholic Mission Density | -2.226** | -2.266** | -1.996** | -0.664* |
| | (1.126) | (1.060) | (1.013) | (0.381) |
| Non-Catholic Mission Density | 0.856 | 0.844 | 0.659 | 0.727 |
| | (1.057) | (0.964) | (0.868) | (0.479) |
| Age | 0.0155*** | 0.0108*** | 0.0133*** | 0.0164*** |
| | (0.003) | (0.003) | (0.003) | (0.002) |
| Age$^2$ | -0.000164*** | -0.0000961** | -0.000119*** | -0.000149*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Female | -0.000965 | 0.00911 | 0.0101 | 0.00221 |
| | (0.007) | (0.006) | (0.007) | (0.008) |
| Literate | | 0.172*** | 0.131*** | 0.0798*** |
| | | (0.052) | (0.033) | (0.019) |
| % White Blood | | | 0.00229*** | 0.000612* |
| | | | | |
| Cultural Controls | | | | X |
| Sub-Region FE | | | | X |
| Colonial Controls | | | | X |
| Observations | 37594 | 37594 | 37086 | 37086 |
| N Clusters | 107 | 107 | 107 | 107 |

Notes: This table displays marginal effects from a probit regression. All columns include controls for gender and a 2nd order polynomial in age. Cultural controls include population density in 1600, historic centralization, nomadic or semi-nomadic, log of tribal area, involvement in agriculture, patrilineal or matrilineal society, jurisdictional hierarchy, original bison share, and sub-region fixed effects: the Great Basin, Northeast, Northwest, Plains, Plateau, Southeast, Southwest, and California. Colonial controls include the expansion of the railway, land cessions, and involvement in the fur trade. Standard errors clustered at the ancestral territory in parentheses, $^*$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$.