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The Long-Run Effects of Missionary Orders in Mexico

Maria Waldinger[*]

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Abstract

This paper examines the long-run effects of different Catholic missionary orders in colonial Mexico on educational outcomes and Catholicism. The main missionary orders in colonial Mexico were all Catholic, but they belonged to different monastic traditions and adhered to different values. Mendicant orders were committed to poverty and sought to reduce social inequality in colonial Mexico by educating the native population. The Jesuit order, by contrast, focused educational efforts on the colony's elite in the city centers, rather than on the native population in rural mission areas. Using a newly constructed data set of the locations of 1,145 missions in colonial Mexico, I test whether long-run development outcomes differ among areas that had Mendicant missions, Jesuit missions, or no missions. Results indicate that areas with historical Mendicant missions have higher present-day literacy rates, and higher rates of educational attainment at primary, secondary and post-secondary levels than regions without a mission. Results show that the share of Catholics is higher in regions where Catholic missions of any kind were a historical present. Additional results suggest that missionaries may have affected long-term development by impacting people's access to and valuation of education.

1   Introduction

When the Spanish conquistadors arrived in America in 1492, Catholic missionary orders accompanied them in order to convert the native population to the Christian faith. In colonial Mexico, the Franciscan, Dominican, Augustinian, and Jesuit orders were the main missionary orders. All part of the Roman Catholic Church, they were similar in many respects, such as organizational structure.[1] They belonged, however, to different monastic traditions, and obeyed different sets of rules. The Franciscan, Dominican, and Augustinian orders followed the Mendicant tradition, whereas the Jesuit order did not. Mendicant orders shared a strong commitment to poverty. They argued that wealth inevitably corrupts Christians, and leads them away from a lifestyle pleasing to God. They believed that life in poverty makes Christians free to live a holy life, and to gain salvation in the afterlife. According to these values, Mendicant orders were strongly committed to the poor. Before coming to Latin America, they cared for the urban poor in Europe (Lawrence, 1994). In colonial Mexico, they advocated social equality between the native population and the colonial elite. In particular, they "sought equality between Indians and Spanish through education" (MacLachlan, 1980: 126). Mendicant orders opened the first school for natives in colonial Mexico (Ricard, 1966: 207). One of the most prominent advocates for the native population was the Dominican Bartolomé de las Casas who denounced their miserable living conditions in his widely read book "A Short Account of the Destruction of the Indies" in 1552 (Griffin, 1992).

The Jesuit order, by contrast, was not defined by its commitment to poverty and to the poor. Founded in 1540 shortly after the Protestant Reformation in Europe, the order's purpose was to strengthen the position of the weakened Roman Catholic Church. Jesuits endorsed economic wealth and influence as valuable means to this end. In colonial Mexico, they established a "close connection [with] the *criollo*[2] elite [that] rested on the order's educational contributions" (MacLachlan, 1980: 137). They strengthened the position of the Catholic elite in the colony, and contributed to the strong position of the Catholic Church in the country. Social inequality, they felt, was justifiable because "the Spanish were the instrument chosen by God to incorporate the Indies into Christian society through subjecting their inhabitants to Spanish dominion" (Liss, 1973:458).

This paper compares educational and cultural outcomes today in areas that had

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[1]All orders were answerable to the pope and their rules had to be approved by the pope. The orders were all trans-national organizations that were organized in provinces and consisted of celibate, highly educated men.

[2]The term *criollo* comprised people born in Hispanic America of European ancestry.

historical Mendicant missions, historical Jesuit missions, or no historical missions.[3] For this purpose, I construct a comprehensive data set of the locations and founding years of all historical missions in colonial Mexico between 1524 and 1810.[4] I combine this information with current locality-level information on the average years of schooling, average literacy rate, the share of the population with secondary and higher education, and the share of Catholics in the population.

Results show that present-day average schooling is 0.69 years higher in localities with a historical Mendicant mission than in localities without a mission. Present-day literacy is 3 percentage points higher, secondary education 7 percentage points higher and higher education 1 percentage point higher. Localities with a historical Jesuit mission do not have significantly different such outcomes today compared to localities without a mission. The coefficient for years of schooling lies at -0.19, for literacy at -0.04, for secondary education at -0.01, and close to zero for higher education. The share of Catholics is 2 percentage points higher in localities with a Mendicant mission, and 3 percentage points higher in localities with a Jesuit mission as compared to localities where a mission was never established.

An important concern in this study is the potential endogeneity of mission locations. If missions were systematically located in areas with especially advantageous conditions for agriculture or commerce, for example, or because of certain advantageous characteristics of the native population, then the results would be biased. To address these concerns I include an array of control variables that might have affected both the location of missions, and outcomes observed today. In particular, I include information on a locality's geographic conditions (such as soil conditions and climate), geographic position (such as proximity to waterways and Mexico City) and pre-Hispanic charcteristics. I then conduct various robustness checks and show that results are robust to the inclusion of detailed pre-Hispanic control variables, to controlling for a mission's duration, and that results hold when limiting the sample to include only localities that had either a Mendicant or a Jesuit mission.

I then use an instrumental variable strategy that exploits the initial directions of missionary treks into unknown territory as a source of exogenous variation in the orders' final distribution across Mexico. Upon arrival, missionary orders first went to Mexico City because only central Mexico had been conquered at the time. From there, missionary expeditions embarked in different directions. Because the data on missions also include their founding year, I am able to trace the spread of missions

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[3]In this paper, I examine the effects of Mendicant and Jesuit missions. I do not examine the effects of educational establishments in urban centers intended to provide high-quality education to the urban elites.

[4]With the end of the colonial period in 1810, all missions were abandoned.

across Mexico over time. The data show that orders tended to expand into new regions by following a course influenced by the direction they travelled when they initially set out from Mexico City, even though geographic and ethnic characteristics of the environment varied along the way. I use the directions of each order's 10 earliest missions from Mexico City as instruments for their final distribution across Mexico. I find that IV results are consistent with OLS results.

Finally, I examine specific mechanisms through which missionary orders might have affected long-term development. In particular, I examine the relationship between missions and contemporary cultural values, access to education, and returns to education. Results indicate that individuals in areas exposed to Mendicant missions value education more. Furthermore, the local population of areas exposed to Mendicant missions had better access to education in 1895, 85 years after the end of the colonial era and of missionary activity. There is no evidence that returns to education are affected by the location of Mendicant missions.

The paper contributes to the literature on the long-term effects of missionary orders. Woodberry (2004), Gallego and Woodberry (2010), and Nunn (2010) find overwhelmingly positive effects of missionary activities during the colonial period in Africa. By setting up schools and educating the population, missionaries contributed to increased human capital and economic prosperity. Bai and Kung (2015) find that missionaries had positive economic effects in China through their effect on knowledge diffusion. Akcomak et al. (2015) find that the positive effect of a religious community on human capital accumulation spurred economic development in the Netherlands. Nunn (2014) emphasizes heterogeneous effects of missionary orders in Africa with respect to gender. Catholic missionaries increased male education, while Protestant missionaries - who placed greater importance on educating women - increased female education. A related strand of research examines the effect of religion in general on economic outcomes (see, in particular Becker and Woessmann, 2008, 2009; McCleary and Barro, 2006 and McCleary, 2007).

Especially relevant is research by Valencia Caicedo (2014) who studies the long-term impact of historical Jesuit missions among the Guaraní in present-day Argentina, Brazil, and Paraguay. He finds positive long-term effects on present-day schooling and income with individuals in missionary areas demonstrating higher non-cognitive skills, and exhibiting different cultural traits.

The question arises why two papers studying the long-term effects of Jesuit missions in relatively similar settings find such different results. The Jesuits' mission strategies share important similarities in both settings: Jesuits educated the urban elite and set up missions in frontier regions (Valencia Caicedo, 2014: 10). However,

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there were important differences: In Mexico, the order dedicated only minimal finances to the maintenance of missions in frontier areas (Negro and Marzal, 2005: 152). The Guaraní missions, by contrast, were heavily subsidized by the Jesuit order (Sarreal, 2014: 7, 126).

Furthermore, the Guaraní settlements were missions and haciendas at the same time where mission inhabitants were also farm laborers. The Jesuits taught them new skills, e.g. embroidery, which they could then sell. The Jesuit order was a major trader of yerba mate, textiles, and cattle in the region (Sarreal, 2014: 89). In Mexico, the Jesuit missions and haciendas were located in different regions of Mexico (Negro and Marzal, 2005: 136). The haciendas were successful enterprises that expanded rapidly. Towards the end of the colonial period, the Jesuit order managed a total of about 1.5 million hectares in hacienda land (Negro and Marzal, 2005: 125).

This paper adds to the literature on the long-term effects of missionary orders by providing evidence that these long-run effects may differ by order. It examines new channels through which missionaries may have influenced long-run outcomes, such as, the value placed on education, access to education, and returns to education. Finally, it extends the geographic scope of the literature to Mexico, one of the regions of most intense missionary activity in history.

The paper is organized as follows. Section 2 provides historical background. Section 3 describes the data used in the analysis and the construction of the dataset. Section 4 shows the main results. Section 5 reports robustness checks and discusses threats to the identification strategy. Section 6 examines mechanisms through which missionary orders may have had long-term effects on education and Catholicism. Section 7 concludes.

2 Historical Background

2.1 Mexico at the Time of the Missionaries' Arrival

In 1524, three years after the fall of the Aztec capital Tenochtitlan, the first missionaries came to the Central American region that is now Mexico. At the time of their arrival, the territory encompassed distinct regions with different political and economic conditions.

Central Mexico was home to the Aztec empire. Numerous small kingdoms surrounding its capital Tenochtitlan were obliged to pay tribute. The area's intensive agriculture contributed to the growth of various urban settlements that performed

functions of political, economic, and religious centers. A centralized political power structure and a complex social order characterized the Aztec empire. The majority of pre-colonial settlements were located in this part of Mexico. The Aztec empire had a sophisticated educational system with universal compulsory schooling according to social status. The children of the nobility attended the *calmécac* which prepared them for future roles as priests or as political or military leaders. The children of commoners attended the *telepuchcalli* which prepared them for life as warriors (Deeds et al., 2011: 60).

Mexico's south was organized in various small, independent kingdoms. The region had been home to the Mayan civilization that had reached its peak long before the Aztecs, before AD 900. When the Spanish arrived, southern Mexico still had an elaborate system of trade. Schools existed but were reserved for the elite living in urban areas.

The north of Mexico was inhabited by nomadic or semi-sedentary independent groups that were loosely organized. The people of this area were called the *Chichimeca* ("barbarians") by the Spanish. The majority of the population in this region lived as hunters, gatherers, or fishermen (Solanes Carraro and Vela Ramírez, 2000). Population density was low compared to central and southern Mexico. There is no evidence of formal schooling. Instead, children learned from their parents about specific tasks and their role in the community.

The Spanish first conquered the Aztec empire, then southern Mexico and finally northern Mexico. After they had captured the Aztec capital Tenochtitlan in 1521, the empire collapsed and came quickly under Spanish control. The more decentralized Mayan region was conquered 25 years later in 1546 (Clendinnen, 1982: 32). The "guerilla tactic" of independent tribes in Mexico's north posed great challenges to the Spanish military conquest (Deeds et al., 2011: 101, 122). The region's conquest took more than 70 years. Even after 1590, Spanish military expeditions regularly set out from central Mexico to put down uprisings in the north and south.

2.2 The Missionaries' Arrival to Mexico

Shortly after conquering Tenochtitlan, Cortés asked for missionaries. He specifically requested Mendicant orders. Unlike other orders, Mendicant friars were not bound to stay in one monastery but could be deployed throughout the colony. In addition, they had already proven their worth as missionaries in the *Reconquista* of Spain.[5] Finally, other orders, such as the Benedictines, owned large land estates

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[5] The *Reconquista* of Spain was a century-long process during which Christian leaders conquered parts of the Spanish peninsula that were under the rule of Muslim leaders.

across Europe, and thus were, in Cortés' opinion, too powerful to be given a say in colonial affairs. The Mendicant orders, in contrast, had in principle renounced all worldly goods and were less likely to compete with Spanish conquerors for land and resources. The three Mendicant orders - the Franciscans, Dominicans and Augustinians - arrived in Mexico in 1524, 1526, and 1533. The Jesuit order was founded in 1540, and sent its first missionaries to Mexico in 1571. The Jesuits had to leave Mexico in 1767, when they were expelled from all Spanish territories in Europe and the Americas. Figure 1 shows the locations of all missions included in the data.

The Mendicant orders established 942 missions. Of these, the Franciscan order established 610, the Dominican order 192, and the Augustinian order 140. The Jesuit order established 203 missions. In the Americas, the Spanish Crown was the administrative head of the Catholic Church. The Spanish state, rather than the pope or the religious orders, funded missionary activities. Spain paid for the journey of missionaries to America, for missionary expeditions within America, and for a yearly stipend for the maintenance of missions. The financial and administrative dependence of the Catholic Church in colonial Mexico on the Spanish Crown made the church an arm of the colonial state (Deeds et al., 2011: 142). The Spanish Crown invested in the evangelization of overseas territories for various reasons, including the legitimacy evangelization conferred on the conquest, and the subjugation of the territories' populations. In return for Spain's pledge to convert the American people to Catholicism, Pope Alexander VI officially approved of the conquest of America by the Spanish (Garcia Martinez, 2009: 249). Both sides benefited. Spain's undertaking was declared to be legitimate by what was then Europe's highest moral authority, and the Roman Catholic Church gained a vast number of new adherents at a time when the Reformation dramatically challenged its influence in Europe.

Once missions were established, they served multiple purposes. They were centers of conversion, and also contributed to the economic and cultural conquest of the native population. The resettlement of natives in missions permitted missionaries to regularly gather children and adults for religious service and indoctrination. Religious teaching took a prominent role in mission life because conversion remained at the heart of missionary work (Bolton, 1917). Missionaries assembled mission inhabitants on a daily or weekly basis to teach them doctrines of the Roman Catholic Church and how to lead lives pleasing to God. At the same time, missions facilitated the use of the native labor force by Spanish land owners (Langer and Jackson, 1995; Cushner, 2006; Knight, 2002). Furthermore, missionaries contributed to the cultural assimilation of the natives. "The importance of the [missions] goes beyond conversion to Christianity. They represent the attempt to change not only a belief

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system but fixed, traditional ways of behaving" (Cushner, 2006). Missionaries forced natives to cover their bodies with clothes, and to give up polygamous relationships. They also imposed a strict, daily schedule of work and prayer to assure the mission's sustenance and missionaries' control over the natives. Besides, the friars believed that life as a "good Christian" naturally included a disciplined lifestyle of work and prayer (Ricard, 1966: 212). The missions introduced the European perception of time and work, of dividing time into hours and minutes, and splitting the day into work and leisure time. Conversion, cultural assimilation, and economic exploitation went hand in hand (Langer and Jackson, 1995).

In structural aspects, Mendicant and Jesuit missions were not systematically different. Due to the limited number of missionaries and the low population density, the mission system was the most efficient way of gaining control and converting the largest number of people. From the point of view of both Mendicant and Jesuit missionaries, conversion remained the primary purpose of missions.

2.3 Differences between Mendicant Orders and Jesuits

The early histories of missionary orders "shaped their approaches to conversion and their views of the people they wished to convert" (Wade, 2008: XIV). The Mendicant orders (i.e. the Franciscan, Dominican and Augustinian orders) were founded in the 13th century by men who rejected the Catholic churchmen's opulent and decadent lifestyles, and lack of education (Lawrence, 1994: 3, 9). Mendicant orders took the stance that wealth inevitably corrupts Christians, and leads them away from a lifestyle pleasing to God. To become a good Christian, one was therefore urged to emulate the Vita Apostolica, "the life of the disciples of Jesus as it was revealed in the Gospels: a life of poverty devoted to evangelizing the unconverted in which the missionaries were supported by alms" (Lawrence, 1994: 32). The key idea of the Mendicant way of life is that poverty makes Christians free to lead better lives, and to gain salvation in the afterlife. Unlike other orders, Mendicant orders as a whole, not only the individual members, commit to poverty.

Mendicant orders had an egalitarian organization at their heart. While friars owed obedience to their superior, all superiors were democratically elected and could be dispelled by the friars or their elected representatives. Certain friars were elected to visit monasteries, and to judge possible wrongdoings of their fellow monks and superiors.

The Jesuit order was founded in a different context and with different values. It

Figure 1: Catholic Missions in Colonial Mexico, 1524-1810

Catholic Mission Stations in Colonial Mexico, 1524 - 1810

Mendicant orders
● Franciscan mission
■ Dominican mission
▲ Augustinian mission

Jesuit order
☆ Jesuit mission
⊗ Mexico City
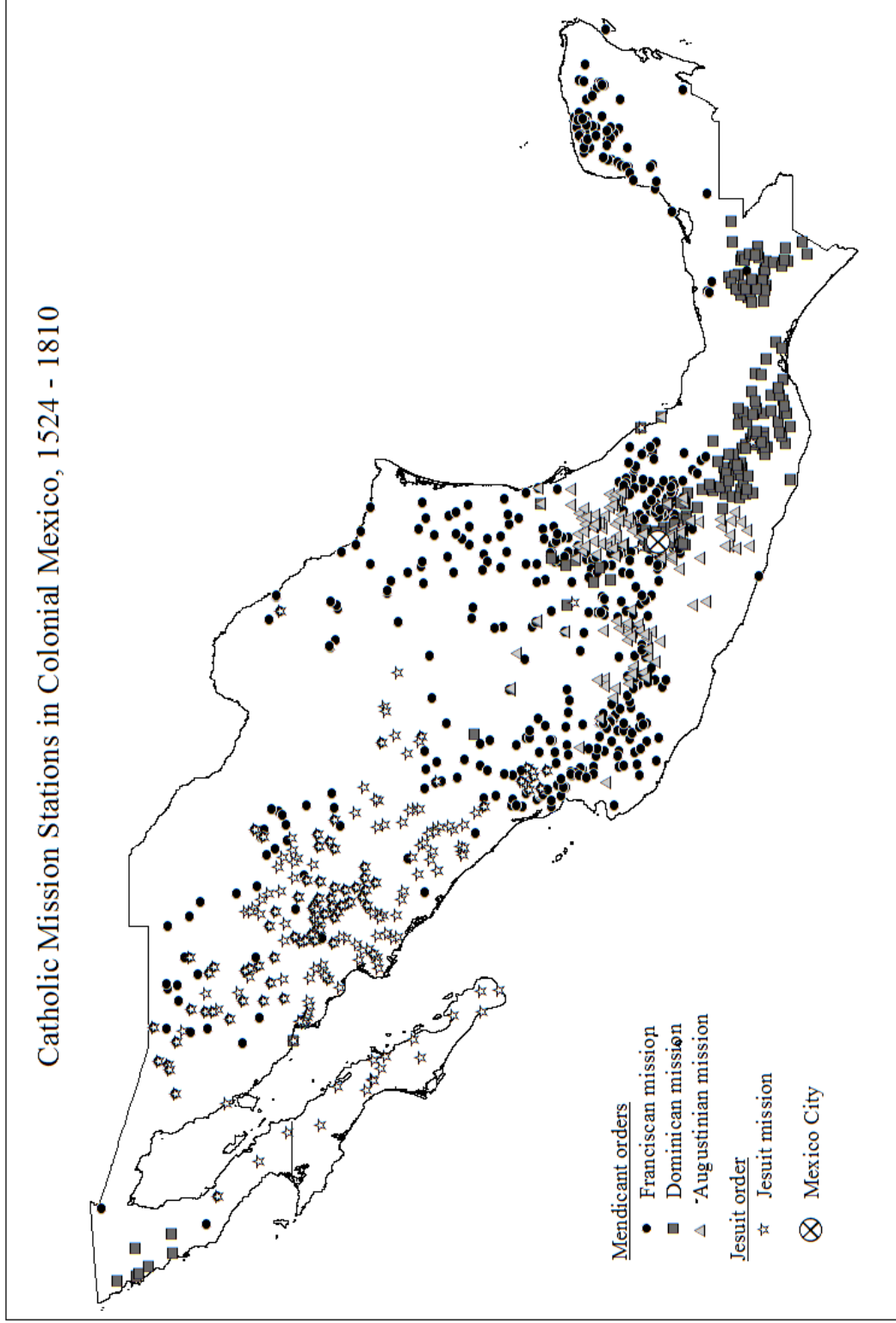
1 All missions Fig 1 in paper.png

Notes: The figure shows the location of 1145 historical missions established by a Mendicant order (Franciscan, Dominican, or Augustinian order) or the Jesuit order.

was founded shortly after the Protestant Reformation in 1540 to help maintain the influence of the Roman Catholic Church in Europe. The founder, Ignatius of Loyola, intended to build a group of well-trained priests who stood in the pope's service and served his purposes. Jesuits were directly answerable to the pope, and, unlike any other order, Jesuits vowed direct obedience to him. The individual Jesuits vowed to have no private property, but - unlike Mendicant orders - the order as a whole did not commit to remain poor. The Jesuit order endorsed economic wealth and influence as important means to serve the interests of the Church. The Jesuit order became an important land owner in Mexico. All founding members of the Jesuit orders held degrees from the renowned university in Paris (Hoepfl, 2004: 9). Their excellent education allowed them to mix in the best society. Jesuits soon gained influence in the political and economic spheres of society. They acquired positions as confessors to Catholic princes and leading figures of the society (Hoepfl, 2004: 16). Whereas the Mendicant orders were organized on egalitarian principles, the Jesuit order concentrated power in the hands of few. The Jesuits' *padre general* was elected for life, and could then not be held accountable (Aviles and Hoover, 1997). He had the power to staff all other positions of importance, and had power to carry out laws.

The Mendicant emphasis on poverty led these orders to esteem, even to romanticize, the simple living conditions of the native population. In the beginning, the Mendicants considered the Mexican natives' ways of life superior to traditional Spanish culture because the natives seemed to live lives uncorrupted by money and greed, in perfect harmony with the Mendicant ideal of poverty. Initially, Mendicant orders naively cherished utopian hopes of creating the perfect Christian egalitarian community among the Mexican natives (Phelan, 1970). These hopes dissipated soon in the realities of the Spanish conquest and native resistance to conversion. Nevertheless, Mendicant orders still advocated equal opportunities between colonizers and colonized. They saw their educational institutions as a means to achieve "equality between Indians and Spanish through education" (MacLachlan, 1980: 126). In 1523, Franciscans opened the first school for natives in Texcoco. Later, a school in Mexico City was opened for native and Spanish orphans. (Ricard, 1966: 207). The Dominican Bartolomé de las Casas was among the most important defenders of native rights. His book "A Short Account of the Destruction of the Indies," published in 1552, was the first serious attempt to draw attention to the miserable living conditions of the native population in the Spanish land holdings (Griffin, 1992).

The Jesuits also founded missions, but their main focus was the establishment of educational institutions in cities to provide education for the colonial elite. The

Jesuits collected money from wealthy Mexican land owners, ostensibly for the establishment of missions, but these assets might have been invested elsewhere. "The fund's relative abundant assets [contrasts with] the poverty in which the missionaries lived who had to use all their energy and imagination to make ends meet [...]. The administration of the Fund turns out to be, at least, suspicious," (Negro and Marzal, 2005: 152). The Jesuits sought to strengthen the position of the Roman Catholic Church in Mexico. They gained influence in Mexican society through the provision of high-quality education to the Spanish and *criollo* youth. "The close connection between the Society of Jesus and the criollo elite rested on the order's educational contributions," (MacLachlan, 1980: 137). This was in line with "the [general Jesuit] educational vision [...] to offer capable and zealous leaders to the social order" (Cesareo, 1993: 26).

3   Data

3.1   Data on Missions

The main source of information on the locations of missions in colonial Mexico is a series of three volumes on political, economic and pre-Hispanic characteristics of colonial Mexico by historical geographer Peter Gerhard (Gerhard 1972; 1982; 1993). The author systematically describes in text format all historical municipalities of Mexico (New Spain). He provides names of missions, the respective order in charge of the mission, and each mission's start and end year. The exact locations of the historical missions (beyond the historical municipality) are not provided.

Based on the missions' names I find the exact geographic coordinates of the historical missions with the help of various sources. If the mission had become a present-day locality I find its coordinates in locality-level census data published by the Mexican Institute of Statistics and Geography (INEGI, 2000). Oftentimes, former missions had changed names or ceased to exist. In this case, I consult the Illustrated Atlas of Indian Villages of New Spain in 1800 (Tanck de Estrada, 2005) which includes maps and geographic coordinates of Indian villages. Some of these had originally been missions. I also consult the Historical Archive of Localities (INEGI, 2011), an online resource that provides lists of locality names that have ceased to exist, and former names of current localities. If these options failed, an Internet search helped to find details about a specific mission's history and its coordinates. In total, I have been able to geo-reference 95 percent of the missions compiled by Gerhard (1972; 1982; 1993). The data set contains 1,145 missions in

total.

I obtain a list of all localities in Mexico and locality-level information on outcome variables from census data of the year 2000 (INEGI, 2000).

3.2 Data on Control Variables

An important concern regarding the validity of results is that numerous factors may have affected both the missionaries' decision to establish a mission in a specific location and the location's long-term development potential. Omitting such factors from the specification would bias results. I therefore include a host of control variables in all specifications. In the following, I describe which variables are included, how they are defined, and the sources of relevant underlying data.

In the results tables, I refer to four categories of control variables: geography, climate, location, and pre-Hispanic characteristics. Geographic controls include distance to the nearest river, to the nearest lake, and to the ocean, altitude, longitude, latitude, and seven measures of soil quality. GIS data on the location of rivers and lakes in Mexico are obtained from USGS (2004). GIS data on the location of oceans are available from ESRI (1996). Distance to rivers, lakes and the ocean are likely to influence both missionaries' settlement decisions, and long-run development trajectories because access to water can secure livelihoods and facilitates transportation. It is therefore important to control for the presence of rivers and lakes.

Information on a locality's altitude, longitude, and latitude is taken from locality-level census data (INEGI, 2009). Not controlling for these factors could lead to biased results because longitude, latitude, and altitude are often correlated with a location's agricultural potential, and with distance to locations of economic importance. They may even be correlated with certain cultural characteristics. People living in high altitudes, for example, where resources are scarce and contact to foreigners limited may be less inclined to establish contact to missionaries.

I include seven measures of soil quality for agriculture from the Harmonized World Soil Database (FAO/IIASA/ISRIC/ISS-CAS/JRC, 2012) as a direct measure of agricultural potential. The data are highly disaggregated with data points for every 30 arc-second (about 1 km in Mexico). The seven measures of soil quality included in the dataset are: nutrient availability, nutrient retention capacity, rooting conditions, oxygen availability to roots, excess salts, toxicity, and workability of fields. Each measure takes a value between zero and seven, with zero indicating the least- and seven indicating the most-advantageous conditions for crop production. Table A.2 in the Appendix provides a description of each soil characteristic.

Table 1: Summary Statistics

	Full sample		No mission		Mission of any order		Mendicant mission		Jesuit mission	
# of missions	1145		0		1145		942		203	
# of localities	104437		95697		8740		8053		1269	
% of localities	100		91.63		8.36		7.71		1.21	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Outcome Variables										
Years of Schooling	4.14	1.70	4.09	1.66	4.75	2.01	4.71	2.02	4.59	2.27
Literacy	0.76	0.18	0.75	0.18	0.77	0.18	0.77	0.19	0.77	0.24
Secondary Education	0.19	0.16	0.18	0.16	0.25	0.19	0.25	0.19	0.24	0.20
Higher Education	0.01	0.04	0.01	0.04	0.03	0.07	0.03	0.07	0.03	0.06
Catholic	0.85	0.24	0.85	0.24	0.89	0.19	0.89	0.19	0.88	0.18
Climate										
Climate Group 1	0.03	0.16	0.02	0.15	0.03	0.18	0.03	0.16	0.10	0.30
Climate Group 2	0.02	0.15	0.02	0.15	0.03	0.16	0.01	0.09	0.16	0.37
Climate Group 3	0.01	0.12	0.01	0.12	0.02	0.13	0.00	0.07	0.11	0.31
Climate Group 4	0.01	0.08	0.01	0.09	0.00	0.05	0.00	0.05	0.01	0.07
Climate Group 5	0.09	0.28	0.09	0.28	0.08	0.27	0.07	0.26	0.08	0.27
Climate Group 6	0.07	0.26	0.08	0.27	0.04	0.19	0.04	0.19	0.02	0.14
Climate Group 7	0.08	0.27	0.08	0.28	0.03	0.17	0.03	0.17	0.01	0.09
Climate Group 8	0.10	0.30	0.10	0.30	0.05	0.05	0.05	0.22	0.00	0.00
Climate Group 9	0.02	0.14	0.02	0.15	0.01	0.11	0.01	0.08	0.05	0.22
Climate Group 10	0.02	0.14	0.02	0.13	0.02	0.15	0.02	0.15	0.03	0.18
Climate Group 11	0.03	0.18	0.03	0.17	0.05	0.22	0.06	0.23	0.03	0.18
Climate Group 12	0.07	0.26	0.07	0.26	0.10	0.30	0.11	0.31	0.04	0.20
Climate Group 13	0.05	0.23	0.05	0.23	0.05	0.22	0.06	0.23	0.02	0.14
Climate Group 14	0.03	0.16	0.03	0.16	0.02	0.15	0.02	0.14	0.02	0.13
Climate Group 15	0.08	0.27	0.07	0.26	0.12	0.32	0.13	0.34	0.00	0.00
Climate Group 16	0.00	0.06	0.00	0.07	0.00	0.03	0.00	0.03	0.00	0.00
Climate Group 17	0.01	0.10	0.01	0.10	0.01	0.08	0.01	0.08	0.00	0.04
Climate Group 18	0.08	0.27	0.08	0.27	0.07	0.26	0.07	0.25	0.12	0.32
Climate Group 19	0.01	0.08	0.01	0.08	0.01	0.07	0.01	0.08	0.00	0.00
Climate Group 20	0.03	0.16	0.03	0.16	0.03	0.18	0.04	0.19	0.03	0.16
Climate Group 21	0.06	0.23	0.06	0.23	0.08	0.27	0.09	0.28	0.08	0.26
Climate Group 22	0.06	0.24	0.06	0.24	0.09	0.28	0.09	0.29	0.07	0.25
Climate Group 23	0.03	0.16	0.02	0.15	0.05	0.22	0.06	0.23	0.00	0.00
Climate Group 24	0.02	0.12	0.02	0.13	0.01	0.07	0.00	0.07	0.03	0.17
Geography										
Altitude	1103.79	858.48	1085.27	863.84	1306.61	768.77	1366.16	740.39	916.70	822.99
Latitude	20.82	3.61	20.82	3.63	20.81	3.32	20.38	3.05	25.99	2.38
Longitude	-99.95	5.07	-99.94	5.10	-100.02	4.82	-99.35	4.38	-107.33	2.83
Distance to the nearest river	0.16	0.17	0.16	0.17	0.13	0.14	0.14	0.14	0.08	0.09
Distance to the nearest lake	0.85	0.64	0.86	0.64	0.75	0.61	0.75	0.60	0.80	0.62
Distance to the ocean	1.41	0.93	1.40	0.94	1.52	0.71	1.55	0.67	1.39	0.87
Soil Suitability for Agriculture										
Nutrient availability	1.19	0.58	1.19	0.58	1.14	0.64	1.16	0.66	1.01	0.22
Nutrient retention capacity	1.13	0.54	1.13	0.53	1.11	0.61	1.12	0.63	1.01	0.21
Rooting conditions	1.68	1.12	1.68	1.12	1.70	1.12	1.73	1.14	1.44	0.69
Oxygen availability to roots	1.68	1.12	1.68	1.12	1.70	1.12	1.73	1.14	1.44	0.69
Excess salts	1.09	0.51	1.09	0.51	1.07	0.58	1.08	0.60	1.02	0.23
Toxicity	1.08	0.49	1.08	0.48	1.09	0.59	1.10	0.61	1.00	0.18
Workability (constraining field management)	2.08	1.16	2.08	1.16	2.04	1.17	2.05	1.19	1.81	0.86
Location										
Distance to the US	6.70	2.52	6.71	2.55	6.67	2.14	6.81	2.13	4.80	1.57
Distance to Mexico City	5.10	3.99	5.15	3.98	4.64	4.00	4.10	3.62	10.91	2.80
Pre-Hispanic Characteristics										
Chichimeca	0.23	0.42	0.24	0.42	0.14	0.35	0.14	0.34	0.11	0.32
Triple Alliance	0.25	0.43	0.24	0.43	0.33	0.47	0.36	0.48	0.03	0.17
Yucatan	0.12	0.32	0.12	0.32	0.11	0.31	0.12	0.32	0.00	0.00
Area North	0.33	0.47	0.33	0.47	0.40	0.49	0.36	0.48	0.86	0.35
Area South	0.07	0.26	0.08	0.27	0.02	0.16	0.03	0.16	0.00	0.00
Distance to Pre-Hispanic Settlements	0.54	0.43	0.54	0.43	0.50	0.48	0.43	0.39	1.25	0.69
Conquest Delay	35.88	42.21	36.08	41.95	33.75	44.84	29.01	42.57	86.04	29.37

Notes: Table 1 shows summary statistics for the number of missions, for the outcome variables and the standard control variables that are used throughout the paper. Summary statistics are provided for different subsamples of localities: for all localities, localities without mission, localities with a mission established by any of the orders, localities with a mission established by a Mendicant order and localities with a mission established by the Jesuit order.

Climate control variables are based on highly disaggregated climate data produced by the Mexican Instituto Nacional de Estadistica y Geografia (INEGI, 2009). The data provide information on temperature and humidity conditions for each locality in Mexico. I define 24 different climate groups based on these conditions. Table A.1 in the Appendix provides details on each climate group's characteristics.[6]

Location relative to places of economic importance can affect economic prospects and the location of missions. In the case of Mexico, missionaries, who embarked from Mexico City, might have been more likely to select a site for a mission based on proximity to Mexico City. By contrast, proximity to the U.S. border, which was far from all population centers of the time, might have made missionaries less likely to establish a mission there. I therefore control for these variables. For this purpose, I produce simple GIS files with the location of Mexico City and the location of the border between the United States and Mexico. As coordinates for Mexico City, I use coordinates for the *Zocalo*, Mexico City's main square located in its center. I then link these GIS files with GIS data on the locations of all localities, and calculate distances.

As described in section 2.1 on page 5, the territory of current-day Mexico encompassed regions with strikingly different political structures, economic conditions, and pre-Hispanic education systems. Pre-Hispanic socioeconomic and political conditions may have affected long-term development, for example, because certain institutions, or cultural traits may have persisted over time. The location of missions may have been affected, for example, if population density or certain cultural traits made specific regions and groups especially attractive for missionaries. It is therefore important to carefully control for these factors.

I include indicator variables for five pre-Hispanic regions within Mexico: the Aztec territory in central Mexico, the Mayan region in southern Mexico, and the region of northern Mexico that was home to nomadic and semi-sedentary people, the so-called *Chichimeca* population. In addition, I define fourth and fifth regions: The fourth region encompasses the entire area south of the central Aztec territory that did not belong to the Mayan kingdom. The fifth region encompasses the entire area north of the Aztec territory except the region where the so-called *Chichimeca* groups resided. To assign each locality in my dataset to one of these areas, I digitize three maps showing the extent of each one from Gerhard (1972, 1982, 1993). Then,

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[6]For this paper, I combine a small number of climate categories because the number of localities in these categories was small. I combine the categories "very warm and dry" and "very warm and very dry" in one climate group. The latter contained 24 localities. I also combine the categories "semi-cold temperatures and subhumid conditions" with "semi-cold temperatures and humid conditions" and "semi-cold temperatures and semi-arid conditions". The two latter categories contained 19 and 21 localities respectively. This leaves 24 climate categories.

I combine information on the extent of each area with information on the location of localities.

The location of pre-Hispanic settlements is another manifestation of the distribution of pre-Hispanic economic strength. I control for distance to the nearest pre-Hispanic settlement and obtain information on the location of pre-Hispanic settlements from maps in Solanes Carraro and Vela Ramírez (2000). Then, I calculate each locality's distance to the nearest pre-Hispanic settlement.

The control variable named *conquest delay* is defined as the number of years that lay between Cortés' arrival in Mexico in 1519, and the year that Spanish military rule was established. This information reflects how many years a locality was exposed to Spanish colonial rule and institutions. It is also a measure of indigenous resistance to the colonizers. I collect data on the year of Spanish conquest for Mexico's 206 historical municipalities in 1786 from Gerhard (1972, 1982, 1993).

4   Results

4.1   Results for Missions of Any Order

In the following, I use the data set described in section 3 to examine whether long-run development outcomes differ among localities that had Mendicant missions, Jesuit missions, or no missions. Throughout the paper, I examine the relationship between the location of missions and five outcome variables. *Years of Schooling* measures the average years of schooling of the population above 15 years of age. *Literacy* is the share of the population above age 15 that is able to read. *Secondary Education* and *Higher Education* is the share of the population above age 15 that has received secondary and higher education. The outcome variable *Catholic* is the share of Catholics in the population.

I first estimate the average effect of missions of any order on outcome variables.

$$Outcome_i \;\; = \;\; \beta_1 + \beta_2 Mission of Any Order_i + \beta_3 X_i + \epsilon_i \tag{1}$$

The variable *Mission of Any Order$_i$* is an indicator variable that is 1 for all localities located within five kilometers of a historical mission. The main coefficient of interest is β_1. It indicates whether outcomes in locality i with a mission of any of the orders are significantly different from outcomes in localities without a mission. X_i includes a host of control variables, namely geographic conditions, climate, location, and pre-Hispanic characteristics. Standard errors here and in

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Table 2: Outcomes for Localities with Missions of Any Order

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
Mission of Any Order	0.66***	0.03***	0.07***	0.01***	0.02***
	(0.09)	(0.01)	(0.01)	(0.00)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.17	0.18	0.16	0.04	0.23

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

all following specifications are clustered at the level of the colonial municipality in 1786. There existed 206 colonial municipalities at the time. All control variables are described in detail in section 3.

Results in table 2 indicate that the people in localities with a historical mission of any order have significantly more years of schooling; a higher share of the population is able to read, has received secondary and higher education, and is Catholic.

4.2 Results for Mendicant and Jesuit Missions

As described in section 2.3, the missionary orders of colonial Mexico prescribed to different values which influenced their activities in Mexico. Hence, the results in table 2 may hide heterogeneity in the effects of missionary orders. In the next specification, I therefore compare outcomes in localities with missions run by Mendicant orders and by the Jesuit order to outcomes in localities without missions.

$$Outcome_i = \beta_1 + \beta_2 MendicantMission_i + \beta_3 JesuitMission_i + \qquad (2)$$
$$\beta_4 X_i + \epsilon_i$$

The variable *Mendicant mission$_i$* is an indicator variable that is 1 for all localities within five kilometers of a historical mission of the Mendicant orders, 0 otherwise. The variable *Jesuit mission$_i$* is defined accordingly. The main coefficients of interest are β_2 and β_3. β_2 compares the average outcome variables in localities with mis-

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Table 3: Outcomes for Localities with Mendicant and Jesuit Missions

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
Mendicant Mission	0.69***	0.03***	0.07***	0.01***	0.02***
	(0.09)	(0.01)	(0.01)	(0.00)	(0.01)
Jesuit Mission	-0.19	-0.04*	-0.01	0.00	0.03**
	(0.23)	(0.02)	(0.02)	(0.00)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.17	0.18	0.16	0.04	0.23

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

sions of Mendicant orders to localities without a mission. β_3 compares the average outcome variables in localities with missions of the Jesuit order to localities without a mission.[7] I include the full set of controls on climate, location, geographic and pre-Hispanic characteristics as in the previous specification.

Results in table 3 show that people in localities with Mendicant missions have on average more schooling, a higher share of the population is able to read, has received secondary and higher education, and is Catholic compared to localities without a mission. The coefficients of having a Jesuit mission are zero or negative for all educational outcomes and insignificant (negative and significant at the 10 percent level for *Literacy*). For a locality's share of Catholics, the Jesuit coefficient is positive and significant. The coefficients on *Mendicant mission* and *Jesuit mission* are significantly different from each other at the 1 percent level for all educational outcomes. They are not significantly different for the outcome *Catholic*.

Even though I control for geographic and climate factors, for location and pre-Hispanic characteristics, one might still be worried that the results might be explained by other factors that are not explicitly controlled for. In the next specification, I therefore include municipality fixed effects, I_m, for 2,340 municipalities in

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[7] This specification estimates the effect *per* Mendicant mission and *per* Jesuit mission, not the sum of these effects. The larger number of Mendicant missions compared to Jesuit missions should therefore not affect results.

Table 4: Outcomes for Localities with Mendicant and Jesuit Missions, Municipality Fixed Effects

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
Mendicant Mission	0.59***	0.03***	0.06***	0.01***	0.01***
	(0.05)	(0.00)	(0.01)	(0.00)	(0.00)
Jesuit Mission	0.07	0.00	0.01	0.00	0.03***
	(0.11)	(0.01)	(0.01)	(0.00)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Municipality Fixed Effects	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.38	0.45	0.33	0.13	0.39

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements and conquest delay (for more details see sections 3.2, A.1, and A.2). Municipality fixed effects for 2340 municipalities in the year 2000 are included. *** p<0.01, ** p<0.05, * p<0.1

the year 2000. This specification estimates coefficients based only on variation in outcomes and the location of missions within each municipality.

$$Outcome_i = \beta_1 + \beta_2 MendicantMission_i + \beta_3 JesuitMission_i + \qquad (3)$$
$$\beta_4 X_i + \beta_5 I_m + \epsilon_i$$

Results in table 4 show that the previous results are robust to the inclusion of municipality fixed effects. We see positive and highly significant coefficients for Mendicant missions. The coefficients on Jesuit missions are close to zero and insignificant for all outcomes except the share of Catholics which is positive and significant. The coefficients on Mendicant mission and Jesuit mission are significantly different from each other at the 1 percent level for all educational outcomes. The coefficient on Jesuit mission is significantly higher than the coefficient on Mendicant mission at the 10 percent level for the outcome *Catholic*.

4.3 Results for Missions of Each Order

We have seen that three Mendicant orders were present in colonial Mexico: the Franciscans, Dominicans, and Augustinians. These orders are part of the same monas-

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tic tradition and share many values. It would now be interesting to see whether their estimated effects are similar. In the following, I therefore replace the indicator variable *Mendicant mission* by three indicator variables: *Franciscan Mission$_i$*, *Dominican Mission$_i$*, and *Augustinian Mission$_i$*. *Franciscan Mission$_i$* is an indicator variable that is 1 for a locality if a mission of the Franciscan order is located less than five kilometers from this location. *Dominican Mission$_i$* and *Augustinian Mission$_i$* are defined accordingly. Specification 4 includes four indicator variables, one for each order, and the full set of control variables. Specification 5 is identical to specification 4 except that municipality fixed instead of pre-colonial zones fixed effects are included.

$$
\begin{aligned}
Outcome_i \quad = \quad & \beta_1 + \beta_2 FranciscanMission_i + \beta_3 DominicanMission_i + \\
& \beta_4 AugustinianMission_i + \beta_5 JesuitMission_i + \\
& \beta_6 X_i + \epsilon_i
\end{aligned} \tag{4}
$$

$$
\begin{aligned}
Outcome_i \quad = \quad & \beta_1 + \beta_2 FranciscanMission_i + \beta_3 DominicanMission_i + \\
& \beta_4 AugustinianMission_i + \beta_5 JesuitMission_i + \\
& \beta_6 X_i + \beta_7 I_m + \epsilon_i
\end{aligned} \tag{5}
$$

Tables 5 and 6 show results. We see that results are similar for the three Mendicant orders. Their estimated effects are positive and mostly significant. We can see that the Franciscan order has the largest estimated effect of the Mendicant orders.

Table 5: Outcomes for Localities with Franciscan, Dominican, Augustinian, and Jesuit Missions

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
Franciscan Mission	0.79***	0.04***	0.08***	0.02***	0.02**
	(0.09)	(0.01)	(0.01)	(0.00)	(0.01)
Dominican Mission	0.41*	0.01	0.04**	0.01**	0.02*
	(0.22)	(0.02)	(0.02)	(0.00)	(0.01)
Augustinian Mission	0.42***	0.00	0.05***	0.01***	0.01
	(0.10)	(0.01)	(0.01)	(0.00)	(0.01)
Jesuit Mission	-0.22	-0.05*	-0.01	-0.00	0.03**
	(0.24)	(0.02)	(0.02)	(0.00)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.17	0.18	0.16	0.04	0.23

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

4.4   Intermediate Outcomes

In this section, I examine whether we also observe an effect of missions on outcomes in an intermediate period. For this purpose, I collect data from the first census that was conducted in Mexico in 1895, 85 years after the end of the colonial period. The census information is available for 381 historical districts. I compute the share of the population that is able to read and write, and the share of the population that is Catholic. I geo-reference the locations of these historical districts, and compute the number of Mendicant and Jesuit missions that were located within each district. I then normalize the number of missions by district area in square kilometers, and estimate the effect of a Mendicant mission per square kilometer and the effect of a Jesuit mission per square kilometer on historical literacy rates and on the share of Catholics.

Table 7 shows results. The estimated effect of a Mendicant mission on literacy in 1895 is positive and highly significant. The estimated effect of a Jesuit mission is negative and not significant. This is consistent with results for current outcomes.

Table 6: Outcomes for Localities with Franciscan, Dominican, Augustinian, and Jesuit Missions, Municipality Fixed Effects

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
Franciscan Mission	0.64***	0.03***	0.07***	0.02***	0.02***
	(0.05)	(0.00)	(0.01)	(0.00)	(0.01)
Dominican Mission	0.25***	0.01	0.03***	0.01***	0.01**
	(0.05)	(0.00)	(0.01)	(0.00)	(0.00)
Augustinian Mission	0.53***	0.03***	0.05***	0.01***	0.00
	(0.07)	(0.01)	(0.01)	(0.00)	(0.01)
Jesuit Mission	0.05	0.00	0.00	0.00	0.03***
	(0.11)	(0.01)	(0.01)	(0.00)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Municipality Fixed Effects	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.38	0.45	0.33	0.13	0.39

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements and conquest delay (for more details see sections 3.2, A.1, and A.2). Municipality fixed effects for 2340 municipalities in the year 2000 are included. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

To compare the size of the effects for outcomes in 1895 and today, I multiply the mean of the variables describing the presence of Mendicant orders with the respective coefficients in 1895 and today.[8] The estimated effect of the average number of Mendicant missions on literacy today is an increase of 0.2 percentage points. The estimated effect of the average number of Mendicant missions on literacy in 1895 is an increase of 0.5 percentage points.

For the share of Catholics, the effect of a Mendicant mission is insignificant and negative. The effect of a Jesuit mission is positive but also insignificant. While the larger Jesuit coefficient is consistent with estimates for current outcomes, these results indicate that there is no significant relationship between the location of Mendicant and Jesuit missions and the share of Catholics in 1895. It is important to note, however, that at this time period, variation in Catholicism is limited; in 1895, the share of Catholics is nearly universal, above 99 percent in more than 75 percent of districts. Today, the share of Catholics lies at 82 percent or above in 75 percent of localities. A possible interpretation of these results is that the effect becomes visible only when alternative religious affiliations become more widely available, thus allowing for any higher level of loyalty to Catholicism among the population of former mission areas to be visible.

5 Robustness

5.1 Controlling for Pre-Hispanic Political, Institutional and Cultural Characteristics

As described in section 2.1, Mexican territory was home to numerous indigenous groups with distinct cultural and political characteristics. An important concern is that these differences affected both the distribution of missions and long-term development outcomes. So far, I include control variables on the pre-Hispanic political unity and distance to the nearest pre-Hispanic urban settlement as controls. In this section, I want to investigate this concern further. I thus include especially detailed controls on an area's pre-Hispanic political, institutional and cultural characteristics.

First, I include fixed effects for 117 indigenous languages within Mexico at the time of conquest. The distribution of indigenous languages is a useful proxy for

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[8] The average locality in 2000 has 0.077 Mendicant missions within 5 kilometers. The estimated effect lies at 0.03 (see Table 3). Hence, the estimated effect for a locality in 2000 with the average number of Mendicant missions lies at 0.077*0.03=0.002. The average district in 1895 has 0.0012 Mendicant missions per square kilometer. The estimated effect of a Mendicant mission per square kilometer lies at 4.542. The estimated effect for a district in 1895 with the average number of Mendicant missions per square kilometer lies at 0.0012*4.542=0.005.

Table 7: Intermediate Outcomes

VARIABLES	(1) Literacy	(2) Catholics	(3) Literacy	(4) Catholics
Number of Mendicant Missions per km²	4.542*** (1.683)	-0.266 (0.614)		
Number of Jesuit Missions per km²	-14.782 (16.574)	5.222 (6.045)		
Number of Mendicant Missions per km² (standardized)			0.0097*** (0.0036)	-0.0006 (0.0013)
Number of Jesuit Missions per km² (standardized)			-0.0036 (0.0041)	0.0013 (0.0015)
Geographic Controls	yes	yes	yes	yes
Climate	yes	yes	yes	yes
Location	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes
Observations	371	371	371	371
R-squared	0.561	0.376	0.5613	0.3760

Notes: The table reports OLS estimates. The unit of observation is the historical municipality of 1895. Standard errors are not clustered as the unit of observation is comparable to the administrative level that standard errors are clustered at in the other specifications. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

pre-Hispanic cultural variation within Mexican territory because groups that share a language are likely to share cultural characteristics. These data are taken from a map of the distribution of indigenous languages before the start of Spanish conquest in 1517 (Gerhard, 1972).

I also include two sets of fixed effects for the political entities of two historical eras that preceded the conquest: one set for the Late Post-Classical period (c. 1200-1521), and another set for the Early Post-Classical period (c. 900-1200). These societies shared political, institutional, and cultural characteristics. The data are collected from two maps in Solanes Carraro et al. (2000: 37, 39).

Finally, I include variables measuring distance to pre-Hispanic urban settlements of three types: settlements of regional importance, commercial centers, and capitals of Aztec Empire tributaries. These are settlements documented for the duration of the Late Post-Classical period (c. 1200-1521). In addition, I include two variables measuring distance to the nearest settlement in two earlier eras: in the Early Post-Classical period (c. 900-1200) and in the Pre-Classical and Classical period (before 900). These data are collected from maps in Solanes Carraro et al. (2000: 15, 37, 39, 63).

Table 8 reports results. Odd-numbered columns show results for the baseline specifications; even-numbered columns show results for the augmented specifications. Point estimates remain stable indicating that previous results are robust to the inclusion of these additional control variables.

5.2   Duration of Missions

In further specifications, I explore whether the results could be driven by the fact that Jesuits stayed in Mexico for a shorter period of time (see Figure 2). I estimate a model that includes both the main effect of a mission and the number of years that a mission existed.

Table 9 reports results. The main effect of the Mendicant missions remains significant in all specifications, except for literacy. The estimated effect of one additional Mendicant mission year is also positive and significant for the educational outcomes, and not significantly different from zero for the share of Catholics in the population.

The main effect of the Jesuit order remains insignificant in all specifications except for *Literacy* where it is negative and significant at the 10 percent level. The estimated effect of one additional Jesuit mission year is insignificant for educational outcomes, and positive and significant for the share of Catholics in the population.

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Table 8: Additional Controls for Pre-Colonial Political, Institutional, and Cultural Conditions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Years of Schooling		Literacy		Secondary Education		Higher Education		Catholic	
Mendicant Mission	0.69***	0.61***	0.03***	0.03***	0.07***	0.06***	0.01***	0.01***	0.02***	0.02***
	(0.09)	(0.06)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Jesuit Mission	-0.19	0.02	-0.04*	-0.00	-0.01	0.00	0.00	0.00	0.03**	0.04***
	(0.23)	(0.13)	(0.02)	(0.01)	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Distance to nearest										
Regional Center of Late Post-Classical Period (c. 1200-1521)		yes		yes		yes		yes		yes
Commercial Center of Late Post-Classical Period (c. 1200-1521)		yes		yes		yes		yes		yes
Triple Alliance Tributaries of Late Post-Classical Period (c. 1200-1521)		yes		yes		yes		yes		yes
Center of Early Post-Classical Period (c. 900-1200)		yes		yes		yes		yes		yes
Center of Pre-Classical and Classical Period (before 900)		yes		yes		yes		yes		yes
Fixed Effects										
Advanced Societies of Late Post-Classical Period (c. 1200-1521)		yes		yes		yes		yes		yes
Advanced Societies of Early Post-Classical Period (c. 900-1200)		yes		yes		yes		yes		yes
Pre-Colonial Language Groups (c. 1517)		yes		yes		yes		yes		yes
Observations	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437
R-squared	0.17	0.26	0.18	0.31	0.16	0.22	0.04	0.07	0.23	0.28

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). A description of the additional pre-Hispanic control variables is provided in section 5.1. *** p<0.01, ** p<0.05, * p<0.1

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Taking the values in table 9 at face value, I calculate the estimated effects of Mendicant and Jesuit orders after 100 and 150 years (table 10).[9] The estimates show larger effects for the Mendicant orders. The exception is for the effect on the share of Catholics in the population, which is larger for the Jesuit order compared to the Mendicant order.

Figure 2: Foundations of Missions by Order and Year, 1524-1810
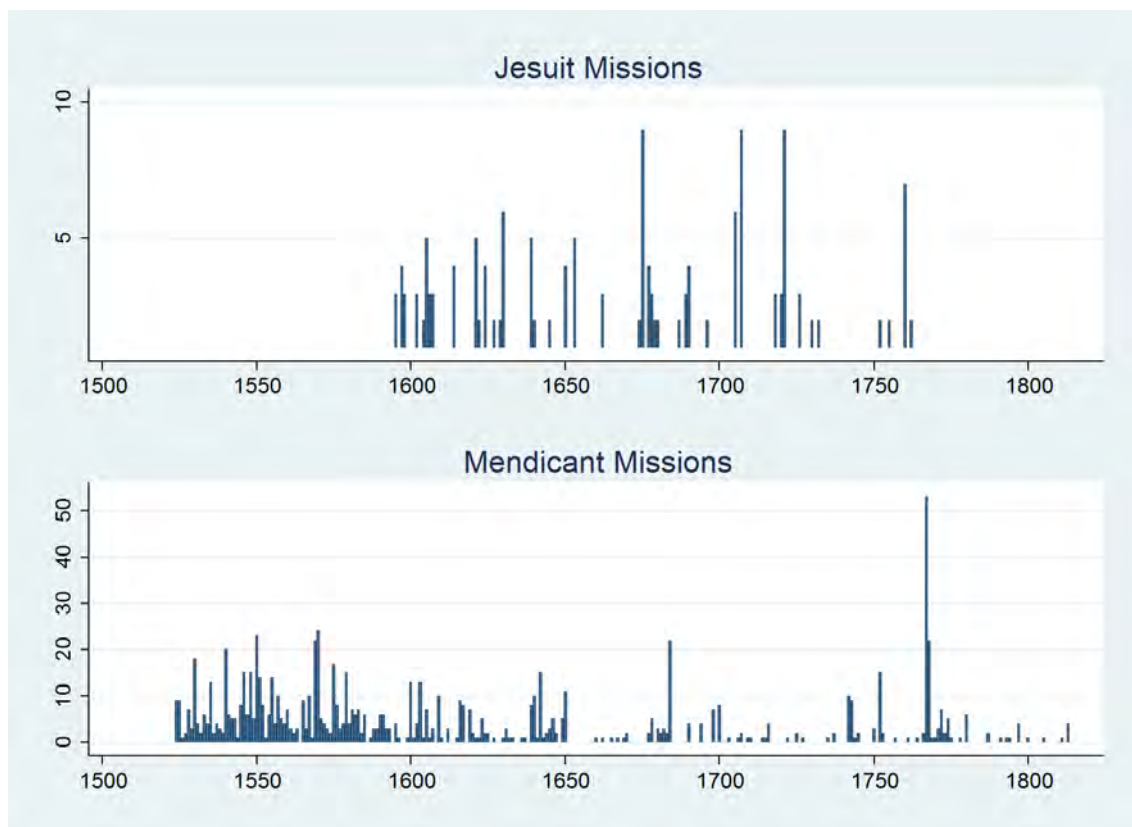
Notes: The figure shows bar charts of the number of missions founded in each year betwen 1524 and 1810 by the Mendicant and the Jesuit orders.

5.3 Sample Restricted to Localities With a Mendicant or a Jesuit Mission

In this section, I compare the effects of Mendicant and Jesuit missions in a sample restricted to localities with either a Mendicant or a Jesuit mission. This specification accounts for all unobserved differences that could set mission locations apart from all other locations.

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[9]The mean duration of missions is 128 years.

Table 9: Controlling for Mission Duration

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
Mendicant Mission	0.4082***	0.0050	0.0493***	0.0108***	0.0252***
	(0.1368)	(0.0119)	(0.0123)	(0.0032)	(0.0071)
Mendicant Duration	0.0022***	0.0002**	0.0002**	0.0000*	-0.0000
	(0.0008)	(0.0001)	(0.0001)	(0.0000)	(0.0001)
Jesuit Mission	-0.2683	-0.0824*	-0.0129	0.0057	0.0000
	(0.4613)	(0.0496)	(0.0360)	(0.0097)	(0.0203)
Jesuit Duration	0.0021	0.0006	0.0002	-0.0000	0.0004***
	(0.0034)	(0.0004)	(0.0003)	(0.0001)	(0.0001)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.1747	0.1796	0.1598	0.0422	0.2329

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The variables Mendicant Duration and Jesuit Duration control for the number of years that a mission was run by a Mendicant or the Jesuit order. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 10: Estimated Effects of Mendicant and Jesuit Missions After 100 and 150 Years

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(5) Catholic
After 100 Years					
Mendicant Mission	0.628	0.025	0.069	0.011	0.025
Jesuit Mission	-0.058	-0.022	0.007	0.006	0.040
After 150 Years					
Mendicant Mission	0.738	0.035	0.079	0.011	0.025
Jesuit Mission	0.047	0.008	0.017	0.006	0.060

Notes: This table calculates the estimated effects of Mendicant and Jesuit missions after 100 and 150 years based on the coefficients on Mendicant Mission, Mendicant Duration, Jesuit Mission and Jesuit Duration in table 9.

Table 11 reports results. As the sample only includes localities with either a Mendicant or a Jesuit mission, I only estimate the effect of Mendicants. In the restricted sample, the positive signs indicate that educational outcomes are on average higher in localities with a Mendicant mission compared to a locality with a Jesuit mission. This difference is statistically significant for two outcome variables: *Years of Schooling* and *Secondary Education*.

5.4 Alternative Standard Errors

In the following, I explore the robustness of results to clustering standard errors at different levels: historical municipality of 1786, district of 1895, municipalities in 2000 and federal state in 2000. There are 206 historical municipalities in 1786, 382 districts in 1895, 2340 municipalities in 2000, and 32 federal states in 2000. Table 12 shows that coefficients remain statistically significant when using these different levels. In table 13, I show results with standard errors clustered spatially using Conley standard errors (Conley, 1999; Hsiang, 2010). Columns 1 to 5 show results when assuming spatial autocorrelation within five distances: 100 km, 200 km, 300 km, 400 km, and 500 km. Standard errors are slightly larger in column 2 compared to column 1, but coefficients remain highly significant in all specifications.

Table 11: Sample Restricted to Localities With a Mendicant or Jesuit Mission

VARIABLES	Years of Schooling (1)	Literacy (2)	Secondary Education (3)	Higher Education (4)	Catholic (5)
Mendicant Mission	0.514**	0.037	0.055***	0.004	0.022
	(0.224)	(0.026)	(0.021)	(0.006)	(0.016)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Sample: Restricted to Localities with					
Either a Mendicant or a Jesuit Mission	yes	yes	yes	yes	yes
Observations	8,158	8,158	8,158	8,158	8,158
R-squared	0.161	0.234	0.129	0.035	0.224

Notes: The table reports OLS estimates. The unit of observation is a locality. The sample has been restricted to include only localities that had either a Mendicant or a Jesuit mission. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

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Table 12: Clustering Standard Errors at Different Levels

VARIABLES	(1)	(2)	(3)	(4)
		Years of	Schooling	
Mendicant Mission	0.69***	0.69***	0.69***	0.69***
	(0.09)	(0.06)	(0.05)	(0.10)
Jesuit Mission	-0.19	-0.19	-0.19	-0.19
	(0.23)	(0.20)	(0.16)	(0.27)
Geographic Controls	yes	yes	yes	yes
Climate	yes	yes	yes	yes
Location	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes
Level of SE Clustering				
historical municipality of 1786	yes			
district of 1895		yes		
municipality of 2000			yes	
federal state of 2000				yes
Number of Cluster	206	382	2340	32
Observations	104,437	104,437	104,437	104,437
R-squared	0.17	0.17	0.17	0.17

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at different levels (see information in table) and are shown in parentheses. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 13: Clustering Standard Errors Assuming Spatial Autocorrelation

VARIABLES	(1)	(2)	(3)	(4)	(5)
			Years of Schooling		
Mendicant Mission	0.69***	0.69***	0.69***	0.69***	0.69***
	(0.09)	(0.13)	(0.13)	(0.13)	(0.12)
Jesuit Mission	-0.19	-0.19	-0.19	-0.19	-0.19
	(0.21)	(0.19)	(0.21)	(0.20)	(0.19)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Conley Standard Errors Assuming Spatial Autocorrelation Within					
100 km	yes				
200 km		yes			
300 km			yes		
400 km				yes	
500 km					yes
Observations	104,437	104,437	104,437	104,437	104,437
R-squared	0.01	0.01	0.01	0.01	0.01

Notes: The table reports OLS estimates. The unit of observation is a locality. The standard errors are Conley (1999) standard errors assuming spatial autocorrelation within a 100 to 500 km radius. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

5.5 Instrumental Variable Estimation - Initial Directions of Missionary Orders into Unknown Territory

In this section, I propose an instrumental variable estimation strategy to further address the potential endogeneity of mission locations. The instrumental variable is based on the observation that the final geographical distribution of missions at the end of the colonial period was affected by the directions missionary orders initially took when setting out from Mexico City.

The first members of each missionary order who came to Mexico initially went to the capital Mexico City. From there, they sent out missionary expeditions in

different directions to establish missions among the native population. For the rest of the colonial period, the orders tended to keep moving in these directions even though geographic and ethnic characteristics varied along the way. Figures 3 to 6 show maps of the directions of each order's 10 first missions from Mexico City and each order's final distribution.

The exogeneity of the instruments depends on the assumption that missionaries have not systematically chosen directions leading them to especially advantageous parts of Mexico. A discussion of the motivation behind mission location decisions can be found in section 5.6.2.

5.5.1 Defining Initial Directions

The Franciscan order left Mexico City heading west, northeast and southeast. Their main ambition was to reach the "uncivilized territories of the north" (Ricard 1966: 66). The second order to arrive in Mexico, the Dominicans, headed south because their "expansion [...] was limited and conditioned by that of the Franciscans" (Ricard, 1966: 66). The Augustinian order left Mexico City in several directions that were still unoccupied by the Franciscan and Dominican orders and "squeezed their missions into the gaps left by the Franciscans and Dominicans" (Ricard, 1966: 68). They went into the west, northeast and southwest while remaining in the center. The Jesuits left Mexico City in a northwesterly direction because this region was not yet occupied by the other missionary orders.

To define each order's initial directions I identify each order's 10 earliest establishments in the context of a missionary expedition. Then, I assign these to directions. This is simple for the Dominican and the Jesuit orders which left Mexico City in one direction only. The Augustinians and Franciscans went into three directions each. To assign each of the Augustinian and Franciscan missions to the correct direction, I use the classification of missionary directions as documented by Ricard (1966: table 2). Then, I draw two lines for each direction, each starting at Mexico City and going through the outermost missions of each direction to the limits of the Mexican territory (Fig. 2 - 5). The area between the lines is then used to instrument for the final distribution of missions.

Table 14: Initial Directions

	Names of Directions (Ricard, 1966)	Identifier in map
Dominican Directions	Southern Direction	
Augustinian Directions	Southern Thrust	A1
	Northern Thrust	A2
	Westward Thrust	A3
Franciscan Directions	Puebla-Tlaxcala group	F1
	Hidalgo-Querétaro group	F2
	Michoacán group	F3
Jesuit Directions	North-western Direction	

Notes: The table shows the initial directions that each order took after leaving Mexico City. The names of directions are taken from Ricard (1966). The identifiers in the last column refer to information in figures 4 and 5.

For the Franciscan order, Ricard identifies three early directions: the southeast (the Puebla-Tlaxcala group), the northeast (the Hidalgo-Querétaro group), and the northwest (the Michoacán group) (Ricard, 1966: 76). For the Augustinian order, he lists the "southern thrust, [...] the northern thrust [...], [...] the westward thrust". (Ricard, 1966: 77). Geographic names for the Franciscan directions corroborate that the 10 earliest missions were part of the early missionary expeditions. I only include establishments that lie outside a 40-mile zone around Mexico City because establishments in the vicinity of Mexico City were not part of the orders' missionary expeditions. Missionary expeditions consisted of more than one mission. In some cases more than one mission was established in the same year as the 10th mission. Because it was not possible to determine which of the missions were built earlier in the year, I include them all.

Figure 3: 10 First Dominican Missions, Initial Directions, and Final Distribution

3 Dominican mission area.png
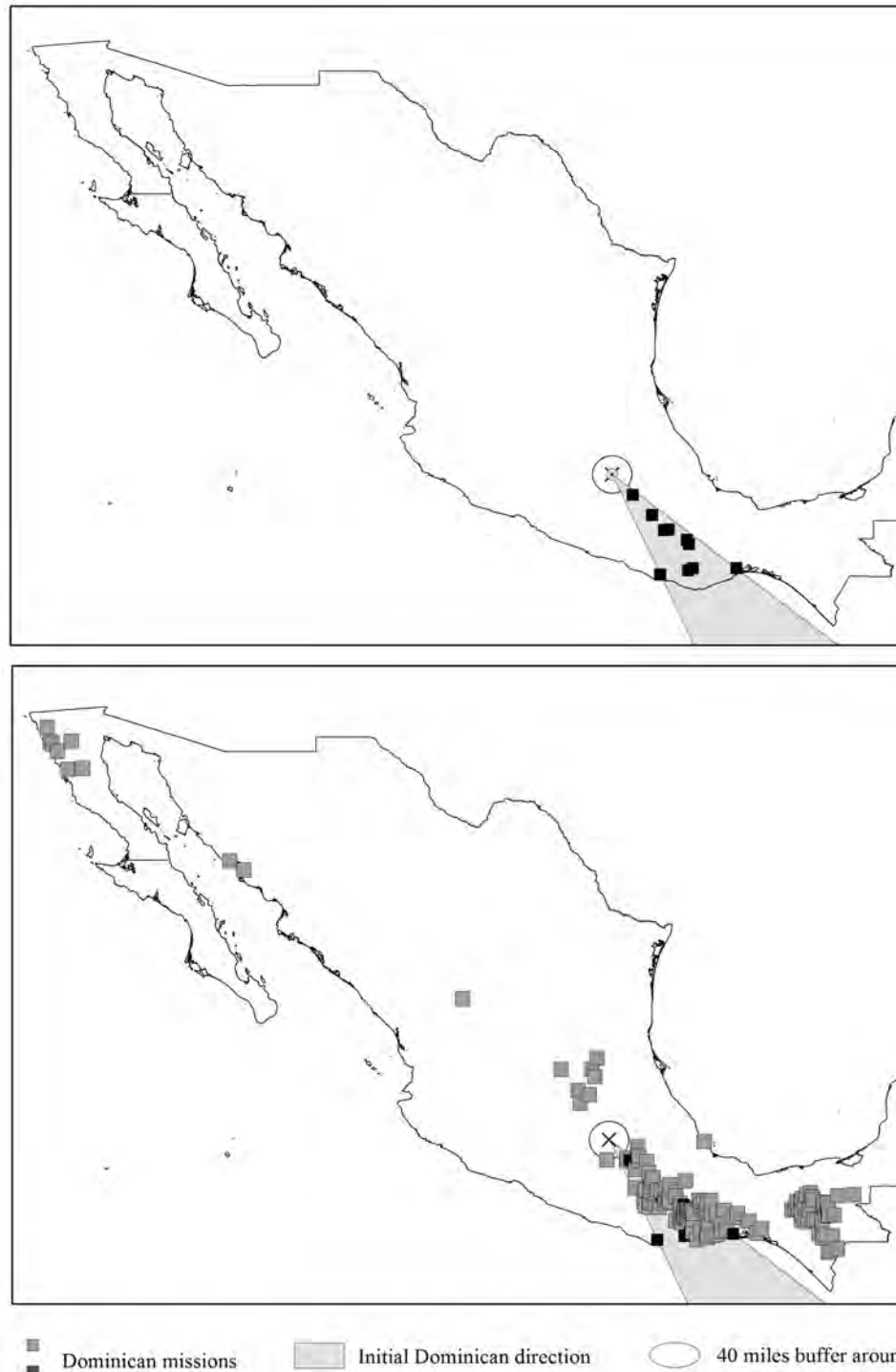
Notes: The figure shows the first 10 missions established by the Dominican order after leaving Mexico City (upper panel). The first 10 missions are used to define the order's early directions (shaded areas). The lower panel shows the order's final distribution.

Figure 4: 10 First Augustinian Missions, Initial Directions, and Final Distribution
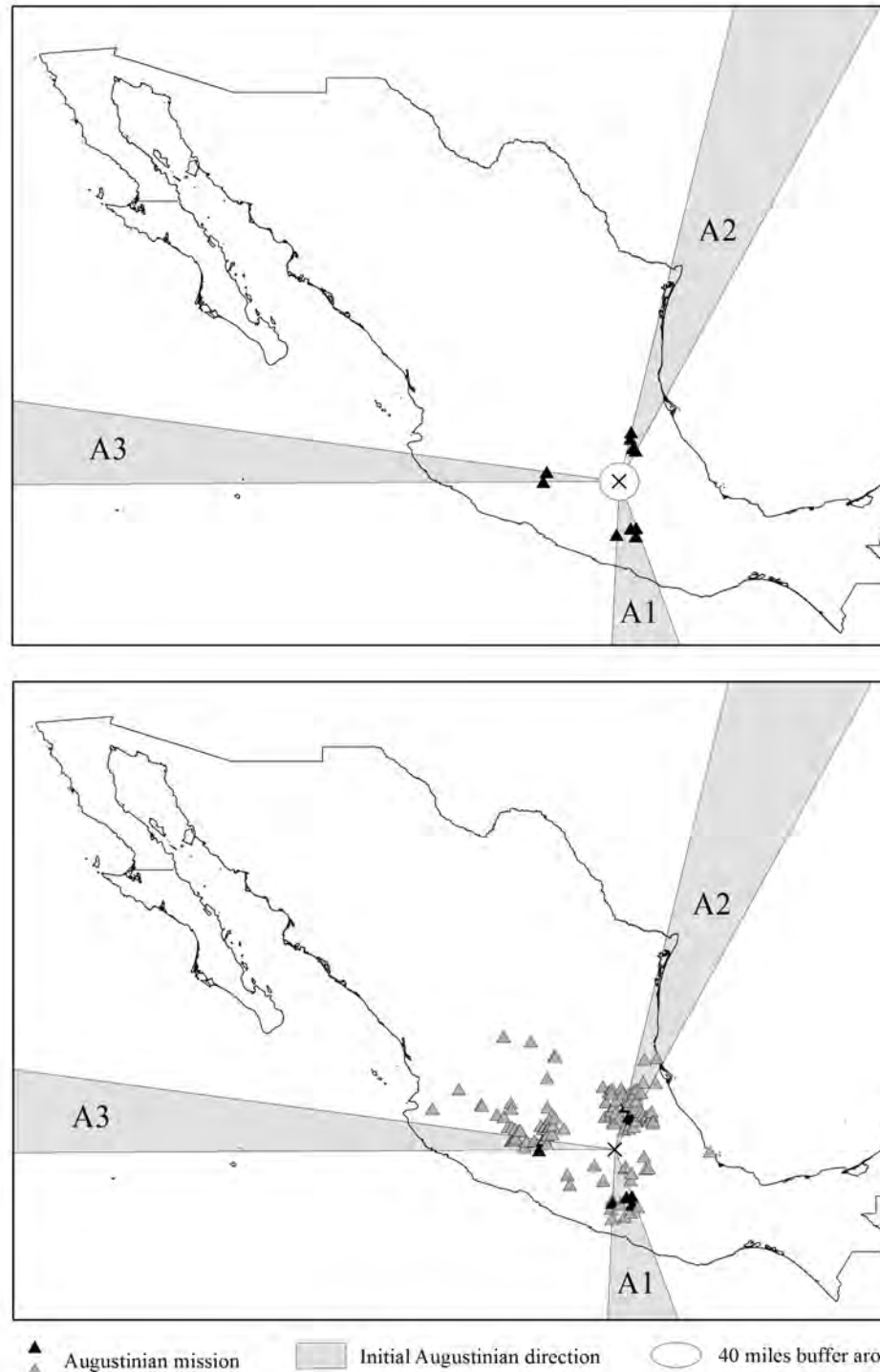
4 Augustinian mission area.png

Notes: The figure shows the first 10 missions established by the Augustinian order after leaving Mexico City (upper panel). The first 10 missions are used to define the order's early directions (shaded areas). The lower panel sho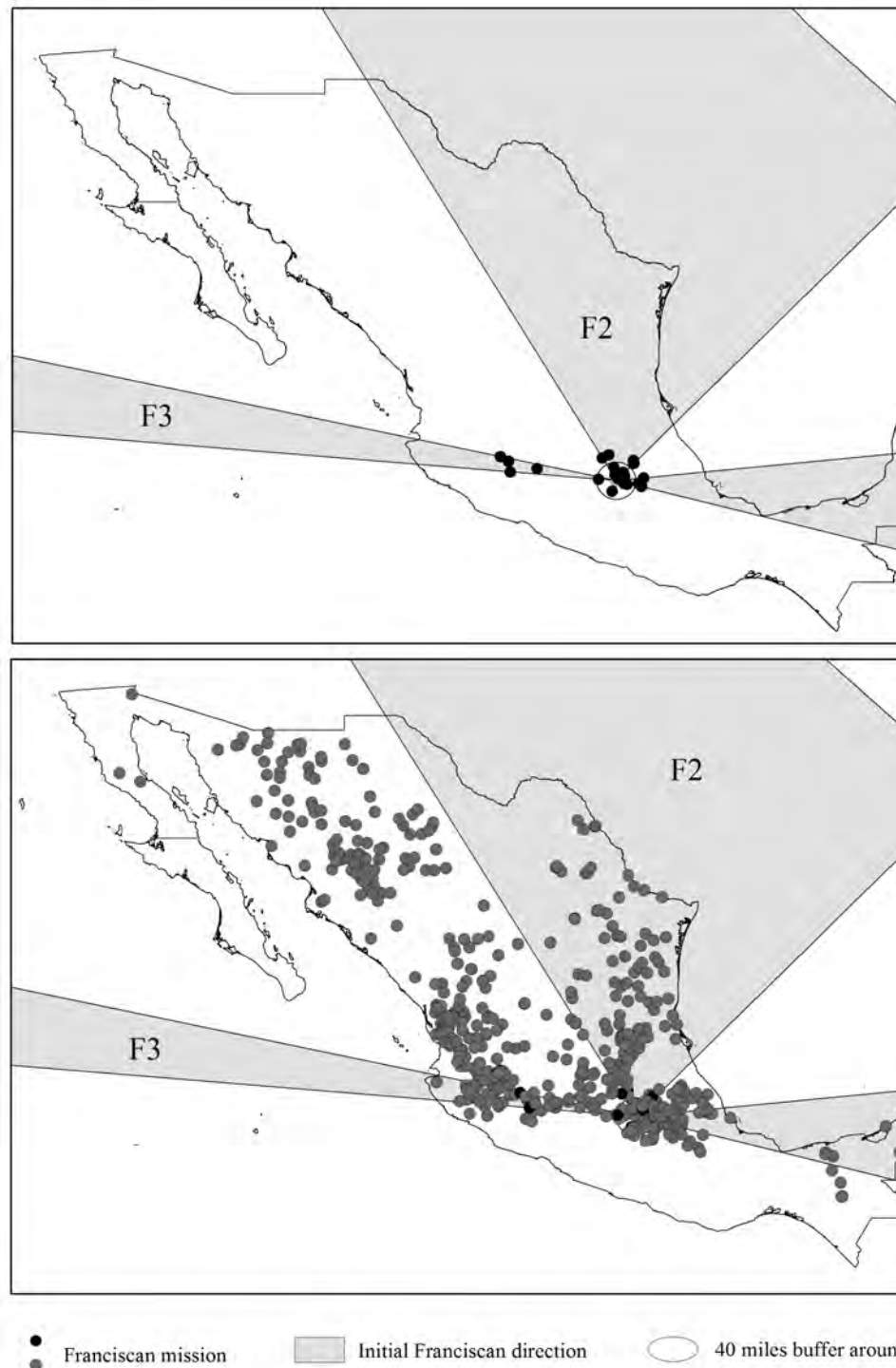ws the order's final distribution. A1, A2, and A3 are identifiers for the order's early directions as described by Ricard (1966)and in table 14.

Figure 5: 10 First Franciscan Missions, Initial Directions, and Final Distribution

5 Franciscan mission area.png

Notes: The figure shows the first 10 missions established by the Franciscan order after leaving Mexico City (upper panel). The first 10 missions are used to define the order's early directions (shaded areas). The lower panel shows the order's final distribution. F1, F2, and F3 are identifiers for the order's early directions as described by Ricard (1966) and in table 14.

Figure 6: 10 First Jesuit Missions, Initial Directions, and Final Distribution

6 Jesuit mission area.png
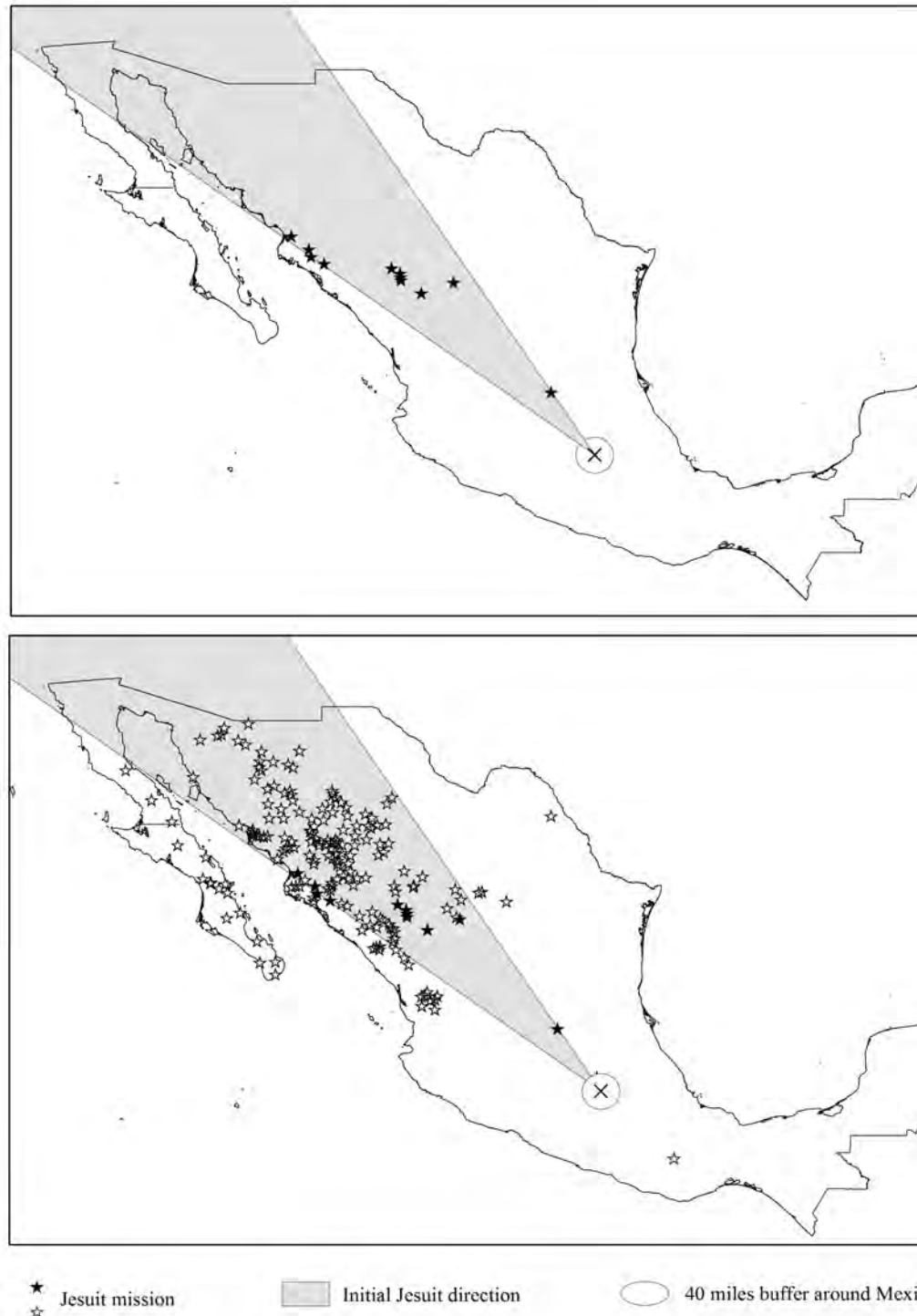
Notes: The figure shows the first 10 missions established by the Jesuit order after leaving Mexico City (upper panel). The first 10 missions are used to define the order's early directions (shaded areas). The lower panel shows the order's final distribution.

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5.5.2 Instrumental Variable Estimation Results

I define the indicator variable *Jesuit area* that is one for all localities that lie within the direction lines of the Jesuit order. The indicator variable *Mendicant area* is one for all localities that lie within the direction lines of one of the Mendicant orders. I use *Jesuit area* as an instrumental variable for the variable *Jesuit mission* that is one for a locality if a historical mission of the Jesuit order was located less than five kilometers away. I use *Mendicant area* to instrument for the variable *Mendicant mission* that is one for a locality if a historical mission of one of the Mendicant orders is located less than five kilometers away. All control variables are the same as in previous regressions.

I propose the following First Stage regressions:

$$
\begin{aligned}
MendicantMission_i \;=\;& \gamma_0 + \gamma_1 MendicantArea_i + \gamma_2 JesuitArea_i + \\
& \gamma_3 Z_i + \epsilon_i
\end{aligned}
\tag{6}
$$

$$
\begin{aligned}
JesuitMission_i \;=\;& \delta_0 + \delta_1 MendicantArea_i + \delta_2 JesuitArea_i + \\
& \delta_3 Z_i + \epsilon_i
\end{aligned}
\tag{7}
$$

The First Stages regressions in table 15 show a positive and significant coefficient of each instrument for its respective endogenous variable. Additionally, the instrumental variable $Jesuit\ Area_i$ is negative and highly significant for the endogenous variable $Mendicant\ Mission_i$. The instrumental variable $Mendicant\ Area_i$ is positive and significant for the endogenous variable $Jesuit\ Mission_i$. The size of the coefficient, however, is less than one third of the coefficient of $Jesuit\ Area_i$ in the same regression. I then test for weakness of these instruments. The Kleibergen-Paap test statistic for underidentification is 8.47 (p-value: 0.0036), rejecting the null hypothesis that the model is underidentified. The Kleibergen-Paap test for weak identification is 4.66 and indicates a possible bias of the IV estimator relative to OLS of below 15 percent.[10]

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[10]As I instrument with two instruments for two endogenous variables I do not use the usual F-test. As I do not assume i.i.d. errors but cluster at the level of the colonial municipality I also do not use the Cragg-Donald Eigenvalue statistic. Instead, I use the Kleibergen-Paap Wald F statistic. The critical value for this statistic is based on the Cragg-Donald Eigenvalue statistic Stock and Yogo (2005).

Table 15: First Stages Regressions

VARIABLES	(1) Mendicant Mission	(2) Jesuit Mission
Mendicant Area	0.035***	0.006**
	(0.012)	(0.003)
Jesuit Area	-0.018	0.020**
	(0.013)	(0.008)
Geographic Controls	yes	yes
Climate	yes	yes
Location	yes	yes
Pre-Hispanic Controls	yes	yes
Observations	104,437	104,437
R-squared	0.044	0.073
Underidentification Test	8.47	
Weak Identification	4.66	

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). The underidentification test is the Kleibergen-Paap rk LM statistic. The p-value of rejecting the null hypothesis of underidentification lies at 0.0036. The Weak Identification test is the Kleibergen-Paap rk Wald F statistic. It indicates a possible bias of IV results compared to OLS results of below 15 percent. *** p<0.01, ** p<0.05, * p<0.1

$$\hat{Outcome}_i = \lambda_1 Mendic\hat{ant}Mission_i + \lambda_2 Jesuit\hat{M}ission_i +$$
$$\lambda_3 Z_i + \epsilon_i$$

Table 16 reports IV regression results. In localities with Mendicant missions, educational attainment is higher and a higher share of the population is Catholic compared to localities without missions. The coefficients are significant at 5 percent for *Years of Schooling* and *Secondary Education*, signifcant at 10 percent for *Higher Education*, and insignificant for *Literacy* and *Catholic*. For Jesuit missions, the coefficients on educational outcomes are insignificant and negative or close to zero. The Jesuit coefficient on the share of Catholics is positive and insignificant.

The statistical significance of these results for the Mendicant orders are overall weaker compared to OLS results. In addition, the Kleibergen-Paap Wald F statistic indicates that the true rejection rate (compared to 5%) lies between 10 and 15%. Hence, results should be considered with caution as standard errors might be underestimated.

Another important feature of the results is that the estimated effects of the Mendicant orders are larger in the IV specifications compared to the OLS specifications. This difference may be driven by measurement error in the mission variables that attenuates the OLS coefficients. An alternative explanation for the discrepancy between IV and OLS estimates could be that the OLS regression estimates the Average Treatment Effect (ATE) while the IV regression estimates a Local Average Treatment Effect (LATE). The LATE estimates the effect on compliers. In this paper, the compliers are localities that only received a mission because they are located within mission areas that were defined from initial directions. It is possible, that the IV specification captures primarily the effect of missions in more remote places that would not have attracted missionaries if it had not been located in a mission area. In such places missions might have had a particular strong effect because the possibilities of obtaining education in the absence of missions might have been especially low. Lastly, the high IV coefficients could indicate that the exclusion restriction is not satisfied. I discuss potential violations of the exclusion restriction in the following section 5.6 (see in particular section 5.6.2).

Table 16: Instrumental Variable Estimations: Outcomes for Localities with Mendicant and Jesuit Missions

VARIABLES	(1) Years of Schooling	(2) Literacy	(3) Secondary Education	(4) Higher Education	(6) Catholic
Mendicant Mission	6.95**	0.46	0.59**	0.05*	0.63
	(3.00)	(0.33)	(0.25)	(0.03)	(0.40)
Jesuit Mission	-1.03	-0.66	0.15	-0.14	1.12
	(9.13)	(1.06)	(0.78)	(0.11)	(1.06)
Geographic Controls	yes	yes	yes	yes	yes
Climate	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes
Observations	104,437	104,437	104,437	104,437	104,437

Notes: The table reports IV estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5.6 Threats to Identification

5.6.1 Endogeneity of Mission Locations

An important concern for the validity of results is that numerous factors may have affected both the missionaries' decision to establish a mission in a specific location and the location's long-term development potential. Omitting such factors from the specification would bias results.

Agricultural Potential: The potential endogeneity of the locations of missions is the main challenge to the validity of the results presented in this paper. Agricultural potential is especially important in this respect. The missionaries' ability to feed the mission population was an asset in attracting people to the mission.

To address this concern I include a large number of control variables that take into account differences in agricultural potential. The most direct controls for agricultural potential are those for climate and for soil suitability for agriculture. The climate controls include information on 24 climate groups that capture variation in temperature and humidity conditions. I also control for seven indicators of variation in soil suitability within Mexico. (Details on the construction of these control variables are in section 3.2, and tables A.1 and A.2 in the Appendix.) The climate data have been published by the Mexican Institute for Statistics and Geography (INEGI);

the soil suitability data are obtained from the Harmonized World Soil Database that has been published by a group of leading organizations on food and agriculture (e.g. FAO). As both the climate and soil suitability data are finely gridded and of high quality, these variables will capture important variation in agricultural potential. I also include other variables that are likely to capture aspects of a locality's agricultural potential such as altitude, latitude and longitude, distance to the nearest river, lake, and to the ocean.

In table 17, I show main results with and without climate and soil suitability controls. The point estimates are remarkably stable, suggesting that the settlement patterns are not driven by the observable variation in climate and soil suitability for agriculture. It is important to note that these results cannot fully rule out that settlement patterns could be related to unobserved variation in climate and soil suitability. On the other hand, the unobserved variation would have to be quite different from the observable variation to explain the results.

Pre-Colonial Education: Another important concern is that that missionaries may have located their missions in areas where people were already more educated in pre-Hispanic times, and thus would have become more educated regardless of missions. To address this concern, one would ideally use as control variables information on pre-colonial educational achievement, which is, however, not available.

My strategy to address this concern is based on the observation that an important determinant of exposure to pre-colonial education was the political entity that ruled a region prior to the Spanish conquest. The Aztec empire, for example, boasted the most sophisticated educational system with universal schooling while there is no evidence of formal schooling in the *Chichimeca* north. To address the concern that pre-colonial differences in exposure to education could bias results I control for the extent of pre-colonial political entities in all specifications.

Another determinant of exposure to pre-colonial education was whether a person lived in a rural or urban area. In the Mayan south, for example, schools existed but were reserved for the elite living in urban areas. I include information on the locations of pre-Hispanic urban settlements in all specifications. In table 8, I further include control variables distinguishing between different types of urban settlements, and control variables for the location of urban settlements in two earlier historical periods. By controlling for the extent of pre-colonial political entities and for the location of urban settlements, I capture two important dimensions of variation in exposure to pre-colonial education.

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Table 17: Main results With and Without Climate and Soil Quality Controls

VARIABLES	Years of Schooling			Literacy			Secondary Education			Higher Education			Catholic		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Mendicant Mission	0.74***	0.69***	0.69***	0.03***	0.03***	0.03***	0.08***	0.07***	0.07***	0.02***	0.01***	0.01***	0.02***	0.02***	0.02***
	(0.11)	(0.10)	(0.09)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Jesuit Mission	-0.12	-0.15	-0.19	-0.03	-0.04	-0.04*	-0.00	-0.00	-0.01	0.00	0.00	0.00	0.03**	0.03**	0.03**
	(0.31)	(0.24)	(0.23)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Geographic Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Location	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pre-Hispanic Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Climate		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes
Soil Quality Controls			yes			yes			yes			yes			yes
Observations	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437	104,437
R-squared	0.10	0.15	0.17	0.12	0.16	0.18	0.10	0.14	0.16	0.03	0.04	0.04	0.22	0.23	0.23

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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5.6.2 Validity of Instrumental Variables

The validity of the instruments depends on the assumption that the orders' early directions only affect the outcomes through their impact on the orders' settlement patterns. If orders systematically chose early directions towards territory with favourable conditions for agriculture, commerce, or with certain pre-Hispanic characteristics, then these directions were not random with respect to the ensuing territory. As a result, instrumental variable estimates would be biased. My main strategy to address this concern is to include detailed information on a locality's geographic conditions, climate, location, and pre-colonial characteristics as control variables. While it is reassuring to see that estimation results are robust to the inclusion of these variables, it is also important to mention that historical data of pre-colonial conditions is limited. The analysis relies in a few cases on proxies, for example, for pre-colonial educational achievement.
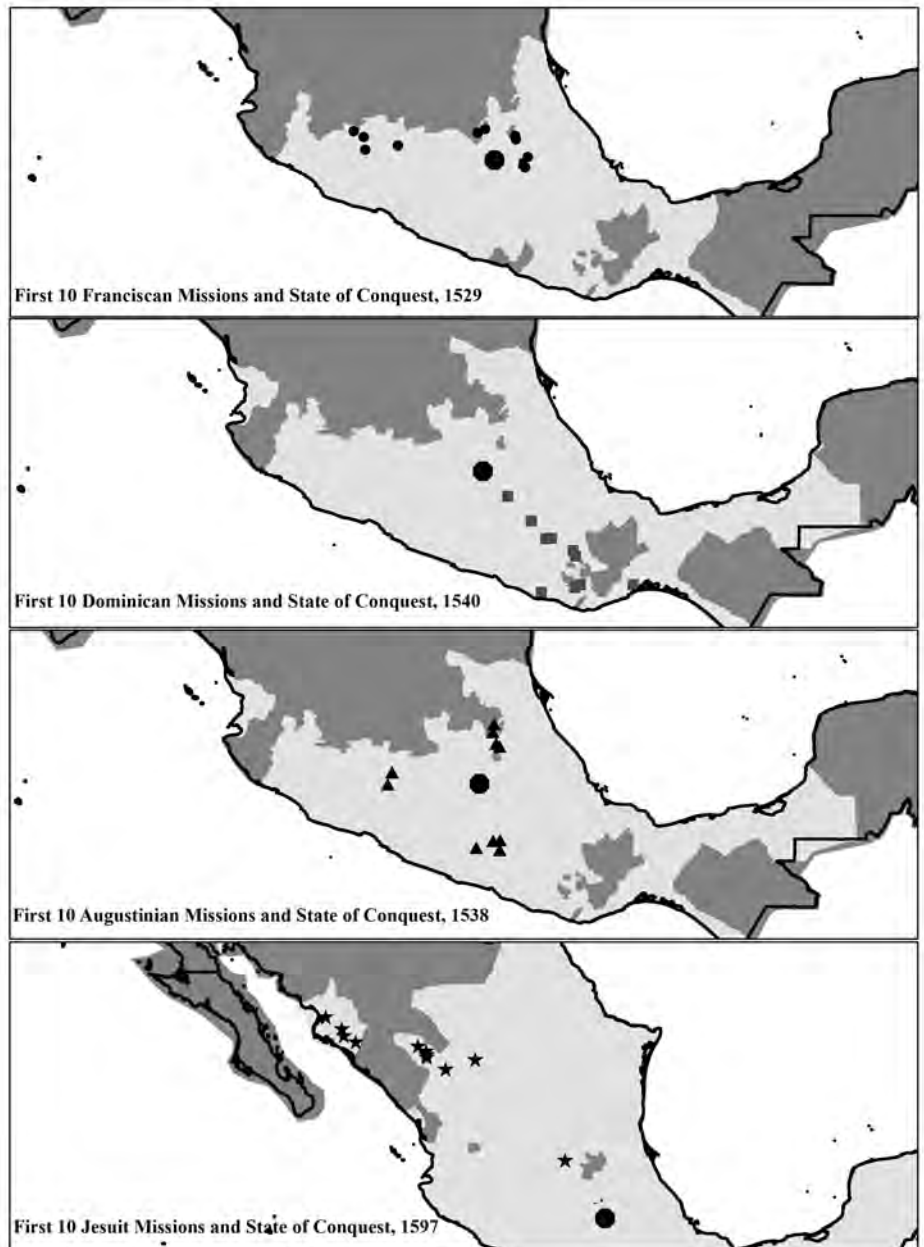
In this section, I present historical evidence and descriptive statistics that can shed light on the motivation underlying the initial directions chosen by missionary expeditions. Mission historians emphasize the missionaries' zeal to reach remote regions of the colony. Franciscans desired to reach remote areas because they were drawn to the simple living conditions of the natives and wanted to avoid contact with corrupt and greedy Spanish colonizers (Ricard, 1966: 66; Phelan, 1970: 46). "After [...] three hundred years of frustration in Europe, the Indians presented them [the Franciscans] with the unique opportunity of applying on a large scale the doctrine of evangelical poverty," (Phelan, 1970: 49).

It has also been observed that missions "played a critical role in the colonization of frontier areas, which in many cases held little or no economic attraction for settlers," (Langer and Jackson, 1995). They "[...] were characteristically and designedly frontier institutions and [...] pioneer agencies [...]. They served not alone to Christianize the frontier, but also to aid in extending, holding, and civilizing it. [...]" (Bolton, 1917: 47).

The data set constructed for this paper allows me to examine the relationship between an area's remoteness and the establishments of missions. I use the progress of Spanish military control as a proxy for remoteness.[11] In Figure 7, I map the locations of the 10 first missions of each order and the state of Spanish conquest at the time the missions were established. The figure shows that all orders had missions not only in the center but also close to areas that were not yet under Spanish control.

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[11]Before an area had been conquered, missions were under constant threat of attacks from the native population. The lack of road infrastructure made delivery of supplies and access in general difficult.

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Figure 7: Spread of Each Order's 10 First Missions and Extent of Spanish Military Control

First 10 Franciscan Missions and State of Conquest, 1529

First 10 Dominican Missions and State of Conquest, 1540

First 10 Augustinian Missions and State of Conquest, 1538

First 10 Jesuit Missions and State of Conquest, 1597

7 instrument missions.png

Notes: The figure contains four panels showing the location of each order's first 10 missions and the progress of Spanish control at the time when the 10th mission was established.

Figure 8 examines the relationship between the Spanish conquest and the establishments of missions quantitatively. It shows the percentage of the colonial municipalities that had a mission before conquest or within a short period afterwards. Close to 20 percent of municipalities had a mission before the Spanish conquest was officially established. About 32 percent of municipalities had a mission within five years of the Spanish conquest, and about 46 percent of municipalities had a mission within 10 years of the Spanish conquest.

Figure 8: Share of Colonial Municipalities with at Least One Early Mission

8 EarlyMissions.png
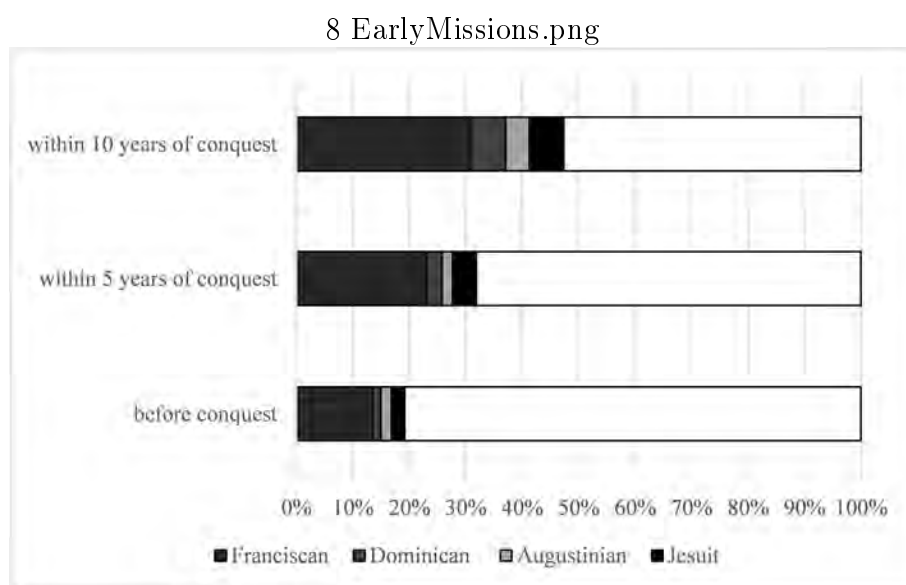
Notes: The figure shows the share of colonial municipalities with at least one mission within 10 years of conquest, 5 years of conquest, and before conquest.

I also test whether the instruments are related to pre-Hispanic characteristics. Using the location of pre-Hispanic settlements as a proxy for pre-Hispanic population density, I define the variable *Pre-Hispanic Settlement* that is 1 for all locations that are located within five kilometers of a pre-Hispanic settlement. In table 18, I test whether the instrumental variables are correlated with the location of pre-Hispanic settlements. Results show that the relationship between *Pre-Hispanic Settlement* and the two instrumental variables *Mendicant Area* and *Jesuit Area* is close to zero.

It is reassuring to see that both the historical and the econometric evidence suggest that the orders' initial directions were, at least, not solely chosen in order to secure especially advantageous conditions for missions. Other considerations, such as the Franciscan ambition to reach regions "untainted" by Spanish greed and corruption seems to have mattered, as well, and this may also have motivated the existence

of missions as "frontier institutions" in remote and economically unattractive regions that we observe in the data (Figures 7 and 8).

Table 18: Instrumental Variables and Pre-Hispanic Settlements

VARIABLES	(1) Pre-Hispanic Settlement
Mendicant Area	-0.0006
	(0.0037)
Jesuit Area	-0.0016
	(0.0041)
Geographic Controls	yes
Climate	yes
Location	yes
Pre-Hispanic Controls	yes
Observations	104,437
R-squared	0.0143

Notes: The table reports OLS estimates. The unit of observation is a locality. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

6   Mechanisms

In this section, I examine specific channels through which the activities of missionaries in the colonial period may have affected outcomes today. In particular, I examine the effect of missions on values, on access to education, and on returns to education.

6.1   Values

I first examine whether individuals in proximity to historical missions value education more than the rest of the population. For this purpose, I use data from the 2013 Latinobarometro, a survey on individuals' attitudes, values, and behavior. It contains a nationally representative sample of 1,200 Mexicans. The Latinobarometro asks respondents when they last read a book for leisure, entertainment or personal interest. Reading for leisure is a useful indicator of the value an individual places on

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education.[12] Answers are organized in five categories: "in the last month," "in the last quarter year," "in the last year," "over a year ago," and "never or almost never." I exclude individuals who respond "Don't know" or who do not give an answer. This reduces the sample size from 1,200 to 1,149. In the following, I show results for two estimation strategies. First, I convert the variable categories to number of months. This is straightforward for the first three categories: Choosing the midpoint of each category, the category "in the last month" is converted to 0.5; the category "in the last quarter year" is converted to 1.5; the category "in the last year" is converted to 6. The categories "over a year ago" and "never or almost never" are converted to the numbers 24 and 60. In my second estimation strategy, I estimate an ordered logit specification. The results are qualitatively the same for both estimation strategies.

I estimate the effect of missionaries on reading using the following equation:

$$
\begin{aligned}
BookReading_{is} &= \beta_0 + \beta_1 MendicantMission_{is} + \beta_2 JesuitMission_{is} + \\
&\quad \beta_3 W_{is} + \beta_4 X_{is} + \beta_5 Z_{is} + \epsilon_{is}
\end{aligned}
$$

The index i indexes individual and index s indexes Mexican federal states. The variable *Book Reading* denotes one of the two measures of book reading intensity. The variables *Mendicant Mission* and *Jesuit Mission* are indicator variables that are 1 for individuals who lived within 20 kilometers of a former mission. W represents individual-level covariates that capture the individual's socioeconomic background: age and age squared, a gender indicator variable, five fixed effects for the individual's current economic situation, eight fixed effects for the employment status of the head of household, seven fixed effects for employment situation, six fixed effects for social class, an indicator variable that is 1 if the individual has had sufficient food in the past 12 months, and when the individual most recently read for professional reasons. Including these individual-level control variables helps to disentangle the relationship between Mendicant and Jesuit missions on book reading from their potential effect on education and income. X represents control variables for geographic conditions, climate, location, and pre-Hispanic characteristics of the location where the individual is from. Z represents federal state fixed effects.

Results in table 19 show that the period of time since an individual had last read a book for leisure is significantly shorter in areas that were exposed to a Mendicant mission. Taken at face value, the most rigorous specification in column 4 indicates that a Mendicant mission reduced the time period since the individual read a book

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[12]Evans et al. (2010), for example, use the number of books in a household as an indicator for a family's "scholarly culture."

for leisure by 8.8 months. The coefficient for the Jesuit mission is not significant. It lies at -0.12. The coefficients on Mendicant and Jesuit missions are significantly different at the 1 percent level in column 4 and at the 5 percent level in column 3. While the pattern of results is robust across different specifications, the exact sizes of the coefficients should be interpreted with caution as their sizes vary with the translation of the two answer categories "over a year ago" and "never or almost never" to months.

Results for the ordered logit specification do not depend on a translation of answer categories to months. These results in columns 5 to 8 of table 19 confirm that individuals in areas with a Mendicant mission read more for leisure. The coefficients on Mendicant and Jesuit Mission in columns (7) and (8) are significantly different at the 1 percent level.

6.2 Access to Education

Now, I examine whether missionary orders may have affected people's access to education. If Mendicant orders built a larger number of schools, and the schools continue to be used even after the missions cease to exist, then Mendicant areas may continue to provide better access to education even after the end of the colonial period. This could explain higher educational achievement in localities with Mendicant missions today.

While systematic data on the number of schools in the colonial period are missing, the first Mexican census that was undertaken in 1895, 85 years after the end of the colonial period, contains information on the number of teachers in the population. I use teacher density in 1895 as a proxy for access to education. For the year 1895, the data are available for 381 districts, 371 of which could be georeferenced. I calculate teacher density based on the number of teachers per total population and per underage population to calculate teacher density.

I estimate the following regression:

$$
\begin{aligned}
ShareOfTeachers_d \;=\; & \beta_0 + \beta_1 \#MendicantMissions/km_d^2 \\
& +\beta_2 \#JesuitMissions/km_d^2 \\
& +\beta_3 W_d + \epsilon_d
\end{aligned}
$$

The left-hand side variable *Share of Teachers* stands for two measures of teacher density: the share of teachers in the total population and the ratio of teachers to underage population. The variables *Number of Mendicant missions per square*

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Table 19: The Effect of Mendicant and Jesuit Missions on Book Reading

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	When was the last time you read a book for leisure, entertainment, personal interest, etc.?							
	(in months)				(ordered logit)			
Mendicant Mission	-10.13***	-6.37***	-5.18***	-8.82***	-0.69***	-0.57***	-0.54***	-0.94***
	(2.22)	(1.54)	(1.93)	(1.81)	(0.15)	(0.12)	(0.17)	(0.20)
Jesuit Mission	-2.55	-2.49	1.18	-0.12	-0.18	-0.22	0.25*	0.11
	(3.58)	(2.04)	(1.75)	(2.16)	(0.24)	(0.20)	(0.15)	(0.21)
Socio-Economic Controls Today		yes	yes	yes		yes	yes	yes
Geographic and Historical Controls			yes	yes			yes	yes
Federal State Fixed Effects				yes				yes
Observations	1,149	1,149	1,149	1,149	1,149	1,149	1,149	1,149
R-squared	0.031	0.349	0.370	0.388				

Notes: The table reports OLS estimates. The unit of observation is an individual. Standard errors are clustered at city level for 97 cities and are shown in parentheses. Socioeconomic controls today are age and age squared, a gender indicator variable, 5 fixed effects for current economic situation, 8 fixed effects for the employment status of the head of household, 7 fixed effects for employment situation, 6 fixed effects for social class, whether the individual has had sufficient food in the past 12 months, and when the individual most recently read for professional reasons. Geographic and historical controls are the full set of control variables as before: altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture, 24 fixed effects for climate groups, distance to the United States, distance to Mexico City, distance to pre-Hispanic settlements, conquest delay and 5 fixed effects for pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

kilometer and *Number of Jesuit missions per square kilometer* measure the number of missions per 1895 district and are normalized by the district's area in square kilometers. W stands for the standard host of control variables. These include geographic conditions, climate, location, and pre-Hispanic controls as in previous specifications, but at the district level. Indicator variables for each of the five pre-colonial regions are 1 if they intersect the district. Other controls include total length of rivers, total area of lakes, mean altitude, the number of years since 1519 before the area came under Spanish control, the number of pre-Hispanic settlements, the distance of the district's centroid to the United States, to the capital, and to the ocean, as well as the centroid's longitude and latitude. Table 20 shows that districts with higher density of Mendicant orders had a higher share of teachers in the total population and a higher ratio of teachers to underage population in 1895.

6.3 Returns to Education

Another plausible channel through which missions may have affected long-term development is a mission's effect on returns to education. Increased economic activity close to missions could have led to relatively good employment opportunities that rewarded those with more education. This could have incentivized individuals to obtain more education. To examine the effect of missions on returns to education I estimate a traditional Mincer regression using microdata from the 2000 Mexican census on individuals' age, income, and education (INEGI, 2000b). These data show the municipality in which each individual resides. I link this information for each individual to the number of Mendicant and Jesuit missions that are located in the municipality normalized by square kilometer. I propose the following specification:

$$
\begin{aligned}
Ln(income)_{is} = {} & \beta_0 + \beta_1 YearsOfSchooling_{is} + \beta_2 PotLMEx_{is} + \beta_2 PotLMEx^2_{is} \\
& + \beta_3 YearsOfSchooling * MendicantMission_{is} \\
& + \beta_4 YearsOfSchooling * JesuitMission_{is} \\
& + \beta_5 MendicantMission_{ms} + \beta_6 JesuitMission_{ms} \\
& + \beta_7 W_{is} + \beta_8 X_{ms} + \beta_9 Z_s + \epsilon_{is}
\end{aligned}
$$

I regress the natural log of income on years of education, and a quadratic of potential labor market experience. To capture a possible effect of Mendicant and Jesuit missions on returns to education I include two interaction terms: one term shows the interaction between years of education and the number of Mendicant missions per square kilometer, and one term shows the interaction between years

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Table 20: Relationship between Mendicant and Jesuit Mission and Teacher Density in 1895

VARIABLES	Share of Teachers in the Full Population		Ratio of Teachers to Underage Population	
	(1)	(2)	(3)	(4)
Number of Mendicant Missions per km²	0.056*** (0.020)		0.378*** (0.090)	
Number of Jesuit Missions per km²	-0.096 (0.197)		-1.004 (0.888)	
Number of Mendicant Missions per km², standardized		0.0001*** (0.0000)		0.0008*** (0.0002)
Number of Jesuit Missions per km², standardized		-0.0000 (0.0000)		-0.0002 (0.0002)
Geographic Controls	yes	yes	yes	yes
Climate	yes	yes	yes	yes
Location	yes	yes	yes	yes
Pre-Conquest Controls	yes	yes	yes	yes
Observations	371	371	371	371
R-squared	0.323	0.3234	0.276	0.2763

Notes: The table reports OLS estimates. The unit of observation is the historical municipality of 1895. Standard errors are not clustered as the unit of observation is comparable to the administrative level that standard errors are clustered at in the other specifications. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, and seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

of education and the number of Jesuit missions per square kilometer. W represents individual-level covariates that may affect income: an indicator variable that is 1 if the respondent is male, a set of indicator variables for eight types of marital status, and an indicator variable that is 1 if an individual self-describes as indigenous. X represents control variables on geographic conditions, climate, location, and pre-Hispanic characteristics of the municipality where the individual is from. Z represents federal state fixed effects.

Results in table 21 show that returns to education are not significantly different in areas that were exposed to Mendicant missions. Differences in returns to education therefore do not explain the positive relationship between Mendicant missions and educational outcomes. Interestingly, returns to education are significantly smaller in areas that were exposed to Jesuit missions. The size of the coefficient, however, is small.

7   Conclusion

This paper examines the long-run effects of Catholic missionary orders in colonial Mexico. The findings show higher present-day educational outcomes (literacy and school completion rates) in regions that had historical Mendicant orders, which were committed to poverty and sought to reduce social inequality in colonial Mexico by educating the native population. These outcomes are not evidenced in regions that had historical missions associated with the Jesuits, whose focus in Mexico lay on providing high-quality education to the colony's elite in urban centers, and less on missionary work in rural areas. The present-day share of Catholics is higher in localities that had a historic Catholic mission, regardless of the type of order, than in regions without a mission.

These results chime with Nunn (2014) who identifies another interesting heterogeneity in the effect of missionaries. Comparing Protestant and Catholic missionaries, he finds that Protestant missionaries who focused more on the female population had important effects on female education, while Catholic missionaries affected primarily male education. The present study complements other studies on the long-run effects of missionaries that find overwhelmingly positive effects (Woodberry, 2004; Gallego and Woodberry, 2010; Nunn, 2010; Akcomak et al. (2015); Bai and Kung, 2015; Valencia Caicedo, 2014).

The study also examines mechanisms through which missionary orders may have affected long-term development. Results suggest that Mendicant missions were associated with better access to education after the end of the colonial era. Their

Table 21: Relationship between Mendicant and Jesuit Mission and Returns to Education

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Ln(Income)				Ln(Income)		
Schooling	0.12***	0.11***	0.11***	0.10***	0.12***	0.11***	0.10***	0.10***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Schooling*Mendicant Mission					-0.00	0.00	0.00	0.01*
					(0.00)	(0.00)	(0.00)	(0.00)
Schooling*Jesuit Mission					-0.02***	-0.02***	-0.01***	-0.01**
					(0.01)	(0.00)	(0.00)	(0.00)
Potential Labor Market Experience	0.04***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.04***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Potential Labour Market Experience Squared	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mendicant Mission					0.06*	0.04	0.03	0.01
					(0.04)	(0.03)	(0.02)	(0.02)
Jesuit Mission					0.26***	0.24***	0.01	0.03
					(0.05)	(0.04)	(0.04)	(0.04)
Individual Level Controls								
Gender		yes	yes	yes		yes	yes	yes
Married Status		yes	yes	yes		yes	yes	yes
Indigenous Identity		yes	yes	yes		yes	yes	yes
Baseline Controls								
Geographic Controls			yes	yes			yes	yes
Climate			yes	yes			yes	yes
Location			yes	yes			yes	yes
Pre-Hispanic Controls			yes	yes			yes	yes
State Fixed Effects				yes				yes
Observations	2,388,339	2,388,339	2,388,339	2,388,339	2,388,339	2,388,339	2,388,339	2,388,339
R-squared	0.33	0.37	0.41	0.42	0.33	0.37	0.41	0.42

Notes: The table reports OLS estimates. The unit of observation is an individual. Robust standard errors are clustered at colonial municipality level and are shown in parentheses. The number of clusters is 206. The individual level controls are one indicator variable for gender, eight indicator variables for married status, and one indicator variable for indigenous identity. The geographic controls are for altitude, latitude, longitude, distance to the nearest river, to the nearest lake, and to the ocean, seven indicators of soil suitability for agriculture. The climate controls are 24 fixed effects for climate groups. Location controls are for distance to the United States and distance to Mexico City. Pre-Hispanic controls are for distance to pre-Hispanic settlements, conquest delay and fixed effects for five pre-Hispanic political regions (for more details see sections 3.2, A.1, and A.2). *** p<0.01, ** p<0.05, * p<0.1

historical presence is also associated with higher value placed on education among contemporary populations. The results may help inform our understanding of values as mechanisms through which historical events may have long-term effects. They also indicate that the values of missionary orders may shape their long-term effects.

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A Online Appendix

A.1 Description of Climate Groups

Table A.1: Description of Climate Groups

Temperature Category	Humidity Category	Climate Group
Very Warm	semiarid, arid, very arid	1
Warm	very dry	2
	sub-humid - median degree of humidity	3
	sub-humid - high degree of humidity	4
	sub-humid - low degree of humidity	5
	humid	6
	arid	7
	semi arid	8
Semi Warm	very dry	9
	arid	10
	semi arid	11
	sub-humid - low degree of humidity	12
	sub-humid - median degree of humidity	13
	sub-humid - high degree of humidity	14
	humid	15
Temperate	very dry	16
	Mediterranean Dry	17
	sub-humid - median degree of humidity	18
	subhumid - high degree of humidity	19
	subhumid - low degree of humidity	20
	humid	21
	arid	22
	semi arid	23
Semi Cold	subhumid, humid, semiarid	24

Notes: The table provides a description of 24 climate group variables that are included as baseline control variables in all specifications. The climate group numbers in the last column refer to the climate group numbers in the summary statistics table.

A.2 Description of Soil Characteristics

Table A.2: Description of Soil Characteristics

Soil Characteristic	Description
Nutrient availability	Soil texture, soil organic carbon, soil pH, total exchangeable bases
Nutrient retention capacity	Soil Organic carbon, Soil texture, base saturation, cation exchange capacity of soil and of clay fraction
Rooting conditions	Soil textures, bulk density, coarse fragments, vertic soil properties and soil phases affecting root penetration and soil depth and soil volume
Oxygen availability to roots	Soil drainage and soil phases affecting soil drainage
Excess salts	Soil salinity, soil sodicity and soil phases influencing salt conditions
Toxicity	Calcium carbonate and gypsum
Workability (constraining field management)	Soil texture, effective soil depth/volume, and soil phases constraining soil management (soil depth, rock outcrop, stoniness, gravel/concretions and hardpans)

Notes: The table contains a description of soil characteristics that are included as baseline control variables in all specifications. These characteristics are indicators of soil suitability for agriculture.