# THE MISSION: Human Capital Transmission, Economic Persistence, and Culture in South America

Valencia Caicedo (2019)

Presented by "Alper Sukru Gencer"

New York University

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    - 10% lower poverty rates (according to an Unsatisfied Basic Needs index)

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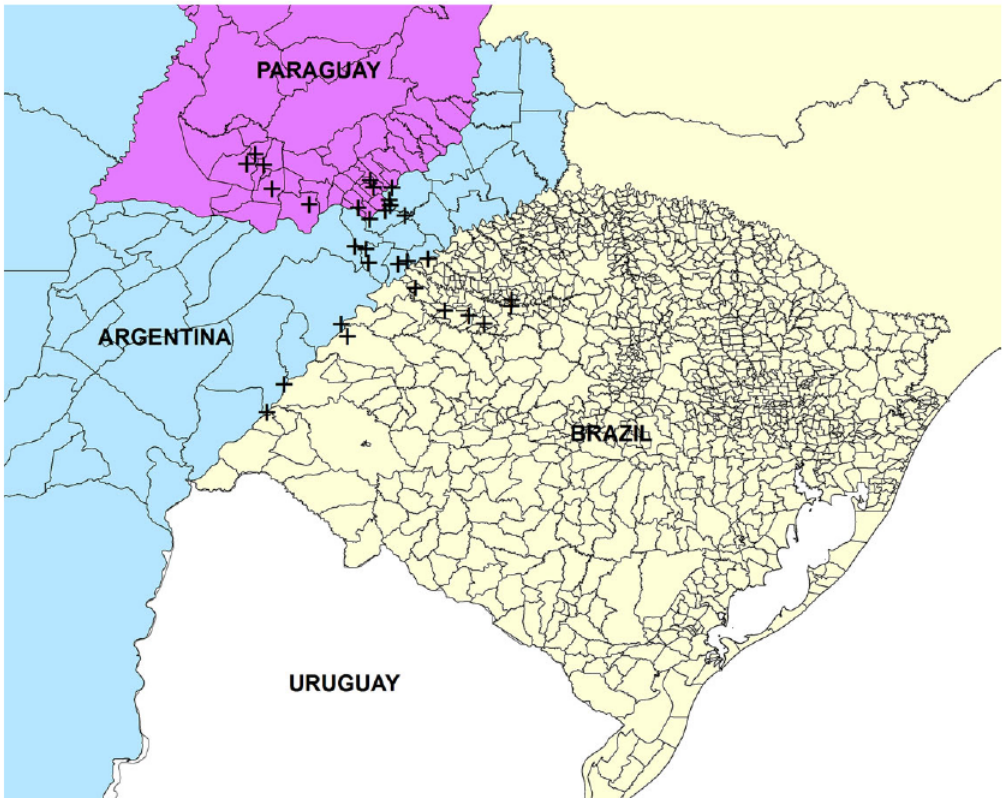
- Using the spatial variation in abandoned missions:



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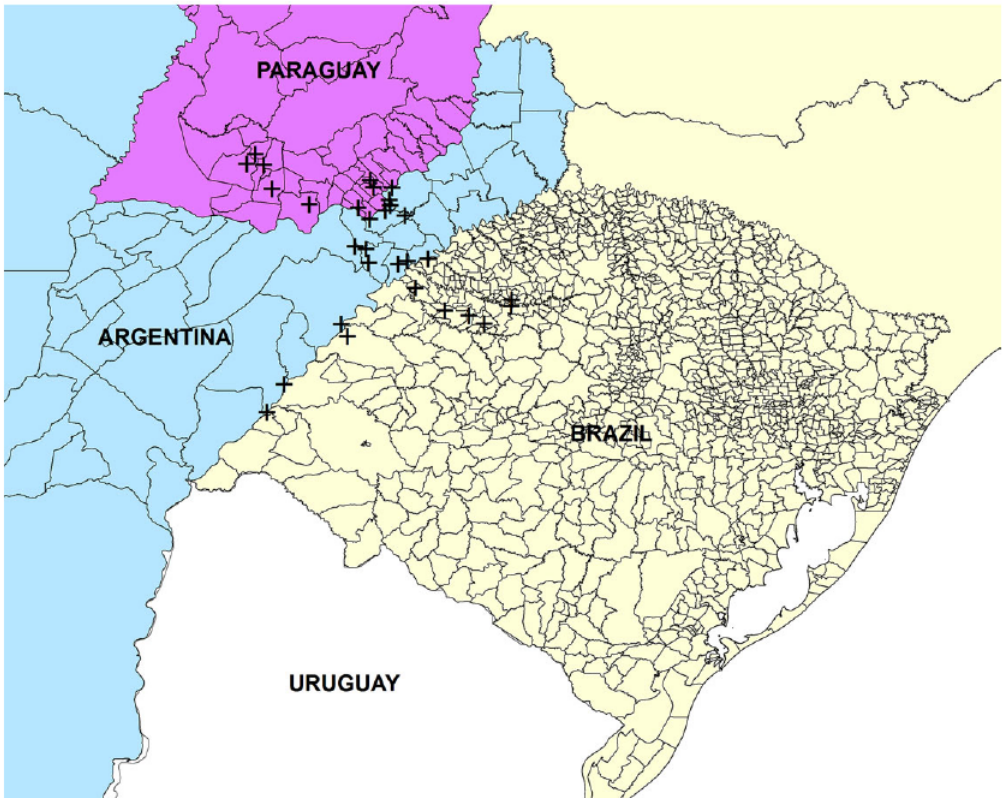

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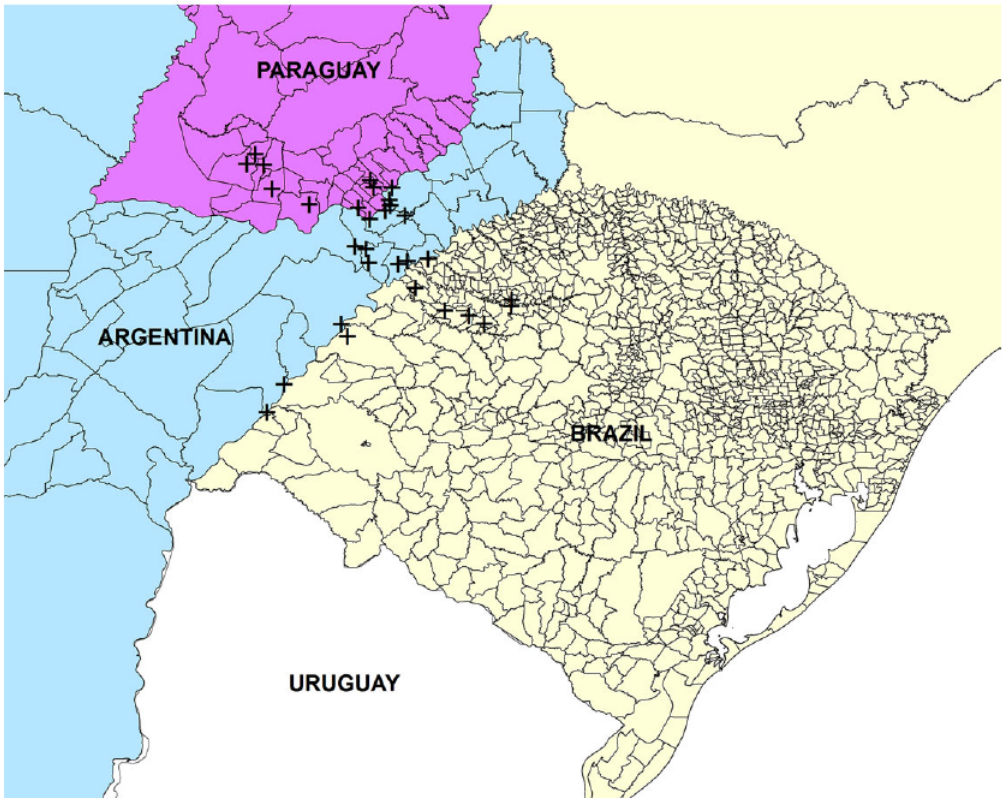

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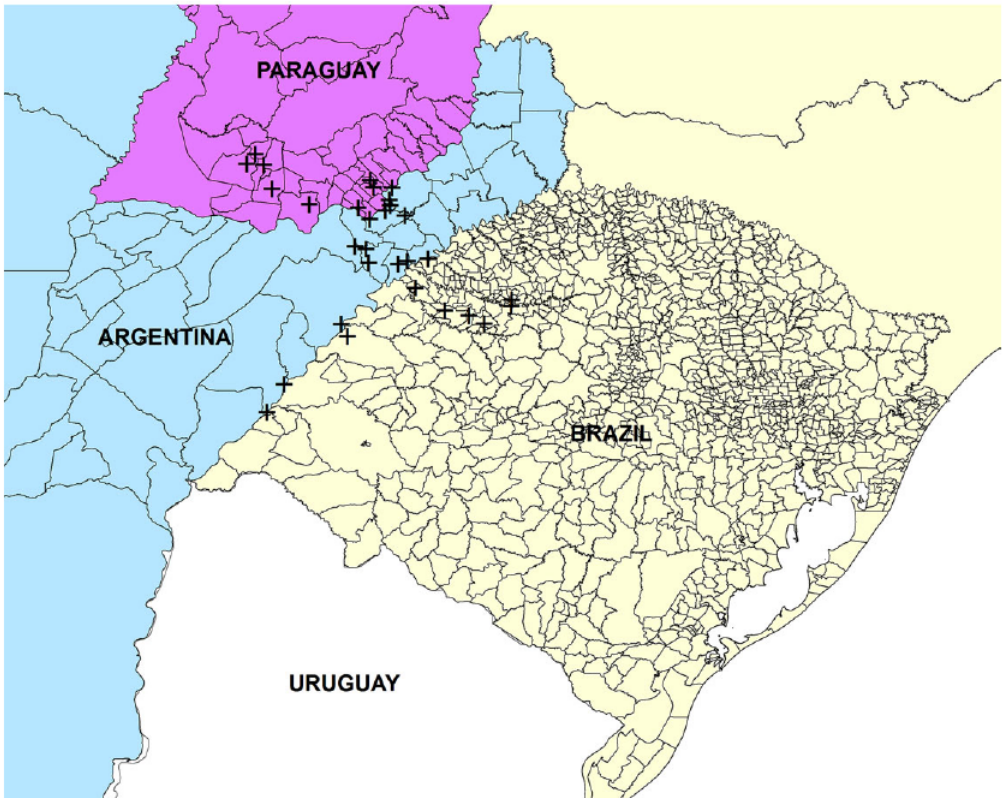
  - Distance to the nearest Jesuit mission



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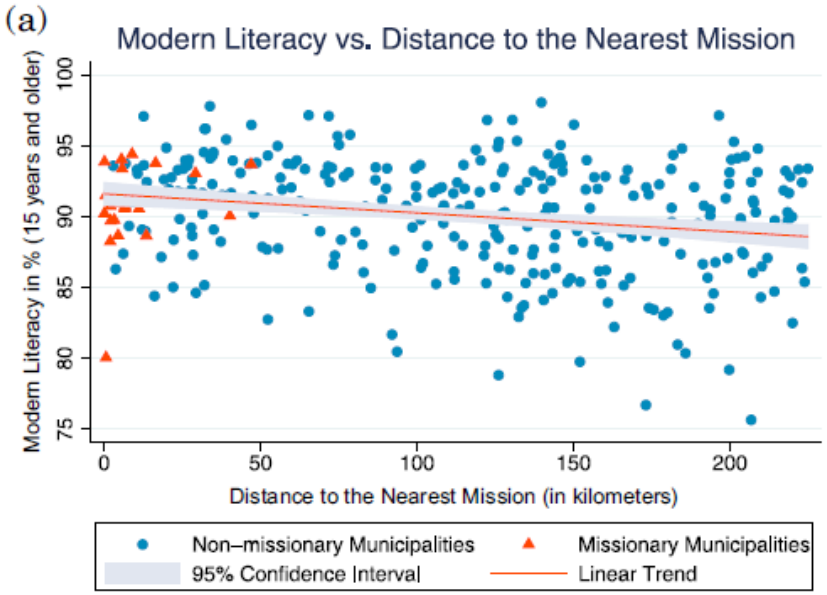
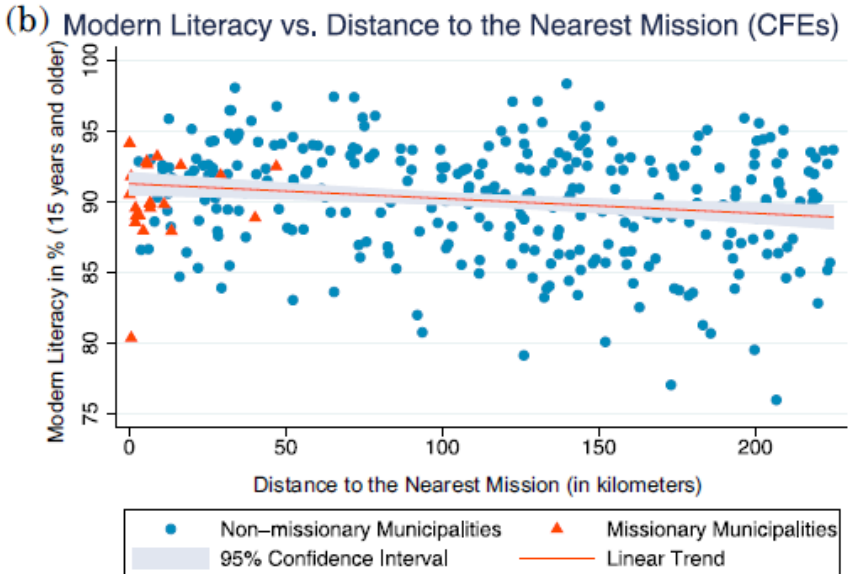
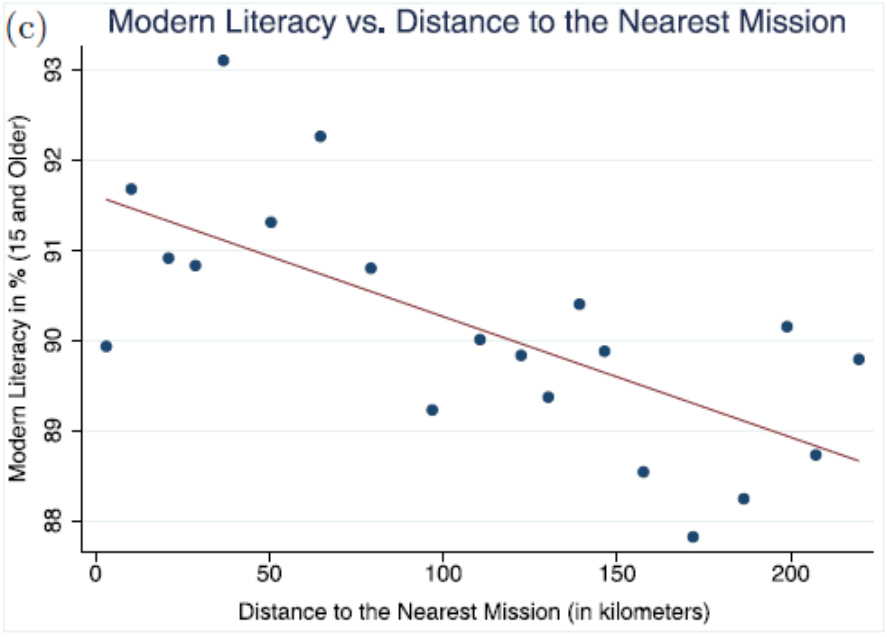
  - $GEO$ is a vector of geographic and weather controls
  - $\mu_j$ a state-fixed effect

# Empirical Findings - 1



# Empirical Findings - 2




(c) Binscatter of Literacy on Missionary Distance

Figure 3: Baseline Model w Unconditional Bins

# Empirical Findings - 2

TABLE II

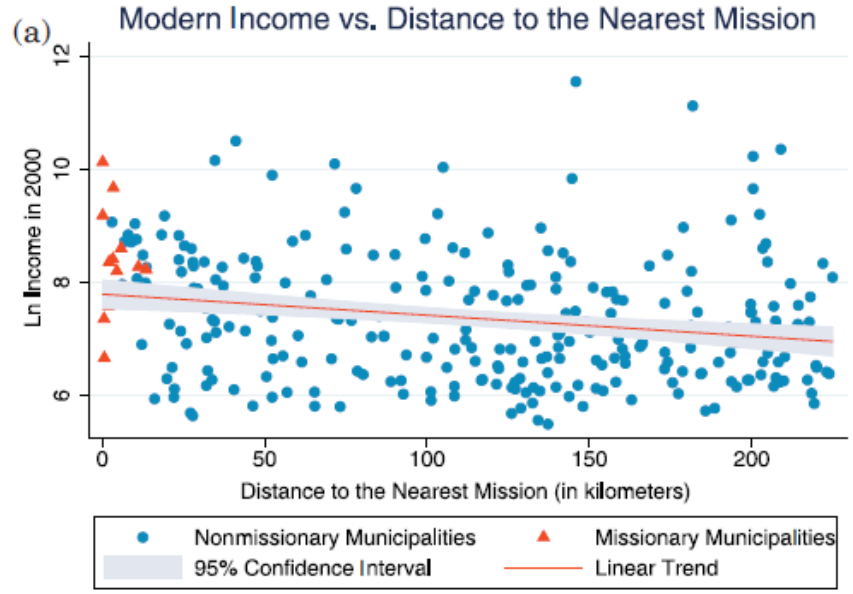
MISSIONARY EFFECT ON MODERN EDUCATION

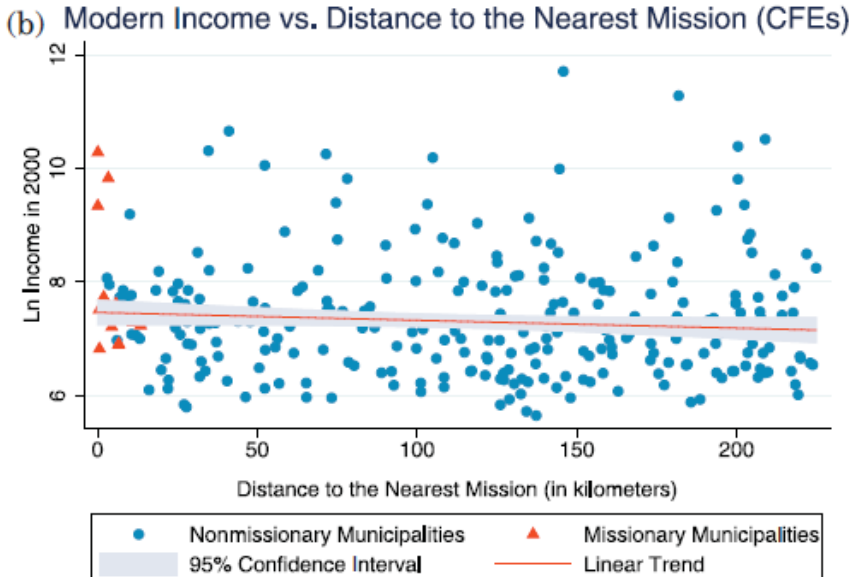
| | Illiteracy | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | Brazil | | Argentina | | Paraguay | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Mission distance | 0.0105*** | 0.0112** | 0.0200*** | 0.0313*** | 0.0157** | 0.0669*** | 0.00451 | 0.0138 |
| | (0.004) | (0.005) | (0.007) | (0.010) | (0.007) | (0.022) | (0.012) | (0.027) |
| | {0.004} | {0.005} | {0.007} | {0.010} | {0.008} | {0.023} | {0.016} | {0.026} |
| Geo controls | No | Yes | No | Yes | No | Yes | No | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 547 | 548 | 467 | 467 | 42 | 42 | 40 | 39 |
| Within $R^2$ | 0.037 | 0.068 | 0.052 | 0.091 | 0.102 | 0.567 | 0.003 | 0.250 |
| $R^2$ | 0.042 | 0.073 | 0.056 | 0.095 | 0.165 | 0.669 | 0.004 | 0.251 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers (equation (1)). The dependent variable is illiteracy for people aged 15 years and older in 2000 in percentages for Argentina, Brazil, and Paraguay. Geographic controls include distance to the nearest coast, distance to the nearest river, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Mesoregion fixed effects are included for Brazil. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS with state fixed effects. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$.

Figure 4: Baseline Model across Countries

# Empirical Findings - 3



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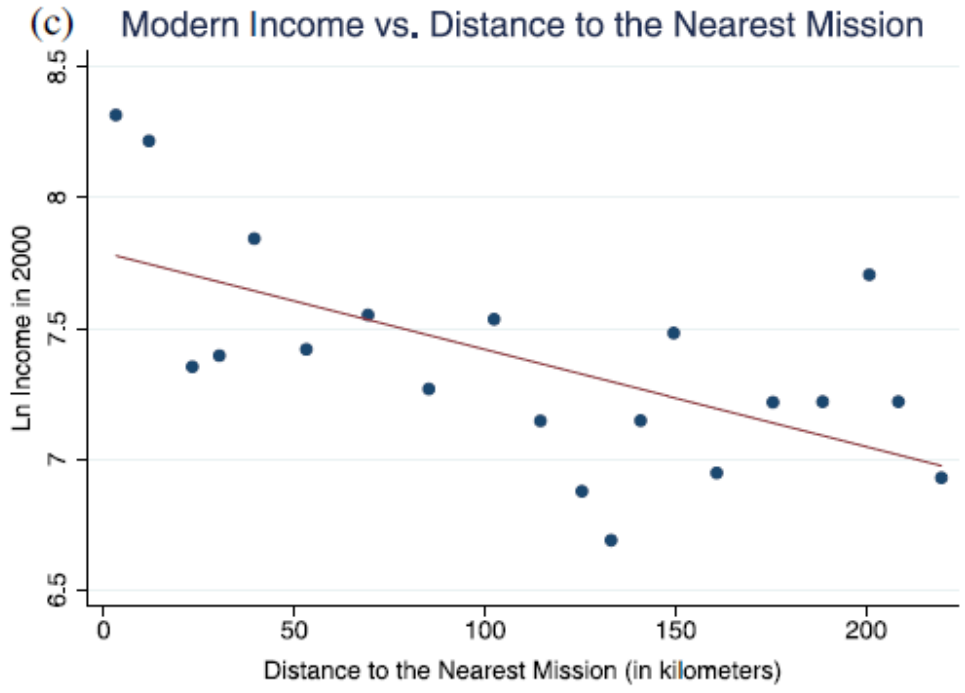


(c) Binscatter of Income on Missionary Distance

Figure 6: Baseline Model with Income Outcome

# Empirical Findings - 3

TABLE III

MISSIONARY EFFECT ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Mission distance | −0.00247** | −0.00679*** | −0.00166*** | −0.00204*** | 0.0409*** | 0.0938** |
| | (0.001) | (0.002) | (0.000) | (0.001) | (0.014) | (0.043) |
| | {0.001} | {0.002} | {0.000} | {0.001} | {0.018} | {0.046} |
| Geo controls | No | Yes | No | Yes | No | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 82 | 81 |
| Within $R^2$ | 0.013 | 0.142 | 0.029 | 0.036 | 0.035 | 0.064 |
| $R^2$ | 0.042 | 0.171 | 0.869 | 0.876 | 0.704 | 0.733 |

Figure 7: Baseline Model with Other Outcomes

# Empirical Findings - 4

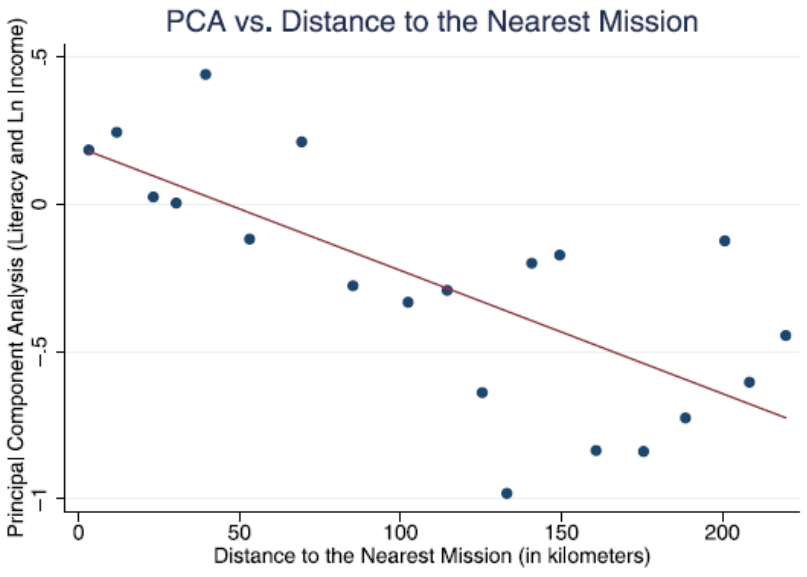


FIGURE IV

Literacy and Income on Missionary Distance: Principal Component Analysis

Figure 8: Baseline Model with PCA of Different Outcomes

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- **Assumption 2**: The effect is driven by human capital shock, not conversion or religion
- **Assumption 3**: Historically treated and today's populations are related
- **Assumption 4**: If the effect is present today, it must be present 20-50 years ago as well.

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  - Accounting for geographic and weather-related covariates:
    - area, altitude, latitude, longitude, temperature, rainfall, ruggedness, slope, distance to the nearest river, distance to the nearest coast, a landlocked dummy, and closest Franciscan mission

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    - area, altitude, latitude, longitude, temperature, rainfall, ruggedness, slope, distance to the nearest river, distance to the nearest coast, a landlocked dummy, and closest Franciscan mission
  - **Implicit Assumption:** geographic and weather-related covariates are time-invariant (so that pre-treatment covariates)

# Robustness Check - 2

- **Assumption 1**: Jesuit missions did not select the regions with higher prior human capital and better regional characteristics

TABLE IV

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Alto Paraná mission distance | −0.0201*** | | | −0.000503 | 0.0185 | −0.0031 | 0.00399 |
| | (0.007) | | | (0.013) | (0.028) | (0.017) | (0.027) |
| | {0.007} | | | {0.019} | {0.028} | {0.019} | {0.027} |
| Guayrá mission distance | | 0.00422 | | −0.0015 | 0.0476*** | −0.00932 | 0.0267* |
| | | (0.009) | | (0.010) | (0.015) | (0.010) | (0.016) |
| | | {0.010} | | {0.010} | {0.015} | {0.011} | {0.016} |
| Itatín mission distance | | | −0.0497*** | −0.00728 | −0.135** | −0.0469 | −0.0956* |
| | | | (0.014) | (0.023) | (0.055) | (0.030) | (0.052) |
| | | | {0.014} | {0.033} | {0.055} | {0.034} | {0.052} |
| Jesuit mission distance | | | | | | 0.0244*** | 0.0216*** |
| | | | | | | (0.005) | (0.006) |
| | | | | | | {0.010} | {0.006} |
| Geo controls | Yes | Yes | Yes | No | Yes | No | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 548 | 548 | 548 | 549 | 548 | 549 | 548 |
| Within $R^2$ | 0.077 | 0.063 | 0.083 | 0.028 | 0.108 | 0.078 | 0.121 |
| $R^2$ | 0.082 | 0.068 | 0.088 | 0.032 | 0.113 | 0.078 | 0.126 |

# Robustness Check - 2

- **Assumption 1**: Jesuit missions did not select the regions with higher prior human capital and better regional characteristics
- Did Jesuit missions select the regions with higher prior human capital and some other demographic **(time-variant)** factors?

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| | | | | | | (0.005) | (0.006) |
| | | | | | | {0.010} | {0.006} |
| Geo controls | Yes | Yes | Yes | No | Yes | No | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 548 | 548 | 548 | 549 | 548 | 549 | 548 |
| Within $R^2$ | 0.077 | 0.063 | 0.083 | 0.028 | 0.108 | 0.078 | 0.121 |
| $R^2$ | 0.082 | 0.068 | 0.088 | 0.032 | 0.113 | 0.078 | 0.126 |

# Robustness Check - 2

- **Assumption 1**: Jesuit missions did not select the regions with higher prior human capital and better regional characteristics
- Did Jesuit missions select the regions with higher prior human capital and some other demographic **(time-variant)** factors?
  - **Placebo Test:** Looking at the effect of proximity to inoperative missions

TABLE IV

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Alto Paraná mission distance | −0.0201*** | | | −0.000503 | 0.0185 | −0.0031 | 0.00399 |
| | (0.007) | | | (0.013) | (0.028) | (0.017) | (0.027) |
| | {0.007} | | | {0.019} | {0.028} | {0.019} | {0.027} |
| Guayrá mission distance | | 0.00422 | | −0.0015 | 0.0476*** | −0.00932 | 0.0267* |
| | | (0.009) | | (0.010) | (0.015) | (0.010) | (0.016) |
| | | {0.010} | | {0.010} | {0.015} | {0.011} | {0.016} |
| Itatín mission distance | | | −0.0497*** | −0.00728 | −0.135** | −0.0469 | −0.0956* |
| | | | (0.014) | (0.023) | (0.055) | (0.030) | (0.052) |
| | | | {0.014} | {0.033} | {0.055} | {0.034} | {0.052} |
| Jesuit mission distance | | | | | | 0.0244*** | 0.0216*** |
| | | | | | | (0.005) | (0.006) |
| | | | | | | {0.010} | {0.006} |
| Geo controls | Yes | Yes | Yes | No | Yes | No | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 548 | 548 | 548 | 549 | 548 | 549 | 548 |
| Within $R^2$ | 0.077 | 0.063 | 0.083 | 0.028 | 0.108 | 0.078 | 0.121 |
| $R^2$ | 0.082 | 0.068 | 0.088 | 0.032 | 0.113 | 0.078 | 0.126 |

# Robustness Check - 2

- **Assumption 1**: Jesuit missions did not select the regions with higher prior human capital and better regional characteristics
- Did Jesuit missions select the regions with higher prior human capital and some other demographic **(time-variant)** factors?
  - **Placebo Test:** Looking at the effect of proximity to inoperative missions
    - Inoperative Missions: initially picked by Jesuit missionaries but ended up not being treated with those that received the full missionary "treatment."

TABLE IV

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Alto Paraná mission distance | −0.0201*** | | | −0.000503 | 0.0185 | −0.0031 | 0.00399 |
| | (0.007) | | | (0.013) | (0.028) | (0.017) | (0.027) |
| | {0.007} | | | {0.019} | {0.028} | {0.019} | {0.027} |
| Guayrá mission distance | | 0.00422 | | −0.0015 | 0.0476*** | −0.00932 | 0.0267* |
| | | (0.009) | | (0.010) | (0.015) | (0.010) | (0.016) |
| | | {0.010} | | {0.010} | {0.015} | {0.011} | {0.016} |
| Itatín mission distance | | | −0.0497*** | −0.00728 | −0.135** | −0.0469 | −0.0956* |
| | | | (0.014) | (0.023) | (0.055) | (0.030) | (0.052) |
| | | | {0.014} | {0.033} | {0.055} | {0.034} | {0.052} |
| Jesuit mission distance | | | | | | 0.0244*** | 0.0216*** |
| | | | | | | (0.005) | (0.006) |
| | | | | | | {0.010} | {0.006} |
| Geo controls | Yes | Yes | Yes | No | Yes | No | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 548 | 548 | 548 | 549 | 548 | 549 | 548 |
| Within $R^2$ | 0.077 | 0.063 | 0.083 | 0.028 | 0.108 | 0.078 | 0.121 |
| $R^2$ | 0.082 | 0.068 | 0.088 | 0.032 | 0.113 | 0.078 | 0.126 |

# Robustness Check - 2

- **Placebo Test:** Looking at the effect of proximity to inoperative missions

TABLE V

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual Poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Alto Paraná mission distance | 0.0155 | 0.0245 | −0.0005 | −0.0012 | −0.387** | −0.224 |
| | (0.018) | (0.019) | (0.003) | (0.002) | (0.155) | (0.155) |
| | {0.017} | {0.018} | {0.002} | {0.001} | {0.151} | {0.157} |
| Guayrá mission distance | −0.009 | 0.00501 | −0.00555*** | −0.00386*** | −0.0073 | 0.375 |
| | (0.010) | (0.013) | (0.001) | (0.001) | (0.212) | (0.255) |
| | {0.010} | {0.013} | {0.001} | {0.001} | {0.246} | {0.275} |
| Itatín mission distance | 0.0027 | −0.0346 | 0.00864* | 0.00699 | 0.408 | 0.126 |
| | (0.039) | (0.046) | (0.005) | (0.005) | (0.273) | (0.292) |
| | {0.038} | {0.045} | {0.005} | {0.005} | {0.248} | {0.261} |
| Jesuit mission distance | | −0.00681** | | −0.00252*** | | 0.137*** |
| | | (0.003) | | (0.001) | | (0.042) |
| | | {0.003} | | {0.001} | | {0.051} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.161 | 0.169 | 0.039 | 0.041 | 0.110 | 0.132 |
| $R^2$ | 0.190 | 0.198 | 0.879 | 0.881 | 0.758 | 0.777 |

Figure 10: Placebo

# Robustness Check - 2

- **Placebo Test:** Looking at the effect of proximity to inoperative missions

TABLE V

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual Poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Alto Paraná mission distance | 0.0155 | 0.0245 | −0.0005 | −0.0012 | −0.387** | −0.224 |
| | (0.018) | (0.019) | (0.003) | (0.002) | (0.155) | (0.155) |
| | {0.017} | {0.018} | {0.002} | {0.001} | {0.151} | {0.157} |
| Guayrá mission distance | −0.009 | 0.00501 | −0.00555*** | −0.00386*** | −0.0073 | 0.375 |
| | (0.010) | (0.013) | (0.001) | (0.001) | (0.212) | (0.255) |
| | {0.010} | {0.013} | {0.001} | {0.001} | {0.246} | {0.275} |
| Itatín mission distance | 0.0027 | −0.0346 | 0.00864* | 0.00699 | 0.408 | 0.126 |
| | (0.039) | (0.046) | (0.005) | (0.005) | (0.273) | (0.292) |
| | {0.038} | {0.045} | {0.005} | {0.005} | {0.248} | {0.261} |
| Jesuit mission distance | | −0.00681** | | −0.00252*** | | 0.137*** |
| | | (0.003) | | (0.001) | | (0.042) |
| | | {0.003} | | {0.001} | | {0.051} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.161 | 0.169 | 0.039 | 0.041 | 0.110 | 0.132 |
| $R^2$ | 0.190 | 0.198 | 0.879 | 0.881 | 0.758 | 0.777 |

Figure 10: Placebo

- **Implicit Assumption:**

# Robustness Check - 2

- **Placebo Test:** Looking at the effect of proximity to inoperative missions

TABLE V

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual Poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Alto Paraná mission distance | 0.0155 | 0.0245 | −0.0005 | −0.0012 | −0.387** | −0.224 |
| | (0.018) | (0.019) | (0.003) | (0.002) | (0.155) | (0.155) |
| | {0.017} | {0.018} | {0.002} | {0.001} | {0.151} | {0.157} |
| Guayrá mission distance | −0.009 | 0.00501 | −0.00555*** | −0.00386*** | −0.0073 | 0.375 |
| | (0.010) | (0.013) | (0.001) | (0.001) | (0.212) | (0.255) |
| | {0.010} | {0.013} | {0.001} | {0.001} | {0.246} | {0.275} |
| Itatín mission distance | 0.0027 | −0.0346 | 0.00864* | 0.00699 | 0.408 | 0.126 |
| | (0.039) | (0.046) | (0.005) | (0.005) | (0.273) | (0.292) |
| | {0.038} | {0.045} | {0.005} | {0.005} | {0.248} | {0.261} |
| Jesuit mission distance | | −0.00681** | | −0.00252*** | | 0.137*** |
| | | (0.003) | | (0.001) | | (0.042) |
| | | {0.003} | | {0.001} | | {0.051} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.161 | 0.169 | 0.039 | 0.041 | 0.110 | 0.132 |
| $R^2$ | 0.190 | 0.198 | 0.879 | 0.881 | 0.758 | 0.777 |

Figure 10: Placebo

- **Implicit Assumption:**
  - The failure of mission is not systematic

# Robustness Check - 2

- **Placebo Test:** Looking at the effect of proximity to inoperative missions

TABLE V

PLACEBO EFFECT OF ABANDONED JESUIT MISSIONS ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual Poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Alto Paraná mission distance | 0.0155 | 0.0245 | −0.0005 | −0.0012 | −0.387** | −0.224 |
| | (0.018) | (0.019) | (0.003) | (0.002) | (0.155) | (0.155) |
| | {0.017} | {0.018} | {0.002} | {0.001} | {0.151} | {0.157} |
| Guayrá mission distance | −0.009 | 0.00501 | −0.00555*** | −0.00386*** | −0.0073 | 0.375 |
| | (0.010) | (0.013) | (0.001) | (0.001) | (0.212) | (0.255) |
| | {0.010} | {0.013} | {0.001} | {0.001} | {0.246} | {0.275} |
| Itatín mission distance | 0.0027 | −0.0346 | 0.00864* | 0.00699 | 0.408 | 0.126 |
| | (0.039) | (0.046) | (0.005) | (0.005) | (0.273) | (0.292) |
| | {0.038} | {0.045} | {0.005} | {0.005} | {0.248} | {0.261} |
| Jesuit mission distance | | −0.00681** | | −0.00252*** | | 0.137*** |
| | | (0.003) | | (0.001) | | (0.042) |
| | | {0.003} | | {0.001} | | {0.051} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.161 | 0.169 | 0.039 | 0.041 | 0.110 | 0.132 |
| $R^2$ | 0.190 | 0.198 | 0.879 | 0.881 | 0.758 | 0.777 |

Figure 10: Placebo

- **Implicit Assumption:**
  - The failure of mission is not systematic
  - The regions with inoperative missions have not differ from the regions with operative missions

# Robustness Check - 3

- **Assumption 2**: The effect is driven by human capital shock, not conversion or religion

TABLE VI

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | Brazil | Argentina | Paraguay |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Franciscan mission distance | 0.00579 | −0.00899 | −0.01200 | −0.0335*** | −0.0618*** | −0.0529* | −0.03500 |
| | (0.005) | (0.008) | (0.008) | (0.008) | (0.019) | (0.029) | (0.025) |
| | {0.006} | {0.011} | {0.009} | {0.012} | {0.019} | {0.030} | {0.026} |
| Jesuit mission distance | | | 0.0131** | 0.0183*** | 0.0518*** | 0.111*** | 0.0208 |
| | | | (0.005) | (0.005) | (0.009) | (0.029) | (0.024) |
| | | | {0.005} | {0.006} | {0.010} | {0.032} | {0.029} |
| Geo controls | No | Yes | No | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 549 | 548 | 549 | 548 | 467 | 42 | 39 |
| Within $R^2$ | 0.026 | 0.062 | 0.036 | 0.077 | 0.116 | 0.674 | 0.494 |
| $R^2$ | 0.031 | 0.067 | 0.041 | 0.082 | 0.120 | 0.737 | 0.495 |

Figure 11: Placebo

# Robustness Check - 3

- **Assumption 2**: The effect is driven by human capital shock, not conversion or religion
- Can we parse out the effect of religious conversion from human capital shock?

TABLE VI

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | Brazil | Argentina | Paraguay |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Franciscan mission distance | 0.00579 | −0.00899 | −0.01200 | −0.0335*** | −0.0618*** | −0.0529* | −0.03500 |
| | (0.005) | (0.008) | (0.008) | (0.008) | (0.019) | (0.029) | (0.025) |
| | {0.006} | {0.011} | {0.009} | {0.012} | {0.019} | {0.030} | {0.026} |
| Jesuit mission distance | | | 0.0131** | 0.0183*** | 0.0518*** | 0.111*** | 0.0208 |
| | | | (0.005) | (0.005) | (0.009) | (0.029) | (0.024) |
| | | | {0.005} | {0.006} | {0.010} | {0.032} | {0.029} |
| Geo controls | No | Yes | No | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 549 | 548 | 549 | 548 | 467 | 42 | 39 |
| Within $R^2$ | 0.026 | 0.062 | 0.036 | 0.077 | 0.116 | 0.674 | 0.494 |
| $R^2$ | 0.031 | 0.067 | 0.041 | 0.082 | 0.120 | 0.737 | 0.495 |

Figure 11: Placebo

# Robustness Check - 3

- **Assumption 2**: The effect is driven by human capital shock, not conversion or religion
- Can we parse out the effect of religious conversion from human capital shock?
  - **Placebo Test:** Looking at the effect of proximity to Guarani Franciscan missions

TABLE VI
FRANCISCAN AND JESUIT MISSIONARY EFFECT ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | Brazil | Argentina | Paraguay |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Franciscan mission distance | 0.00579 | −0.00899 | −0.01200 | −0.0335*** | −0.0618*** | −0.0529* | −0.03500 |
| | (0.005) | (0.008) | (0.008) | (0.008) | (0.019) | (0.029) | (0.025) |
| | {0.006} | {0.011} | {0.009} | {0.012} | {0.019} | {0.030} | {0.026} |
| Jesuit mission distance | | | 0.0131** | 0.0183*** | 0.0518*** | 0.111*** | 0.0208 |
| | | | (0.005) | (0.005) | (0.009) | (0.029) | (0.024) |
| | | | {0.005} | {0.006} | {0.010} | {0.032} | {0.029} |
| Geo controls | No | Yes | No | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 549 | 548 | 549 | 548 | 467 | 42 | 39 |
| Within $R^2$ | 0.026 | 0.062 | 0.036 | 0.077 | 0.116 | 0.674 | 0.494 |
| $R^2$ | 0.031 | 0.067 | 0.041 | 0.082 | 0.120 | 0.737 | 0.495 |

Figure 11: Placebo

# Robustness Check - 3

- **Assumption 2**: The effect is driven by human capital shock, not conversion or religion
- Can we parse out the effect of religious conversion from human capital shock?
  - **Placebo Test:** Looking at the effect of proximity to Guarani Franciscan missions
    - Guarani Franciscan missions: Less emphasis on education and technical training

TABLE VI

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON MODERN EDUCATION

| | Illiteracy | | | | | | |
|---|---|---|---|---|---|---|---|
| | Argentina, Brazil, and Paraguay | | | | Brazil | Argentina | Paraguay |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Franciscan mission distance | 0.00579 | −0.00899 | −0.01200 | −0.0335*** | −0.0618*** | −0.0529* | −0.03500 |
| | (0.005) | (0.008) | (0.008) | (0.008) | (0.019) | (0.029) | (0.025) |
| | {0.006} | {0.011} | {0.009} | {0.012} | {0.019} | {0.030} | {0.026} |
| Jesuit mission distance | | | 0.0131** | 0.0183*** | 0.0518*** | 0.111*** | 0.0208 |
| | | | (0.005) | (0.005) | (0.009) | (0.029) | (0.024) |
| | | | {0.005} | {0.006} | {0.010} | {0.032} | {0.029} |
| Geo controls | No | Yes | No | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 549 | 548 | 549 | 548 | 467 | 42 | 39 |
| Within $R^2$ | 0.026 | 0.062 | 0.036 | 0.077 | 0.116 | 0.674 | 0.494 |
| $R^2$ | 0.031 | 0.067 | 0.041 | 0.082 | 0.120 | 0.737 | 0.495 |

Figure 11: Placebo

# Robustness Check - 3

- **Placebo Test:** Looking at the effect of proximity to Guarani Franciscan missions

TABLE VII

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Franciscan mission distance | −0.00175 | 0.0111*** | −0.00010 | 0.00356*** | −0.0225 | −0.0867 |
| | (0.004) | (0.004) | (0.001) | (0.001) | (0.042) | (0.056) |
| | {0.004} | {0.004} | {0.001} | {0.001} | {0.045} | {0.052} |
| Jesuit mission distance | | −0.0103*** | | −0.00356*** | | 0.130** |
| | | (0.002) | | (0.001) | | (0.062) |
| | | {0.002} | | {0.001} | | {0.057} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.119 | 0.166 | 0.032 | 0.039 | 0.070 | 0.088 |
| $R^2$ | 0.138 | 0.185 | 0.872 | 0.879 | 0.762 | 0.780 |

Figure 12: Placebo

# Robustness Check - 3

- **Placebo Test:** Looking at the effect of proximity to Guarani Franciscan missions

TABLE VII

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Franciscan mission distance | −0.00175 | 0.0111*** | −0.00010 | 0.00356*** | −0.0225 | −0.0867 |
| | (0.004) | (0.004) | (0.001) | (0.001) | (0.042) | (0.056) |
| | {0.004} | {0.004} | {0.001} | {0.001} | {0.045} | {0.052} |
| Jesuit mission distance | | −0.0103*** | | −0.00356*** | | 0.130** |
| | | (0.002) | | (0.001) | | (0.062) |
| | | {0.002} | | {0.001} | | {0.057} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.119 | 0.166 | 0.032 | 0.039 | 0.070 | 0.088 |
| $R^2$ | 0.138 | 0.185 | 0.872 | 0.879 | 0.762 | 0.780 |

Figure 12: Placebo

- **Implicit Assumption:**

# Robustness Check - 3

- **Placebo Test:** Looking at the effect of proximity to Guarani Franciscan missions

TABLE VII

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Franciscan mission distance | −0.00175 | 0.0111*** | −0.00010 | 0.00356*** | −0.0225 | −0.0867 |
| | (0.004) | (0.004) | (0.001) | (0.001) | (0.042) | (0.056) |
| | {0.004} | {0.004} | {0.001} | {0.001} | {0.045} | {0.052} |
| Jesuit mission distance | | −0.0103*** | | −0.00356*** | | 0.130** |
| | | (0.002) | | (0.001) | | (0.062) |
| | | {0.002} | | {0.001} | | {0.057} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.119 | 0.166 | 0.032 | 0.039 | 0.070 | 0.088 |
| $R^2$ | 0.138 | 0.185 | 0.872 | 0.879 | 0.762 | 0.780 |

Figure 12: Placebo

- **Implicit Assumption:**
  - The failure of mission is not systematic

# Robustness Check - 3

- **Placebo Test:** Looking at the effect of proximity to Guarani Franciscan missions

TABLE VII

FRANCISCAN AND JESUIT MISSIONARY EFFECT ON DEVELOPMENT PROXIES IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Median years of schooling Brazil | | Ln income Brazil and Paraguay | | Individual poverty index Argentina and Paraguay | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Franciscan mission distance | −0.00175 | 0.0111*** | −0.00010 | 0.00356*** | −0.0225 | −0.0867 |
| | (0.004) | (0.004) | (0.001) | (0.001) | (0.042) | (0.056) |
| | {0.004} | {0.004} | {0.001} | {0.001} | {0.045} | {0.052} |
| Jesuit mission distance | | −0.0103*** | | −0.00356*** | | 0.130** |
| | | (0.002) | | (0.001) | | (0.062) |
| | | {0.002} | | {0.001} | | {0.057} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 427 | 427 | 506 | 506 | 81 | 81 |
| Within $R^2$ | 0.119 | 0.166 | 0.032 | 0.039 | 0.070 | 0.088 |
| $R^2$ | 0.138 | 0.185 | 0.872 | 0.879 | 0.762 | 0.780 |

Figure 12: Placebo

- **Implicit Assumption:**
  - The failure of mission is not systematic
  - The regions with inoperative missions have not differ from the regions with operative missions

# Robustness Check - 4

- **Assumption 3**: Historically treated and today's populations are related

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- Can we show that population treated and observed are related?

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- **Assumption 3**: Historically treated and today's populations are related
- Can we show that population treated and observed are related?
    - The migration and urbaniztion are not the drivers of human capital and economic outcomes

# Robustness Check - 5

- **Assumption 4**: If the effect is present today, it must be present 20-50 years ago as well.

TABLE VIII

MISSIONARY EFFECT ON HISTORICAL AND POSTWAR EDUCATION

Panel A: Illiteracy in Argentina

| | 1895, OLS | | | | ML Probit | | |
|---|---|---|---|---|---|---|---|
| | Argentinean (1) | Males (2) | Females (3) | Foreigners (4) | 1970 (5) | 1980 (6) | 1991 (7) |
| Mission distance | 0.0505*** | 0.0395** | 0.0841*** | −0.0412*** | 0.00439* | 0.00462*** | 0.00368*** |
| | (0.018) | (0.016) | (0.017) | (0.005) | (0.002) | (0.002) | (0.001) |
| | {0.029} | {0.020} | {0.021} | {0.006} | | | |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | No | No | No | No | Yes | Yes | Yes |
| Observations | 32 | 33 | 34 | 33 | 13,532 | 175,706 | 109,887 |
| Within $R^2$ | — | — | — | — | 0.023 | 0.008 | 0.009 |
| $R^2$ | 0.598 | 0.714 | 0.872 | 0.877 | 0.023 | 0.009 | 0.010 |

Panel B: Education in Brazil

| | Illiteracy in Brazil 1920, OLS | | | Median years of schooling ML probit | |
|---|---|---|---|---|---|
| | Total (1) | Brazilian (2) | Foreigners (3) | 1980 (4) | 1991 (5) |
| Mission distance | 0.176** | 0.183*** | 0.110 | −0.00993*** | −0.00909*** |
| | (0.071) | (0.066) | (0.071) | (0.003) | (0.003) |
| | {0.081} | {0.087} | {0.076} | | |
| Geo controls | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | No | No | No | Yes | Yes |
| Observations | 71 | 71 | 71 | 232,717 | 331,498 |
| Within $R^2$ | — | — | — | 0.0583 | 0.051 |
| $R^2$ | 0.149 | 0.17 | 0.444 | 0.061 | 0.054 |

Figure 13: Persistence of Human Capital

# Theory:

- Theory's suggest that historical human capital shocks is one of the most important determinants of today's human capital and economic growth

# Theory:

- Theory's suggest that historical human capital shocks is one of the most important determinants of today's human capital and economic growth
  - **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities

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- Theory's suggest that historical human capital shocks is one of the most important determinants of today's human capital and economic growth
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    - Specialization in industries that require more skill-intensive manufacturing

# Theory:

- Theory's suggest that historical human capital shocks is one of the most important determinants of today's human capital and economic growth
  - **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities
    - Shift from agriculture to manifactuaring
    - Specialization in industries that require more skill-intensive manufacturing
  - **Technology Adoption in Agriculture**:

# Theory:

- Theory's suggest that historical human capital shocks is one of the most important determinants of today's human capital and economic growth
  - **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities
    - Shift from agriculture to manifactuaring
    - Specialization in industries that require more skill-intensive manufacturing
  - **Technology Adoption in Agriculture**:
    - Adoption and use of newer technologies

# Mechanisms - 1

"In his 1827 visit to the former mission of Loreto, Argentina, French naturalist Alcide d'Orbigny reported how indigenous inhabitants still lived "following the old missionary customs" (cited in G´alvez 1995, 392).

- **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities

TABLE IX

MISSIONARY EFFECT ON STRUCTURAL TRANSFORMATION IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Brazil 2010 Employed in | | | Argentina 2001 Employed in | | | Paraguay 2012 Employed in | | |
|---|---|---|---|---|---|---|---|---|---|
| | Agriculture (1) | Manufacturing (2) | Commerce (3) | Agriculture (4) | Manufacturing (5) | Commerce (6) | Agriculture (7) | Manufacturing (8) | Commerce (9) |
| Panel A: Without Geographic Controls | | | | | | | | | |
| Mission distance | 0.0174 | −0.0587*** | 0.00737 | 0.00543*** | −0.00022 | −0.00164*** | 0.0133** | −0.00755 | −0.0112** |
| | {0.027} | {0.012} | {0.008} | (0.002) | (0.001) | (0.001) | (0.006) | (0.005) | (0.005) |
| Observations | 466 | 466 | 466 | 48,476 | 48,476 | 48,476 | 1,962 | 1,962 | 1,962 |
| Within $R^2$ | 0.045 | 0.221 | 0.032 | 0.079 | 0.001 | 0.007 | 0.044 | 0.014 | 0.026 |
| $R^2$ | 0.168 | 0.274 | 0.104 | 0.105 | 0.002 | 0.008 | 0.061 | 0.014 | 0.026 |
| Panel B: With Geographic Controls | | | | | | | | | |
| Mission distance | 0.151*** | -0.0877*** | -0.0300** | 0.0218*** | -0.000228 | -0.00908*** | 0.0147* | -0.0189*** | -0.0171*** |
| | {0.048} | {0.022} | {0.013} | (0.008) | (0.003) | (0.003) | (0.009) | (0.007) | (0.005) |
| Observations | 426 | 426 | 426 | 48,476 | 48,476 | 48,476 | 1,928 | 1,928 | 1,928 |
| Within $R^2$ | 0.135 | 0.287 | 0.190 | 0.148 | 0.013 | 0.014 | 0.100 | 0.050 | 0.054 |
| $R^2$ | 0.301 | 0.357 | 0.272 | 0.167 | 0.014 | 0.014 | 0.117 | 0.051 | 0.054 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are the percentage of the population working in agriculture, manufacturing, and commerce in Brazil in columns (1) to (3); whether a person is working in agriculture, manufacturing, and commerce in Argentina in 2001 in columns (4) to (6); and Paraguay in 2012 in columns (7) to (9). Mesoregion fixed effects are included for Brazil and state fixed effects for Argentina and Paraguay throughout. Geographic controls in Panel B include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS in columns (1) to (3) and probit elsewhere

# Mechanisms - 1

"In his 1827 visit to the former mission of Loreto, Argentina, French naturalist Alcide d'Orbigny reported how indigenous inhabitants still lived "following the old missionary customs" (cited in G´alvez 1995, 392).

- **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities
  - Shift from agriculture to manifactuaring

TABLE IX

MISSIONARY EFFECT ON STRUCTURAL TRANSFORMATION IN BRAZIL, ARGENTINA, AND PARAGUAY

| | Brazil 2010 Employed in | | | Argentina 2001 Employed in | | | Paraguay 2012 Employed in | | |
|---|---|---|---|---|---|---|---|---|---|
| | Agriculture (1) | Manufacturing (2) | Commerce (3) | Agriculture (4) | Manufacturing (5) | Commerce (6) | Agriculture (7) | Manufacturing (8) | Commerce (9) |
| Panel A: Without Geographic Controls | | | | | | | | | |
| Mission distance | 0.0174 | −0.0587*** | 0.00737 | 0.00543*** | −0.00022 | −0.00164*** | 0.0133** | −0.00755 | −0.0112** |
| | {0.027} | {0.012} | {0.008} | (0.002) | (0.001) | (0.001) | (0.006) | (0.005) | (0.005) |
| Observations | 466 | 466 | 466 | 48,476 | 48,476 | 48,476 | 1,962 | 1,962 | 1,962 |
| Within $R^2$ | 0.045 | 0.221 | 0.032 | 0.079 | 0.001 | 0.007 | 0.044 | 0.014 | 0.026 |
| $R^2$ | 0.168 | 0.274 | 0.104 | 0.105 | 0.002 | 0.008 | 0.061 | 0.014 | 0.026 |
| Panel B: With Geographic Controls | | | | | | | | | |
| Mission distance | 0.151*** | -0.0877*** | -0.0300** | 0.0218*** | -0.000228 | -0.00908*** | 0.0147* | -0.0189*** | -0.0171*** |
| | {0.048} | {0.022} | {0.013} | (0.008) | (0.003) | (0.003) | (0.009) | (0.007) | (0.005) |
| Observations | 426 | 426 | 426 | 48,476 | 48,476 | 48,476 | 1,928 | 1,928 | 1,928 |
| Within $R^2$ | 0.135 | 0.287 | 0.190 | 0.148 | 0.013 | 0.014 | 0.100 | 0.050 | 0.054 |
| $R^2$ | 0.301 | 0.357 | 0.272 | 0.167 | 0.014 | 0.014 | 0.117 | 0.051 | 0.054 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are the percentage of the population working in agriculture, manufacturing, and commerce in Brazil in columns (1) to (3); whether a person is working in agriculture, manufacturing, and commerce in Argentina in 2001 in columns (4) to (6); and Paraguay in 2012 in columns (7) to (9). Mesoregion fixed effects are included for Brazil and state fixed effects for Argentina and Paraguay throughout. Geographic controls in Panel B include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS in columns (1) to (3) and probit elsewhere

# Mechanisms - 2

- **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities

TABLE X

MISSIONARY EFFECT ON SKILL-INTENSIVE INDUSTRIES IN BRAZIL

| | Brazil 2010 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Iron and steel | Tobacco products | Nonferrous metals | Fabricated metal products | Plastic products | Beverages industries | Transport equipment | Electric machinery | Industrial chemicals | Chemicals other |
| HCINT | 11.425 | 11.509 | 11.547 | 11.577 | 11.678 | 11.967 | 12.346 | 12.357 | 12.704 | 13.031 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mission distance | −0.00255** | −0.000104*** | −0.0265*** | −0.00230*** | −0.000349 | −0.0103*** | −0.00552** | −0.00685* | −0.00367* | −0.00203 |
| | (0.001) | (0.000) | (0.009) | (0.001) | (0.003) | (0.003) | (0.002) | (0.004) | (0.002) | (0.002) |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 |
| Within $R^2$ | 0.025 | 0.007 | 0.046 | 0.072 | 0.077 | 0.026 | 0.123 | 0.051 | 0.013 | 0.044 |
| $R^2$ | 0.025 | 0.009 | 0.046 | 0.075 | 0.084 | 0.034 | 0.124 | 0.055 | 0.024 | 0.046 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variable is an indicator variable that equals 1 if an individual reports working in the iron and steel, tobacco products, nonferrous metals, fabricated metal products, plastic products, beverages industries, transport equipment, electric machinery, industrial chemicals, and other chemicals industries in Brazil in 2010, ordered from least to most by their HCINT according to Ciccone and Papaioannou (2009). Mesoregion fixed effects are included. Geographic controls include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is for a probit model and errors clustered at the municipality level are in parentheses *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 15: Persistence of Human Capital

# Mechanisms - 2

- **Structural Transformation**: Human capital shock leads to sectoral shift in economic activities
  - Specialization in industries that require more skill-intensive manufacturing

TABLE X

MISSIONARY EFFECT ON SKILL-INTENSIVE INDUSTRIES IN BRAZIL

| | Brazil 2010 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Iron and steel | Tobacco products | Nonferrous metals | Fabricated metal products | Plastic products | Beverages industries | Transport equipment | Electric machinery | Industrial chemicals | Chemicals other |
| HCINT | 11.425 | 11.509 | 11.547 | 11.577 | 11.678 | 11.967 | 12.346 | 12.357 | 12.704 | 13.031 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mission distance | −0.00255** | −0.000104*** | −0.0265*** | −0.00230*** | −0.000349 | −0.0103*** | −0.00552** | −0.00685* | −0.00367* | −0.00203 |
| | (0.001) | (0.000) | (0.009) | (0.001) | (0.003) | (0.003) | (0.002) | (0.004) | (0.002) | (0.002) |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 | 174,964 |
| Within $R^2$ | 0.025 | 0.007 | 0.046 | 0.072 | 0.077 | 0.026 | 0.123 | 0.051 | 0.013 | 0.044 |
| $R^2$ | 0.025 | 0.009 | 0.046 | 0.075 | 0.084 | 0.034 | 0.124 | 0.055 | 0.024 | 0.046 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variable is an indicator variable that equals 1 if an individual reports working in the iron and steel, tobacco products, nonferrous metals, fabricated metal products, plastic products, beverages industries, transport equipment, electric machinery, industrial chemicals, and other chemicals industries in Brazil in 2010, ordered from least to most by their HCINT according to Ciccone and Papaioannou (2009). Mesoregion fixed effects are included. Geographic controls include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is for a probit model and errors clustered at the municipality level are in parentheses *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 15: Persistence of Human Capital

# Mechanisms - 3

- **Technology Adoption in Agriculture**:

TABLE XI

MISSIONARY EFFECT ON TECHNOLOGY ADOPTION IN AGRICULTURE (GENETICALLY ENGINEERED SOY) AND STRUCTURAL TRANSFORMATION IN BRAZIL

| | Brazil 1996–2006 | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Change in | | | Share in | | |
| | Total soy farmed (1) | GE soy (2) | Non-GE soy (3) | Agricultural productivity (4) | Agriculture (5) | Manufacturing (6) | Services (7) |
| Mission distance | −0.00117*** | −0.00164*** | 0.000721*** | −0.00240* | 0.0507** | −0.0393*** | −0.00907 |
| | (0.0002) | (0.0003) | (0.0002) | (0.0012) | (0.0233) | (0.0094) | (0.0166) |
| | {0.0002} | {0.0003} | {0.0002} | {0.0012} | {0.0324} | {0.0129} | {0.0231} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 509 | 245 | 239 | 262 | 524 | 524 | 524 |
| Within $R^2$ | 0.259 | 0.362 | 0.229 | 0.069 | 0.065 | 0.249 | 0.029 |
| $R^2$ | 0.608 | 0.552 | 0.553 | 0.117 | 0.329 | 0.313 | 0.254 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are total area planted with soy, changes in genetically engineered (GE) soy and non-GE soy from 1996 to 2006, the logarithm of agricultural productivity, and the share of the labor force in agriculture, manufacturing, and services in Brazil in percentages in 1996 and 2006. Mesoregion fixed effects are included. Geographic controls include latitude, longitude, distance to the nearest Franciscan mission, and soy suitability in columns (1) to (3). Data are from Bustos, Caprettini, and Ponticelli (2016). Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 16: Persistence of Human Capital

# Mechanisms - 3

- **Technology Adoption in Agriculture**:
  - Adoption and use of newer technologies

TABLE XI

MISSIONARY EFFECT ON TECHNOLOGY ADOPTION IN AGRICULTURE (GENETICALLY ENGINEERED SOY) AND STRUCTURAL TRANSFORMATION IN BRAZIL

| | Brazil 1996–2006 | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Change in | | | Share in | | |
| | Total soy farmed (1) | GE soy (2) | Non-GE soy (3) | Agricultural productivity (4) | Agriculture (5) | Manufacturing (6) | Services (7) |
| Mission distance | −0.00117*** | −0.00164*** | 0.000721*** | −0.00240* | 0.0507** | −0.0393*** | −0.00907 |
| | (0.0002) | (0.0003) | (0.0002) | (0.0012) | (0.0233) | (0.0094) | (0.0166) |
| | {0.0002} | {0.0003} | {0.0002} | {0.0012} | {0.0324} | {0.0129} | {0.0231} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 509 | 245 | 239 | 262 | 524 | 524 | 524 |
| Within $R^2$ | 0.259 | 0.362 | 0.229 | 0.069 | 0.065 | 0.249 | 0.029 |
| $R^2$ | 0.608 | 0.552 | 0.553 | 0.117 | 0.329 | 0.313 | 0.254 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are total area planted with soy, changes in genetically engineered (GE) soy and non-GE soy from 1996 to 2006, the logarithm of agricultural productivity, and the share of the labor force in agriculture, manufacturing, and services in Brazil in percentages in 1996 and 2006. Mesoregion fixed effects are included. Geographic controls include latitude, longitude, distance to the nearest Franciscan mission, and soy suitability in columns (1) to (3). Data are from Bustos, Caprettini, and Ponticelli (2016). Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 16: Persistence of Human Capital

# Alternative Mechanisms - 1

- **Population Density → Urbanization → Better Economic and Human Capital Outcomes**

TABLE XII

MISSIONARY EFFECT ON ALTERNATIVE TRANSMISSION MECHANISMS

| | Argentina, Brazil, and Paraguay | | | |
|---|---|---|---|---|
| | Population density (1) | Precolonial pop. density (2) | Road density (3) | Railroad density (4) |
| Panel A | | | | |
| Mission distance | 0.340* | 1.028 | −0.00916*** | 0.00136*** |
| | (0.205) | (1.119) | (0.002) | (0.0004) |
| | {0.207} | {1.138} | {0.002} | {0.0004} |
| Geo controls | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes |
| Observations | 548 | 69 | 548 | 548 |
| Within $R^2$ | 0.176 | 0.057 | 0.408 | 0.181 |
| $R^2$ | 0.180 | 0.302 | 0.626 | 0.351 |

Figure 17: Persistence of Human Capital

# Alternative Mechanisms - 2

- **Role of infrastructure**

TABLE XII
CONTINUED

| | Brazil | | Paraguay Visits | | Brazil Median years of schooling | |
|---|---|---|---|---|---|---|
| | Health index (1) | Touristic activities (2) | Museum (3) | Monument (4) | Resident (5) | Nonresident (6) |
| Panel B | | | | | | |
| Mission distance | −0.0889*** | 0.0009 | −0.00116* | −0.00333** | −0.00281*** | −0.00019 |
| | (0.021) | (0.001) | (0.001) | (0.002) | (0.001) | (0.002) |
| | {0.022} | {0.001} | {0.001} | {0.001} | {0.001} | {0.002} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 467 | 427 | 890 | 890 | 266 | 201 |
| Within $R^2$ | 0.162 | 0.033 | 0.020 | 0.039 | 0.123 | 0.093 |
| $R^2$ | 0.164 | 0.048 | 0.021 | 0.042 | 0.130 | 0.114 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are population density and precolonial population density in Panel A, columns (1) and (2), and road and railroad density in columns (3) and (4). The Brazilian IFDM Health Index is the dependent variable in Panel B column (1), prevalence of tourism in percentages in column (2), visits to museums and national monuments in columns (3) and (4), and median years of schooling in Brazil for residents and nonresidents in columns (5) and (6). Mesoregion fixed effects are included for Brazil. Geographic controls include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS with state fixed effects. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 18: Persistence of Human Capital

# Alternative Mechanisms - 2

- **Role of infrastructure**
- **Tourism**

TABLE XII
CONTINUED

| | Brazil | | Paraguay Visits | | Brazil Median years of schooling | |
|---|---|---|---|---|---|---|
| | Health index (1) | Touristic activities (2) | Museum (3) | Monument (4) | Resident (5) | Nonresident (6) |
| Panel B | | | | | | |
| Mission distance | −0.0889*** | 0.0009 | −0.00116* | −0.00333** | −0.00281*** | −0.00019 |
| | (0.021) | (0.001) | (0.001) | (0.002) | (0.001) | (0.002) |
| | {0.022} | {0.001} | {0.001} | {0.001} | {0.001} | {0.002} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 467 | 427 | 890 | 890 | 266 | 201 |
| Within $R^2$ | 0.162 | 0.033 | 0.020 | 0.039 | 0.123 | 0.093 |
| $R^2$ | 0.164 | 0.048 | 0.021 | 0.042 | 0.130 | 0.114 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are population density and precolonial population density in Panel A, columns (1) and (2), and road and railroad density in columns (3) and (4). The Brazilian IFDM Health Index is the dependent variable in Panel B column (1), prevalence of tourism in percentages in column (2), visits to museums and national monuments in columns (3) and (4), and median years of schooling in Brazil for residents and nonresidents in columns (5) and (6). Mesoregion fixed effects are included for Brazil. Geographic controls include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS with state fixed effects. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 18: Persistence of Human Capital

# Alternative Mechanisms - 2

- **Role of infrastructure**
- **Tourism**
- **Health Outcomes**: As alternative Outcome to Human Capital

TABLE XII
CONTINUED

| | Brazil | | Paraguay Visits | | Brazil Median years of schooling | |
|---|---|---|---|---|---|---|
| | Health index (1) | Touristic activities (2) | Museum (3) | Monument (4) | Resident (5) | Nonresident (6) |
| Panel B | | | | | | |
| Mission distance | −0.0889*** | 0.0009 | −0.00116* | −0.00333** | −0.00281*** | −0.00019 |
| | (0.021) | (0.001) | (0.001) | (0.002) | (0.001) | (0.002) |
| | {0.022} | {0.001} | {0.001} | {0.001} | {0.001} | {0.002} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 467 | 427 | 890 | 890 | 266 | 201 |
| Within $R^2$ | 0.162 | 0.033 | 0.020 | 0.039 | 0.123 | 0.093 |
| $R^2$ | 0.164 | 0.048 | 0.021 | 0.042 | 0.130 | 0.114 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are population density and precolonial population density in Panel A, columns (1) and (2), and road and railroad density in columns (3) and (4). The Brazilian IFDM Health Index is the dependent variable in Panel B column (1), prevalence of tourism in percentages in column (2), visits to museums and national monuments in columns (3) and (4), and median years of schooling in Brazil for residents and nonresidents in columns (5) and (6). Mesoregion fixed effects are included for Brazil. Geographic controls include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS with state fixed effects. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 18: Persistence of Human Capital

# Alternative Mechanisms - 2

- **Role of infrastructure**
- **Tourism**
- **Health Outcomes**: As alternative Outcome to Human Capital
- **Migration**

TABLE XII
CONTINUED

| | Brazil | | Paraguay Visits | | Brazil Median years of schooling | |
|---|---|---|---|---|---|---|
| | Health index (1) | Touristic activities (2) | Museum (3) | Monument (4) | Resident (5) | Nonresident (6) |
| Panel B | | | | | | |
| Mission distance | −0.0889*** | 0.0009 | −0.00116* | −0.00333** | −0.00281*** | −0.00019 |
| | (0.021) | (0.001) | (0.001) | (0.002) | (0.001) | (0.002) |
| | {0.022} | {0.001} | {0.001} | {0.001} | {0.001} | {0.002} |
| Geo controls | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 467 | 427 | 890 | 890 | 266 | 201 |
| Within $R^2$ | 0.162 | 0.033 | 0.020 | 0.039 | 0.123 | 0.093 |
| $R^2$ | 0.164 | 0.048 | 0.021 | 0.042 | 0.130 | 0.114 |

*Notes*. The table shows the coefficient of distance to the nearest Jesuit mission in kilometers. The dependent variables are population density and precolonial population density in Panel A, columns (1) and (2), and road and railroad density in columns (3) and (4). The Brazilian IFDM Health Index is the dependent variable in Panel B column (1), prevalence of tourism in percentages in column (2), visits to museums and national monuments in columns (3) and (4), and median years of schooling in Brazil for residents and nonresidents in columns (5) and (6). Mesoregion fixed effects are included for Brazil. Geographic controls include distance to the nearest coast, distance to the nearest river, distance to the nearest Franciscan mission, altitude, ruggedness, temperature, area, rainfall, latitude, and longitude. Please refer to Section I of the Online Appendix for units and additional details of these variables. Estimation is by OLS with state fixed effects. Robust standard errors are in parentheses and Conley standard errors are in curly brackets *** $p < .01$, ** $p < .05$, * $p < .1$.

Figure 18: Persistence of Human Capital

# References I

Valencia Caicedo, Felipe. 2019. "The Mission: Human Capital Transmission, Economic Persistence, and Culture in South America." *The Quarterly Journal of Economics* 134 (1): 507–56.