

# Maroon Communities: Cultural Transmission and Local Development in Brazil

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## Motivation

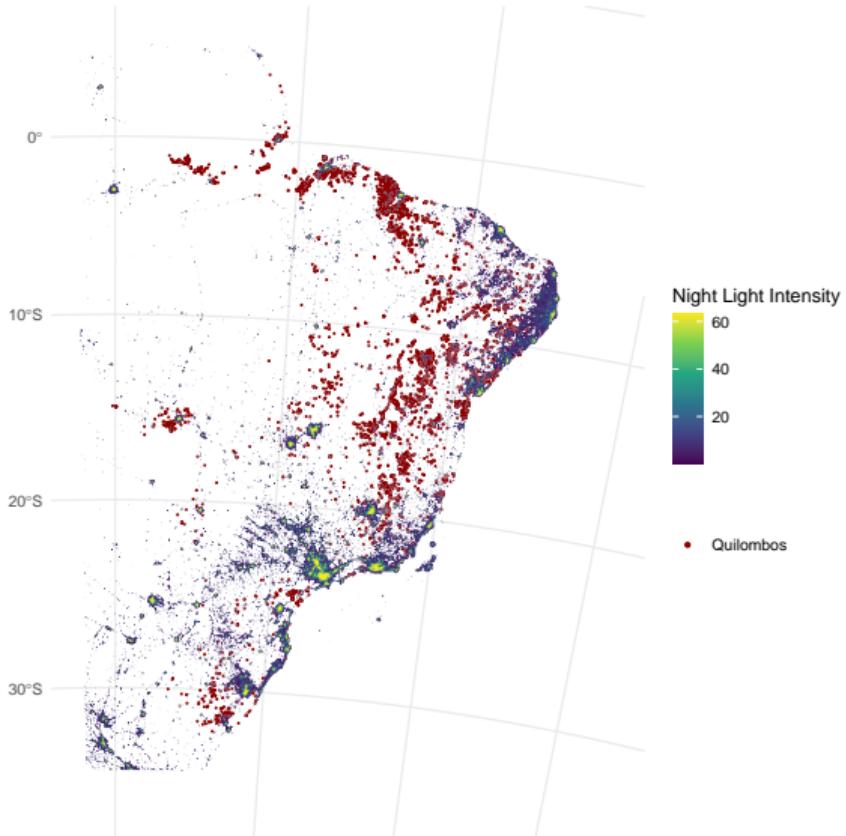
- ▶ Slave resistance (violent and non-violent) was an integral part of the slavery institution. Historically, slave resistance led to the formation of **ethnic territories of fugitive and liberated slaves**, called quilombos in Brazil (maroon communities).
- ▶ Today, there are more than 1.3 million quilombola descendants in Brazil in over 8000 communities (IBGE, 2022 Census). It seems small in relation to Brazil's total population, but it is equivalent to 10% of Portugal's population, for example.
- ▶ Quilombos have been studied extensively, mainly by historians but also by geographers, anthropologists, and sociologists. Economists have overlooked this part of history.

## Motivation

- ▶ Recent historiography (e.g. João José Reis, Flávio Gomes, etc) has shown that quilombos were historically culturally and economically integrated into the society and not hidden away relying on self-sufficiency (old view in history).
- ▶ Historians and Economic Historians have also shown that many New World endeavors were entirely dependent on African skills, such as black smiting, metalworking, artisan crafts, and skilled carpentry and masonry (e.g Stuart Schwartz, Russel-Wood, Hebert Klein, Flávio Versiani).
- ▶ Other social scientists (e.g. Rafael Sanzio) have shown that quilombos historically act as a kinship network and as a repository of these skills and knowledge.
  - ▶ Kinship is culture (not biology) (Sahlins 2013).
- ▶ This suggests that quilombos can affect the local economy and also suggests some likely mechanisms that could explain why this effect exists.

# Motivation

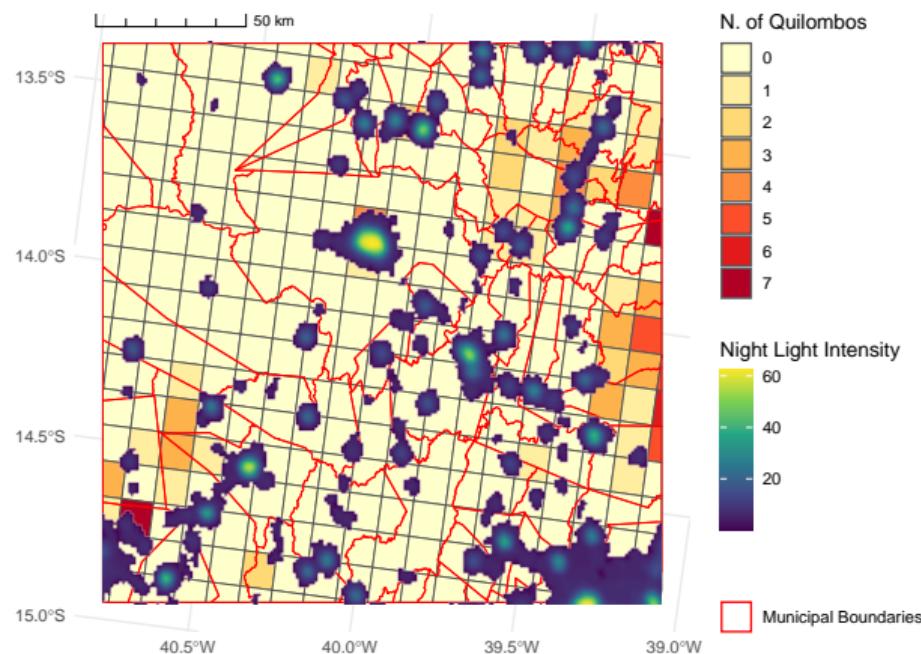
- ▶ Strong correlation between maroon communities ( $N = 8,441$ ) and night lights in 2010.
  - ▶ Grid-cell regression ( $N = 54,156$ ) with municipality FEs of quilombos on night light intensity yields a 1-to-1 coefficient.
  - ▶ Robust to “turning off” the quilombo pixels.
- ▶ The coefficient, however, reduces in half when controlling for population.
- ▶ The correlation goes back as far as 1992 (the first year of night lights).



# Motivation

We can learn three facts from this simple exercise:

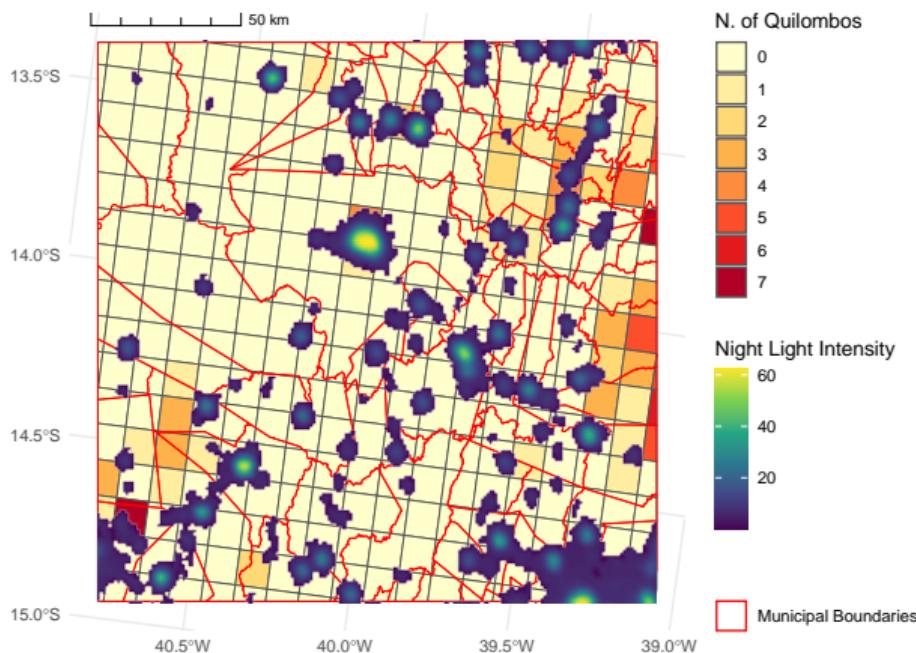
1. Quilombos are not randomly distributed across space; we need to find an exogenous variation at the **local** level that we can explore.



# Motivation

We can learn three facts from this simple exercise:

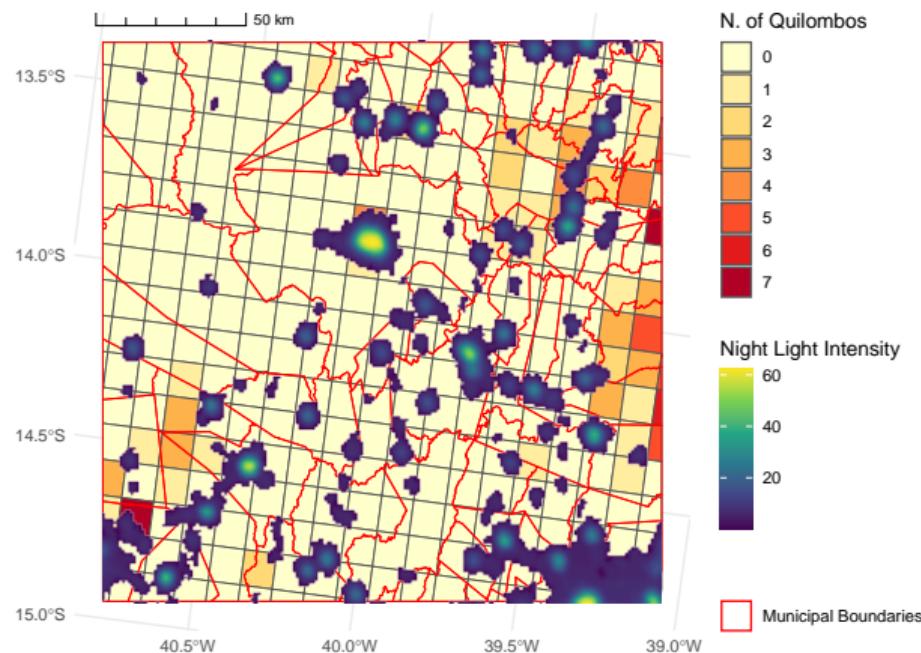
2. The correlation is not “just population,” it appears to also translate into income, but to identify a **causal effect of quilombos** we have to be careful to find a variation that is independent of historical population density.
  - ▶ Historical selection can go both ways, but already more dense and rich areas could have attracted the maroons, and both communities and income persisted.



# Motivation

We can learn three facts from this simple exercise:

3. The correlation is not likely to be a product of recent institutional development.
  - ▶ Community certification via Fundação Palmares was instituted only in 2003.
  - ▶ Formal land titling via INCRA was instituted in 1995 and has given titles to relatively few communities.
  - ▶ We have to look for deeper roots... like culture.



## What I do

- ▶ Use geocoded location of all quilombos and least-cost paths based on exogenous geography to build a [Quilombo Access](#) (QA) measure for each municipality at the local level (i.e. 30 km for each side).
- ▶ I compliment the OLS regressions using QA as treatment with two additional identification strategies:
  1. An IV based on plausibly exogenous variation in the construction of paved roads.
    - ▶ Here I can control for historical population density before the roads were constructed.
  2. Recentering the treatment and the IV with random shocks of placebo maroon communities (Borusyak and Hull 2023).
- ▶ I then look at the effect of QA on income and explore various mechanisms based on cultural intergenerational transmission.

## What I find

- ▶ Quilombo Access has a positive effect on the local economy.
    - ▶ Measured by individual-level hourly wages.
  - ▶ How does the quilombos plausibly affect the economy?
1. Quilombo Access has a positive effect on socialization and intergenerational cultural transmission of quilombo traits, consistent with a cultural heterogeneity equilibrium (Bisin and Verdier 2000, 2001).
    - ▶ More homogamous marriages between blacks and between Afro-Brazilian religion followers.
    - ▶ More municipal-level cultural activities (quilombos, Afro-Brazilian religion, capoeira).
    - ▶ More people with skilled occupations historically connected to the quilombos.
  2. Culture → Institutions (Bisin and Verdier 2024).
    - ▶ More black candidates and black politicians elected.
    - ▶ More municipal-level culture and memory policies.
  3. Skills → density → income (consistent with a spatial equilibrium à la Glaeser and Gottlieb 2009).
    - ▶ Higher population density.

# Roadmap

1. Historical Context
2. Data
3. Empirical Strategy
4. Results

# Historical Context

- ▶ The formation of quilombos in historical perspective: Trade and the organized reproduction of the territory (Flávio Gomes and João José Reis).

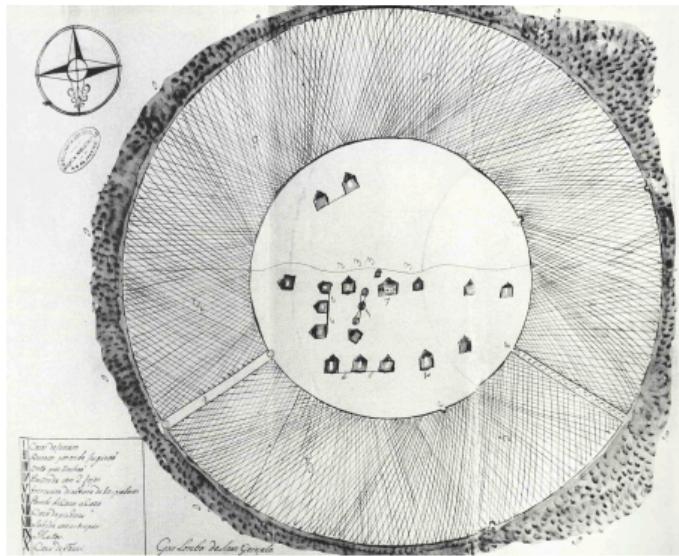


Figure: Quilombo São Gonçalo, 1796 (Anais da Biblioteca Nacional).



Figure: Quilombo products arrive at the Court market in Rio de Janeiro, c. 1825 ("Rue Droite à Rio Janeiro", M. Rugendas, 1835).

# Historical Context

- Resistance as a repository of culture and religion.



Figure: “Jogar Capoeira”, M. Rugendas, 1835.



Figure: “Negros Dançando”, Z. Wagner, 1634.

# Historical Context

- ▶ Quilombos and occupational skills:
  - ▶ Fugitives and manumitted slaves were more likely to be skilled (Colistete 2021; Klein 2012).
  - ▶ There is a direct link between some ethnicities (Jeje, Mina, Yoruba, Nago, Ashanti, etc) and skilled occupations in colonial Brazil (e.g. Russel-Wood 1977).
  - ▶ Also, there is a direct link between Afro-Brazilian religion and metal-related skills (similar to Jewish and Jesuit occupation selection in Botticini and Eckstein 2007 and Valencia Caicedo 2018).



Figure: "Ogum", J. Nunes and C. Schubl, Museu Nacional, 2020.

# Data

- ▶ Quilombos: Geocoded locations of all self-declared quilombos (IBGE 2022 Census).
- ▶ Quilombos today can be a historical product of seven main contexts (Sanzio 2009): Bankrupt and/or abandoned farm occupations; purchase of property by manumitted slaves; donations of land by farm owners to former slaves; payment for services rendered in official wars; lands of some religious order left to former slaves; coastal occupations of land under the Navy control; and extensions of federal land not properly registered.

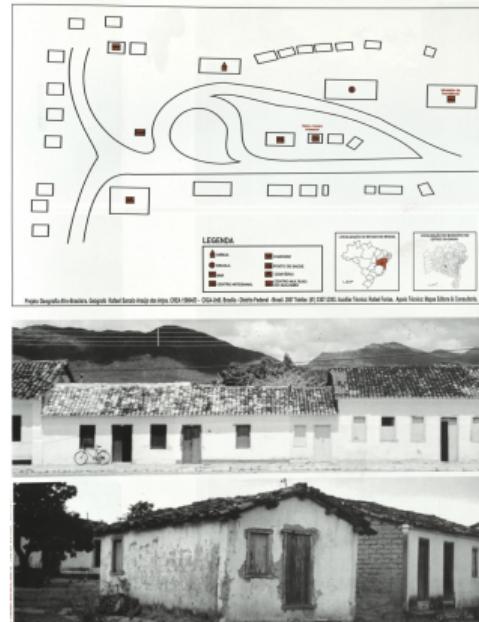


Figure: Contemporaneous Quilombo, Sanzio 2009.

## Data

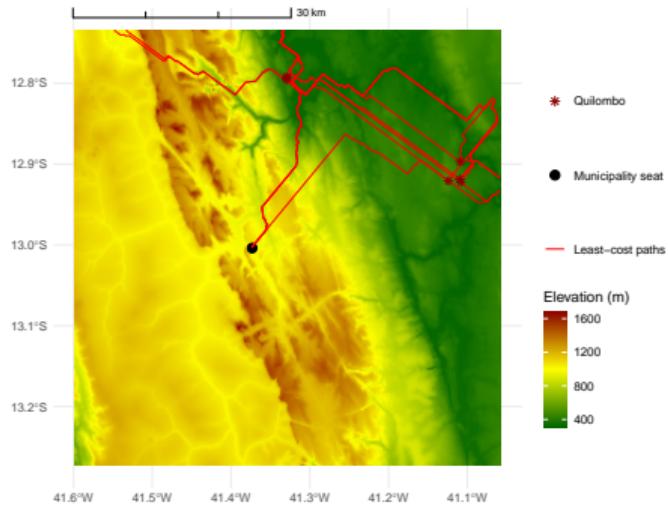
- ▶ Income (hourly wage): IBGE 2010 Census microdata.
- ▶ Marriages: IBGE 2010 Census microdata.
- ▶ Skilled occupations: IBGE 2010 Census microdata and International Standard Classification of Occupations (ISCO).
  - ▶ Crafts and Trades, Metal and Blacksmith, Skilled Carpenter and Mason.
- ▶ Municipal-level cultural activities and policies: IBGE MUNIC surveys.
- ▶ Population density: IBGE 2010 and 1920 censuses.
- ▶ Black candidates and elected: TSE 2016 election.
- ▶ Paved roads: IBGE shapefiles for state and federal roads.
- ▶ Geography: SRTM 250m elevation raster and other sources.

## Empirical Strategy

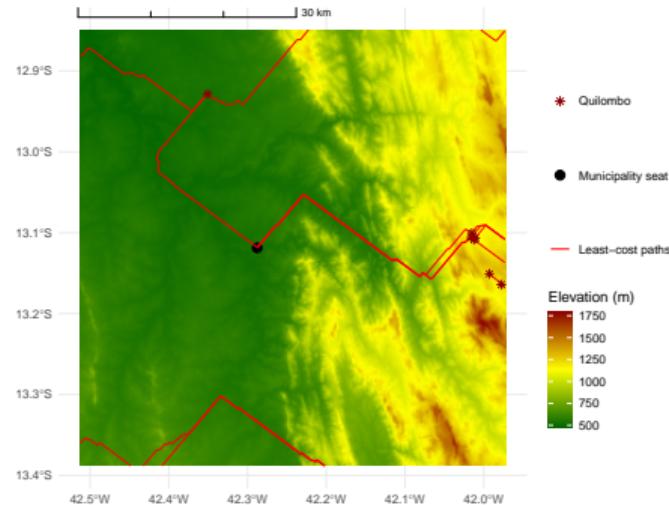
- ▶ To build the least-cost paths, I use the Dijkstra algorithm to minimize costs only based on the terrain (elevation raster).
- ▶ Then QA is simply the sum of the inverse of the distance between the municipality seat and the quilombos (30km cutoff):

$$QuilomboAccess_i = \sum_j \frac{QuilomboPop_{ij}}{walkLCPdist_{ij}} \quad (1)$$

# Empirical Strategy



**Figure:** Example 1: Sum of walk LCP dist. = 120 km and QA = 0.13.



**Figure:** Example 2: Sum of walk LCP dist. = 147 km and QA = 0.11.

## Empirical Strategy

- ▶ The IV approach explores the construction of state and federal roads which plans are plausibly not affected by the quilombos.
- ▶ I then construct the IV as the difference between the sum of the “walking LCP” before and after the construction of the roads.

# Empirical Strategy

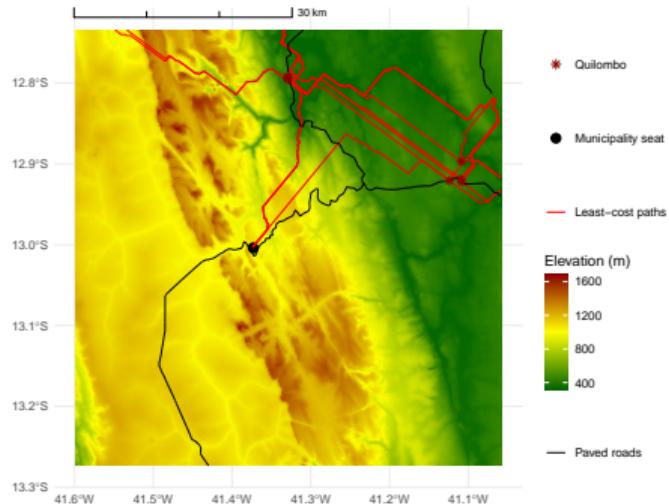


Figure: Example 1

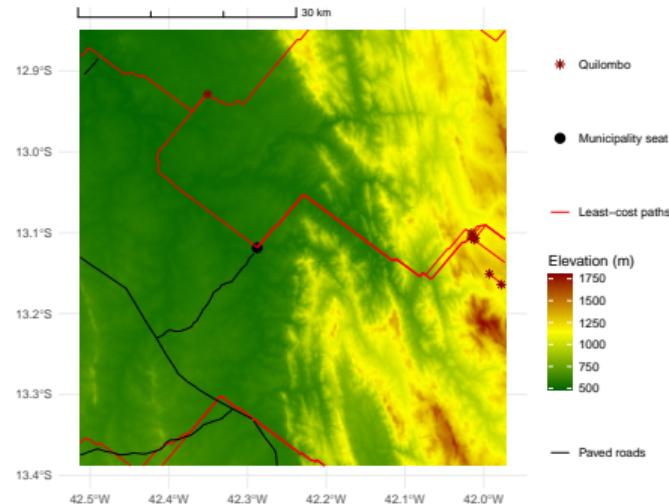
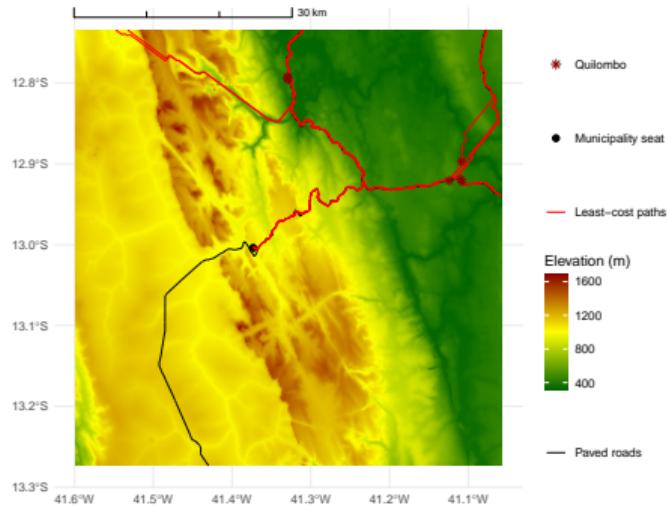
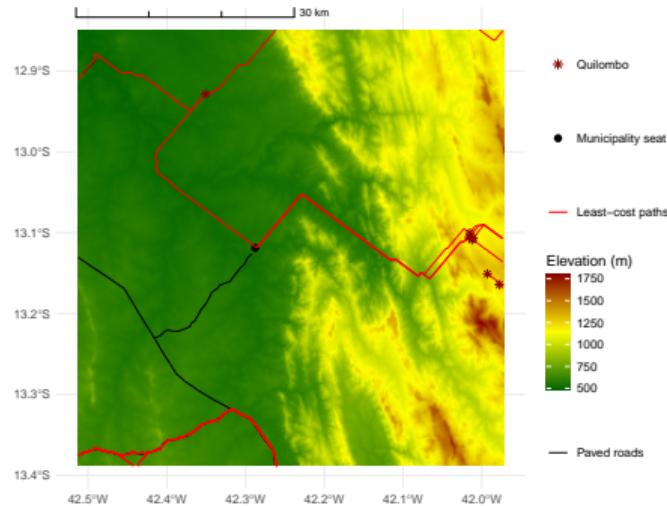


Figure: Example 2

# Empirical Strategy



**Figure:** Example 1: Sum of walk LCP dist. with roads = 2 km and IV = -118.



**Figure:** Example 2: Sum of walk LCP dist. with roads = 149 km and IV = 2.

# Empirical Strategy

- ▶ For recentering, I follow Borusyak and Hull (2023) and treat the quilombos as random shocks, given pre-determined geography and location of cities.
- ▶ I draw the same quantity of random placebo quilombos in suitable and constrained terrain and build the LCP paths with and without roads.
- ▶ I then draw 1000 random samples of real and placebo quilombos and build the expected QA and IV measures.
- ▶ The recentered QA and IV are simply the original variables subtracted by the expected variables, which can then serve as instruments.

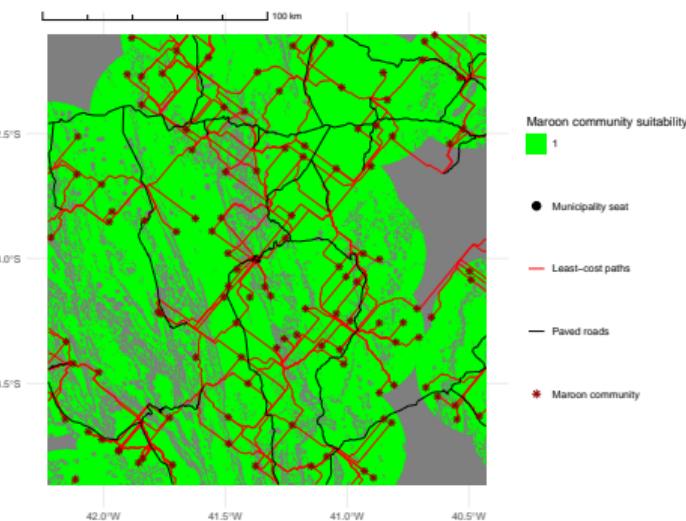


Figure: Example 1 with random quilombos.

## Empirical Strategy

- ▶ The baseline estimating equation is:

$$\text{Outcome}_i = QA_i + \text{controls}_i + \epsilon_i \quad (2)$$

- ▶ When at the individual level, controls are latitude and longitude, state fixed effects, and individual fixed effects for sex, race, marital status, and educational attainment.
- ▶ When at the municipal level, controls include latitude, longitude, state fixed effects, temperature, precipitation, elevation, and ruggedness.
- ▶ When using the roads IV, I can additionally control for population density in 1920.
- ▶ I restrict the sample to treated municipalities and neighbors (results are robust to the full sample).
- ▶ I always present clustered standard errors at the municipality level and Conley spatial standard errors (50 km) with the derived first stage Kleinbergen-Paap F statistic for the IV regressions.

## Results: Income

	Dependent Variable: ln(hourly wage)			
	QA OLS	QA Recentered IV	Roads IV	Roads Recentered IV
<b>Panel A: Full Sample</b>				
Quilombo Access	0.04140	0.04559	0.04266	0.05594
Robust SE	(0.00066)	(0.00071)	(0.00129)	(0.00137)
Cluster SE	{0.01619}	{0.01711}	{0.01978}	{0.02032}
Conley SE	[0.02031]	[0.02016]	[0.03194]	[0.0338]
Observations	4995543	4995543	4995543	4995543
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		2963.84	188.4	97.34
<b>Panel B: Blacks</b>				
Quilombo Access	0.04378	0.04790	0.03966	0.07227
Robust SE	(0.00193)	(0.00205)	(0.0036)	(0.00389)
Cluster SE	{0.01605}	{0.01719}	{0.01691}	{0.01878}
Conley SE	[0.02015]	[0.02017]	[0.02892]	[0.03283]
Observations	420960	420960	420960	420960
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		4816.79	183.47	59.46

## Results: Homogamous Marriages

	QA OLS	QA Recentered IV	Roads IV	Roads Recentered IV
<b>Panel A: Dep. Var.: Black Marriages (= 1)</b>				
Quilombo Access	0.01391	0.01445	0.01527	0.01724
Robust SE	(2e-04)	(0.00022)	(0.00033)	(0.00038)
Cluster SE	{0.00199}	{0.0023}	{0.0016}	{0.00257}
Conley SE	[0.00268]	[0.00298]	[0.00294]	[0.00459]
Observations	3434363	3434363	3434363	3434363
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		4740.96	211.16	119.94
<b>Panel B: Dep. Var.: Afro-Brazilian Religious Marriages (= 1)</b>				
Quilombo Access	0.00106	0.00101	0.00168	0.00210
Robust SE	(4e-05)	(4e-05)	(7e-05)	(1e-04)
Cluster SE	{0.00029}	{0.00031}	{0.00039}	{0.00057}
Conley SE	[5e-04]	[0.00048]	[0.00079]	[0.00107]
Observations	3287902	3287902	3287902	3287902
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		4728.58	211.32	124.38

# Results: Skills

	QA OLS	QA Recentered IV	Roads IV	Roads Recentered IV
<b>Panel A: Dep. Var.: Crafts and Trades (= 1)</b>				
Quilombo Access	0.00187	0.00275	0.01619	0.00315
Robust SE	(0.00017)	(0.00018)	(0.00038)	(0.00039)
Cluster SE	{0.0017}	{0.00186}	{0.00325}	{0.00419}
Conley SE	[0.00221]	[0.0022]	[0.00512]	[0.00649]
Observations	7074697	7074697	7074697	7074697
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		4041.84	201.68	115.61
<b>Panel B: Dep. Var.: Metal and Blacksmith (= 1)</b>				
Quilombo Access	0.00020	0.00044	0.00197	0.00084
Robust SE	(5e-05)	(6e-05)	(0.00013)	(0.00013)
Cluster SE	{0.00031}	{0.00033}	{0.001}	{0.00088}
Conley SE	[0.00037]	[0.00034]	[0.00148]	[0.00136]
Observations	7074697	7074697	7074697	7074697
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		4041.84	201.68	115.61
<b>Panel C: Dep. Var.: Skilled Carpenter and Mason (= 1)</b>				
Quilombo Access	0.00039	0.00051	0.00141	0.00060
Robust SE	(6e-05)	(6e-05)	(0.00012)	(0.00014)
Cluster SE	{0.00025}	{0.00025}	{0.00043}	{0.00054}
Conley SE	[3e-04]	[0.00029]	[0.00064]	[8e-04]
Observations	7074697	8894762	8894214	8894214
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		2350.49	193.35	126.94

## Results: Density

	Dependent Variable: ln(population density)			
	QA OLS	QA Recentered IV	Roads IV	Roads Recentered IV
<b>Panel A: Full Sample</b>				
Quilombo Access	0.11670	0.03530	0.48930	0.10557
Robust SE	(0.0267)	(0.02638)	(0.05536)	(0.05097)
Cluster SE	{0.0267}	{0.02638}	{0.05536}	{0.05097}
Conley SE	[0.04705]	[0.04476]	[0.11492]	[0.11647]
Observations	3974	3974	3974	3974
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		12362.42	223.84	183.94
<b>Panel B: Blacks</b>				
Quilombo Access	0.32216	0.23693	0.71432	0.35368
Robust SE	(0.02783)	(0.02764)	(0.06373)	(0.0588)
Cluster SE	{0.02783}	{0.02764}	{0.06373}	{0.0588}
Conley SE	[0.05176]	[0.04911]	[0.13116]	[0.13265]
Observations	3974	3974	3974	3974
State FE	Yes	Yes	Yes	Yes
Kleibergen-Paap F		12362.42	223.84	183.94

## Conclusion

- ▶ Recent Brazilian historiography has shown that quilombos have had an important economic and cultural impact since colonial times and has suggested some possible mechanisms.
- ▶ In this paper, I find that there is a contemporaneous positive effect of quilombos on income.
- ▶ A plausible mechanism that links quilombos to the economy is that the access of a municipality to quilombos leads to a cultural heterogeneity equilibrium with intergenerational transmission of quilombo traits.
- ▶ I have focused today more on skills and density, which would link back quilombo skills to the economy.
- ▶ Another potential mechanism is that quilombo culture leads to the improvement of institutions, for which there is also initial evidence.
- ▶ A promising path forward could be to better integrate cultural transmission in the spatial equilibrium framework.