BROTHER VOTES FOR BROTHER: THE EFFECTS OF PENTECOSTAL POLITICAL INFLUENCE IN BRAZIL*

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Abstract

The rise of far-right movements around the world have oftentimes been associated with a growing influence of conservative religions, such as Pentecostal Evangelicals. However, causal estimates of the effects of Pentecostal growth on political attitudes are limited. In this paper, I develop a novel empirical strategy to estimate the effects of Pentecostal growth on support for Evangelical and far-right candidates in Brazil. I exploit the staggered translation of the Bible into different indigenous languages by SIL, a 20th-century US Evangelical organization. To further strengthen identification, I predict the timing of SIL translations using linguistic distance to foreign languages with prior Bible translations. As a first stage result, I find that exposure to SIL activities increased the share of Pentecostal affiliations. Leveraging this variation, I find that a 1 p.p. increase in the share of Pentecostals increased Evangelical and far-right candidates' vote share by 18% and 16%, respectively. These effects are larger in municipalities with less educated, poorer, and more rural populations. Furthermore, results suggest that 20% of the votes obtained by Bolsonaro in 2018 can be attributed to the increase in Pentecostal affiliations. Finally, I find that SIL activities generate spillover effects in municipalities where no indigenous language is spoken, allowing me to extend the analysis to the rest of Brazil. These results suggest that the Pentecostal church is an important driving force in the rise of the far-right in the recent history of Brazil.

Keywords: Far-right, Voting, Pentecostal Evangelicals, Bible translation, Brazil.
JEL Codes: D72, N36, Z12, Z13.

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1 INTRODUCTION

One of the most significant transformations of recent decades in Latin America has been the decline of Catholicism and the rapid growth of Pentecostal Evangelicals. Pentecostal church leaders promote a socially conservative agenda and are strongly involved in politics. They exert political influence in several ways, from persuading their followers to support specific candidates to promoting pastors to run for elections. Political candidates are increasingly aware of the power of these organizations in mobilizing votes. This is best exemplified by the decision of Brazil's far-right candidate, Jair Bolsonaro, to convert to Pentecostalism two years before the 2018 presidential elections that he ultimately won.

An increasing number of studies have evaluated the diverse forces driving the recent rise of far-right movements worldwide. For instance, some have evaluated the role of migration patterns (Bazzi et al., 2023), exposure to refugees (Steinmayr, 2021), austerity reforms (Dal Bó et al., 2023) and trade flows (Autor et al., 2020). While the media regularly describes Pentecostalism as one of the driving forces in the rise of the far-right worldwide, we lack reliable estimates of the causal effects of Pentecostal growth on political outcomes.[1]

In this paper, I develop a novel empirical strategy to estimate the causal effect of Pentecostal growth on political outcomes in Brazil. As a source of exogenous variation in Pentecostal growth, I exploit the activities of the Summer Institute of Linguistics (SIL), a 20th-century evangelical organization founded in the US. The main objective of this organization was to translate the Bible into all languages throughout the world. This was seen as a key step to promote evangelism. Around 1960, SIL started translating the Bible into indigenous languages spoken across Brazil. The process of translating the Bible into an indigenous language is highly involved and typically takes around ten years. During this period, SIL missionaries spend time with the local communities to learn their language. While they usually do not reside in the tribal areas (but in bases in central towns), they have continuous contact with the indigenous population. It is likely that through these interactions, as well as through the legacy of having the Bible translated into the local language, SIL missionaries were able to spread their beliefs and conservative views representative of US evangelism. Still, the organization's presence in the tribal areas was limited, as they were not allowed to establish churches or schools.

In order to measure the timing of SIL activities, I collect novel data from the Joshua Project. This is a US Evangelical organization that kept records of when the Bible was

[1] See: "Of Bibles and ballots" *The Economist*, Jun 3rd 2021 and "Top Pentecostal leaders supported the far right in Brazil's presidential campaign" *Vox*, Oct 8, 2018. Retrieved on October 26, 2022.

translated into different languages in the world. It also provides a copy of the Bible, which I used to verify that the copyright of the translation belongs to SIL. To the best of my knowledge, this data had not been used before in any empirical study. I use the translation of the Bible as a proxy to measure SIL exposure in each municipality. For this purpose, I combine the information on the year of translation into each language from Joshua Project with geo-localized data on the indigenous languages spoken in 1980 in Brazil from the Ethnologue. Next, I map the data from the language to the municipality level by using detailed data on population count by each 100-meter square in Brazil. This procedure allows me to measure the population speaking each indigenous language at the municipality level.

Focusing the analysis on municipalities where indigenous languages are spoken, I first implement a Difference-in-Differences empirical strategy that compares outcomes before and after the first translation of the Bible into a local indigenous language. This analysis allows me to verify that there are no pre-existing trends in the outcomes of interest. This supports the assumption that the timing of SIL translations is as good as randomly assigned, conditional on controls. Next, I construct a time-varying municipality-level measure of exposure to SIL from 1980 to 2010 that exploits two additional sources of variation: (i) that some municipalities speak more than one indigenous language and (ii) the indigenous population that speaks each language. For each municipality and year, I add the population speaking indigenous languages with a Bible translation over the municipality's total population. I fixed the population measures to those in 1980. Hence, all the time-variation in this measure of SIL exposure is driven by the timing of Bible translations. This is my main regressor of interest in a specification that includes controls for time-fixed effects, year-fixed effects, and year-fixed effects interacted with municipalities' characteristics from 1980, such as mean income, urbanization rate, school attendance rate, and ethnicity composition.

Despite there being no evidence that SIL targets municipalities where Pentecostals were already growing, there remain some potential threats to the identification strategy. For instance, a concern would be if areas where SIL has easier access, politicians too may find access easier. Therefore, to further strengthen the identification strategy, I enrich this approach by predicting the timing of SIL translations using linguistic distance to foreign languages. More specifically, I construct a predicted SIL exposure by replacing the actual timing of the Bible translation with the translation of similar languages spoken outside Brazil. I show that linguistic similarities to other languages spoken outside Brazil for which the Bible was already translated have strong predicted power over the actual translation of the Bible.

The first set of results indicates that exposure to SIL increased the share of Pentecostal affiliations in municipalities where indigenous languages are spoken. Specifically, estimates imply that a 10 percentage point (p.p.) increase in the share of the population with the Bible translated into its native language, led to a 2 p.p. increase in the share of Pentecostal Evangelical affiliations. The increase in Pentecostal affiliation is not driven by the conversion of one specific religious affiliation, but there appears to be a substitution effect from different religions. As an additional step towards understanding the effect of SIL's presence, I classify the Pentecostal Evangelical population by ethnic group as defined in the Brazilian census. Results indicate that the effect of SIL presence on Pentecostal affiliations is mainly through the indigenous and brown populations. I obtain similar estimates using, instead of the actual timing of SIL exposure, the predicted timing of SIL exposure using linguistic similarities as a driving force for the timing of Bible translation.

I use the increase in the share of Pentecostal affiliations induced by SIL to study its effect on two main voting outcomes: the vote share obtained by far-right candidates in the presidential elections and the vote share obtained by candidates associated with Evangelical churches in the federal elections. I follow an IV approach, instrumenting the share of Pentecostals with the predicted SIL exposure measured using linguistic distance. I find that Pentecostal growth has strong effects on political outcomes in municipalities where indigenous languages are spoken. Specifically, a 10 p.p. increase in the share of the Pentecostal population leads to a 9 p.p. increase in the vote share of candidates associated with Evangelical congregations and a 2 p.p. increase in the vote share obtained by far-right candidates. This IV empirical strategy requires the following exclusion restriction: linguistic similarities of indigenous languages to languages spoken outside Brazil with a Bible translation only affect political outcomes through their effect on Pentecostal affiliations, conditional on the baseline controls. I find this assumption highly plausible since there are limited economic or social interactions between tribal groups located outside Brazil. These results suggest that Pentecostals have a sizeable political influence, increasing the vote share of both Evangelical and far-right candidates.

Next, I study the effect of Pentecostalism on support for Jair Bolsonaro in the 2018 presidential elections. While Datafolha's survey indicates that nearly 70% of Evangelicals voted for Bolsonaro in Brazil's 2018 presidential elections, different population characteristics may be driving this correlation. I am not able to implement the same panel data strategy described above because Bolsonaro did not participate in previous presidential elections and there is no comparable candidate. Therefore, I conducted a cross-sectional analysis and control for support for far-right candidates in previous elections. I follow

an IV approach, instrumenting the share of Pentecostals in 2010 with SIL exposure in 1980 measured with linguistic distance. Results suggest that a 10 p.p. increase in the share of the Pentecostal population led to a 4.3 p.p increase in the vote share obtained by Bolsonaro in the 2018 presidential elections. Considering Datafolha (2016) indicates Pentecostal affiliation reached 22% of the population in 2016, this estimate implies that 20% of the votes obtained by Bolsonaro in 2018 can be attributed to Pentecostals.

The results described above refer to the municipalities where indigenous languages are spoken, which contain 29% of Brazil's population. To evaluate the effect of Pentecostalism in the rest of Brazil, I design an empirical strategy that leverages the spillovers generated by SIL activity across non-indigenous-speaking municipalities. SIL activity in indigenous speaking municipalities can generate spillovers in other regions through the influence of commuters or migrants in their destination municipalities. Then, by following a market access approach, I explore whether SIL generated an increase in the share of Pentecostals in municipalities where no indigenous language is spoken. For each municipality, I calculate indirect SIL exposure as a weighted average of the predicted SIL exposure in other municipalities, with weights given by geographical distance to each of them.

Indirect effect estimates indicate that SIL activity generated spillovers, increasing the share of Pentecostal affiliation in municipalities where no indigenous language is spoken. Specifically, municipalities that go from the 50th to the 75th percentile of indirect SIL exposure increased the share of Pentecostal affiliation by 0.2 p.p. I then measure the total effect of SIL by including the direct effect in target municipalities and the spillover effects in the other municipalities of Brazil. Leveraging this variation, I study the implied elasticity of Pentecostalism on voting outcomes in the rest of Brazil.

I then focus on two samples: municipalities where no indigenous languages are spoken and all municipalities of Brazil. The elasticities estimated in the different samples are highly positive and significant, although the magnitudes are not the same. In municipalities where no indigenous languages are spoken, an increase of 10 p.p. in the share of Pentecostal affiliations leads to a 3 p.p. increase in the Evangelical vote share, while when including all municipalities, it increases 9 p.p. These results indicate that, while Pentecostal institutions have a strong political influence in all of Brazil, they are more persuasive in municipalities where indigenous languages are spoken. Descriptive statistics show that these municipalities, on average, are more rural, and the population density is lower. However, there do not seem to be differences in the education levels measured by literacy rate or school attendance.

I then explore whether the Pentecostal political influence depends on the levels of education, income, or the rural nature of the population. To do this, I separate the

municipalities between those that are below and above the median of, for instance, literacy rate. I then follow the same procedure for schooling, mean income, urbanization, and population density. Results indicate that Pentecostal institutions have stronger political influence in less educated, poorer, and more rural municipalities. These results hold within direct or within indirect effect. These suggest that Pentecostals' political power is stronger in regions that are more socially isolated and, therefore, may have less interaction with other political forces. This result seems to support the prior that Pentecostals tend to have a more substantial influence in regions where state presence might be weaker.[2]

Different mechanisms may drive the strong elasticity between Pentecostals and support for evangelical candidates. For instance, Churches' organizational advantage might be a very good instrument for campaigning in the elections, as Pentecostals frequently attend ceremonies where the Pastor tends to emphasize the institution's support for his candidate. To test this, I exploit the fact that Pentecostal churches in Brazil have very different structures and sizes. For instance, the two largest Pentecostal churches, the Assembly of God (AG) and the Universal Church of the Kingdom of God (UCKG) have significant organizational differences (Cammett, Novaes, and Tuñón, 2022). The UCKG has a highly centralized ecclesial structure among Evangelical churches, while the AG is divided among several ministries. Findings suggest that identifying with a Pentecostal congregation does not guarantee electoral support. Candidates endorsed by major Pentecostal churches with a centralized structure are more successful at capturing Pentecostal votes than other Evangelical candidates. This is particularly relevant given the campaign finance reform in Brazil that imposed spending limits (Avis et al., 2022).

My paper is related to several strands of the literature. First, it builds on the literature that studies the upsurge of Pentecostal Evangelicals. For instance, Costa, Marcantonio, and Rocha (2023) and Buccione and Mello (2020) study how economic downturns and exposure to church-affiliated TV channels increased both Pentecostal affiliations and support for candidates connected to Pentecostal churches. In turn, Corbi and Sanches (2021) examine the effect of tax subsidies on opening Pentecostal churches in Brazil and their impact on the political representation of Pentecostal groups. This paper contributes to this literature by proposing a novel identification strategy to uncover the causal effect of the rise of Pentecostalism on voting outcomes. Because this identification strategy is based on the activity of an international organization, the analysis can be expanded to other regions with intense SIL activity, most notably Latin America and Africa.

Second, this paper is related to the literature studying culture and individual pref-

[2]See:"Revival Fire Springing Up In Brazil" *Believers portal*, April 14, 2017. Retrieved on October 26, 2022.

erences. The empirical literature has provided evidence that religion is one of the key cultural elements that shape the formation of individual preferences. In particular, religion influences behavior towards work ethic, risk-taking, consumption, moral norms and other attitudes (Scheve, Stasavage, et al., 2006; McCleary and Barro, 2006; Renneboog and Spaenjers, 2012; Cantoni, 2015; Iyer, 2016; Carvalho, Iyer, and Rubin, 2019; Bryan, Choi, and Karlan, 2021). In addition, Basten and Betz (2013) and Gerber, Gruber, and Hungerman (2016) study voting outcomes to show that religion influences redistribution preferences and turnout levels. More recently, Bazzi et al. (2023) and Giuliano and Tabellini (2020) provide examples on how culture can shape voting patterns. I contribute to this literature by isolating the effect of socially conservative religious beliefs on the vote share obtained by far-right and religious candidates.

Third, this paper also contributes to the literature on the rise of Populism across the world, summarized by Guriev and Papaioannou (2022). The empirical literature studied different factors that led to the rise of populist movements, such as, austerity reforms, migration patterns and economic shocks (Fetzer, 2019; Fetzer, Sen, and Souza, 2019; Alabrese et al., 2019; Autor et al., 2020 and Dal Bó et al., 2023). In this paper I present empirical evidence of the effect of Pentecostal Evangelical growth on the increased support for Brazil's far-right populist candidate, Jair Bolsonaro.

Fourth, this paper builds on the literature studying the legacies of missionaries' work. Nunn (2010), Waldinger (2017) and Valencia Caicedo (2019) study how missionary work influenced religious beliefs in colonial times. More closely related to my work, Cagé and Rueda (2016) study the early introduction of the printing press by Protestant missionaries in 19th century sub-Saharan Africa.[3] This paper contributes to this literature by studying how a small intervention of a 20th-century missionary society, that continues to be active, can spread religions with strong political influence.

Finally, this paper is related to the literature on foreign influence. Beath, Christia, and Enikolopov (2017), Berger et al. (2013), Bursztyn and Cantoni (2016), Dell and Querubin (2018) and Gagliarducci et al. (2019) examine different channels through which foreign influence can affect internal matters. I contribute to this literature by providing the first empirical study of SIL, a major international organization which translated the Bible into more than 1,350 languages and was active in 104 countries.

The rest of the paper is organized as follows. Section 2 describes the background of SIL, the Pentecostal upsurge, and the indigenous population in Brazil; Section 3 describes the data used in the study; Section 4 first discusses the empirical strategy focusing on

[3]In a posterior paper to the current study, Brown (2023) explores the long-term effects of Bible translations and Protestant missionary activity in sub-Saharan Africa.

indigenous-speaking municipalities and then presents the results on voting for far-right and Evangelical candidates. It also discusses the effect on the vote share obtained by Bolsonaro in the 2018 presidential elections; Section 5 discusses the spillover effects, expanding the analysis to all Brazil; Section 6 explores possible mechanisms; Section 7 presents a set of robustness checks for the main results and finally, Section 8 concludes.

2 BACKGROUND

2.1 Summer Institute of Linguistics

The SIL was founded in the US in the mid-1930s and is considered the largest twentieth century evangelical missionary society in terms of members sent abroad.[4] SIL's main activity is to translate the Bible into different languages, especially those that are less known. While the organization was not allowed to establish churches nor schools in foreign countries, the reading of the Bible was expected to result in religious conversions. Most members of SIL belonged to the conservative wing of US evangelism, and therefore, intended to promote their values in the different regions they worked in (Hvalkof and Aaby, 1981). Therefore, indigenous groups that are exposed to SIL activity would likely shape their religious beliefs.

Originally, SIL was founded as a dual-organizational "Wycliffe Bible Translators (WBT) and Summer Institute of Linguistics (SIL)". WBT is the part of the organization that maintains the essentials of a traditional faith mission by emphasizing the religious side, which allows it to raise funds and recruit missionaries in the US. On the other hand, SIL is the side of the organization that takes care of the scientific and linguistic aspects and arranges the fieldwork in foreign countries. The SIL organization studies numerous minority languages and works with speakers of such language communities in translating the Bible into their mother tongue.

According to Hvalkof and Aaby (1981), the organization expanded extremely rapidly. When established in 1942, SIL had worked on the translation into 18 languages and by 1963 had already reached 308 linguistic groups. Although Latin America is SIL's oldest and largest field of operation, it has also worked among many tribes located in countries from Asia and Africa. Around 1960, SIL missionaries started their work in Brazil, having already settled among tribes located in other Latin American countries,

[4]The Summer Institute of Linguistics is referred to nowadays as SIL International. https://www.sil.org/.

for example Mexico, Peru, Bolivia, Guatemala and Honduras.[5] Figure 1 presents the number of languages spoken in Brazil into which the Bible was translated for the period 1940-2020. It is possible to observe that the number of languages with an existing Bible translation has been increasing since 1960, reaching 61% of all languages in Brazil in 2019.

In each country SIL goes to, the organization establishes a main base, where they have language labs, libraries, workshops, air base, radio stations, hospitals and schools for missionaries' children. Figure A2 presents a map that shows the location of the indigenous tribes that SIL had reached by 1995 and the location of SIL base in Brazil (Colby and Dennett, 1996). The founder of SIL also created the Jungle Aviation and Radio Service (JAARS) that provided aviation and technical service to SIL members involved in the translation of the Bible in more remote areas.[6] By using JAARS services, SIL members could take advantage of the facilities in the main base.

Before receiving their field assignments, SIL's members need to attend three summer courses in linguistics and survival training in order to prepare for their work (Stoll, 1982). Once in the field, usually working in teams of two, their first objective is to collect general ethnographic and ethnolinguistic data to get to know the culture and the language of the tribe they have been assigned to. Their usual approach is to select informants who will assist the missionaries in exchange for payment. During the fieldwork, SIL's members seek to build a relationship of trust with the informant and other members of the community in order to facilitate their work. Part of the translation work is usually done from the major base, where SIL members may bring their informants to take advantage of the working facilities.[7]

According to Stoll (1982) and Hvalkof and Aaby (1981), the hired language informants, who frequently become the first to convert, are then sent from the SIL base back to their tribe as salaried teachers, spreading SIL-prepared educational material in the native language. Therefore, it is through native intermediaries that SIL begins a campaign of religious conversion. Usually, SIL has complete control over the production of written material, which facilitates steering the community in the desired direction. Typically, the first written materials to be circulated are sections of the New Testament and Christian hymns. Hvalkof and Aaby (1981) point out that SIL not only uses written material, but also distributes cassette tape recorders together with tapes containing Biblical stories, Christian hymns and US hymns in the native language of the tribes.

[5]For more details on which countries SIL has worked see Hvalkof and Aaby (1981).

[6]See more on JAARS in `//www.jaars.org/`. The JAARS mission is to "provide logistical solutions that help making Bible translation possible".

[7]Figure A3 in the Appendix presents a set of pictures illustrating SIL activities.

The work in a language group is considered to be concluded once the translation of the New Testament is completed and the missionaries have been able to create a group of believers who are capable of reading the Bible and spreading its message. In order to avoid conflicts with foreign governments, SIL emphasizes that it has no intention of establishing its own church in the areas where it sends its translators. Once the whole language project is concluded, which often takes around 15 years, translators must leave to work on other language groups (Hvalkof and Aaby, 1981).

The organization emphasizes that it aims to translate the Bible into all existing languages, all languages being equally relevant. In other words, SIL does not indicate a priority for any particular language. Therefore, given the work it requires to translate the Bible into a specific language, it is natural to think that it is more likely that the Bible is translated into a particular language if there already exist other Bibles translated into similar languages spoken in other regions or in other countries. The main rationale behind this prediction is that translating the Bible into a specific language will be less costly if there exists a previous translation into another similar language.

2.2 Indigenous Tribes in Brazil

The indigenous tribes located in Brazil are quite heterogeneous. Some have an indigenous language as their first language, and others have Portuguese. There are around 180 indigenous languages spoken in Brazil with important linguistic diversity, both with regard to the organization of sound systems and grammatical structure. Of these 180 languages, only 24 have more than 1,000 speakers, 108 languages have between one hundred and a thousand speakers and 50 languages have less than 100 speakers (Gaspar, 2009). Brazil's 2010 Census identified that in indigenous lands, out of all the indigenous population, 57.3% spoke an indigenous language at home, and 28.8% did not speak Portuguese.

The diversity that exists among indigenous tribes does not come just from their different languages and cultures. The relationship they have with the non-indigenous population is also different (Povos Indígenas no Brasil, 2018). They can have direct contact with the non-indigenous population of the region (for instance, as farmers, illegal settlers, fishermen, or lumberjacks) or they can have contact through an institution (governmental or non-governmental). There are also indigenous groups established in urban centers, for instance, in the outskirts of Manaus or in the city of São Paulo (Povos Indígenas no Brasil, 2018). There are also some isolated indigenous groups living in Brazil, for whom there is very little information.

2.3 Pentecostal Upsurge and Political Involvement in Brazil

Pentecostalism is a segment of Evangelical Christianity that originated in the US in the early 20th century. According to the Pew Research Center (2006), Pentecostalism and related charismatic movements represent the fastest-growing segments of global Christianity, accounting for at least a quarter of the world's Christian population. This growth is mostly concentrated in countries from Latin America, Asia and Africa. Particularly, over the last decades, many countries in Latin America have experienced a shift away from Roman Catholicism and toward Pentecostalism.

Pentecostals and Catholics' differ on several sensitive topics (Pew Research Center (2006), Costa, Marcantonio, and Rocha (2023) and Buccione and Mello (2020)). Pentecostals tend to support more traditional Christian practices, being particularly conservative with respect to matters such as abortion or LGBTQI rights. They emphasis the reliability of the Bible and the "gifts of the Holy Spirit", such as, speaking in tongues, faith healing and prophesying. Also Pentecostals are more likely to attend church, read the Bible daily and report God being the most important aspect of life. Pew Research Center (2006) also points out that Pentecostals tend to have specific political preferences, supporting political leaders with strong religious beliefs.

Historically over 90% of Brazil's population identified with the Roman Catholic church. However, the percentage of Catholics in the population has been dropping at an accelerating rate since 1980, while the share of Evangelical affiliations has been growing. Within the Evangelicals, this growth seems to be mainly driven by the increase of Pentecostalism, which started to gain strength after 1980. Figures 2 and 3 illustrate the change in Brazil's religious composition over the last decades. The Brazilian Census data indicate that Pentecostals represented around 13% of Brazil's population in 2010, accounting for more than 60% of all Evangelicals in Brazil.[8] Figure 1 illustrates how the evolution of Pentecostals in the municipalities where indigenous languages are spoken trace the evolution of the translation of the Bible.

Although there had been early attempts at expanding the Pentecostal movement in Brazil, it was not until the 1980s that it started to gain strength. In this sense, the last and most successful Pentecostal wave in Brazil arrived in the late 1970s and the 1980s, with the foundation and rapid expansion of independent churches, which are often referred as Neopentecostals (Freston (1994) and Freston (2004)). In 1986, an Evangelical

[8] According to Datafolha (2016), Pentecostal affiliation has continued to increase reaching 22% of the population in 2016.

Caucus[9] was formed consisting largely of Pentecostals. The Evangelical Caucus grew from 4% of the Parliament in 1987 to 15% in 2010, becoming the third largest force in Parliament. This group focuses not only on guaranteeing equal religious treatment but also on protecting Christian morals and the institutional interest of the churches (Schmidt and Engler, 2016).

According to Schmidt and Engler (2016), Brazilian Pentecostalism was formerly regarded as apolitical, its leaders' motto being "the believer does not meddle in politics". However, during the 20th century they revealed a clear political and ideological orientation. Pentecostal leaders began to focus on influencing Brazil's political agenda and public sphere, standing by the new motto "brother votes for brother". Despite Brazilian law separating church and state, Pentecostal churches have become aggressively involved in politics. One example is the case of Jair Bolsonaro, who publicly converted to Pentecostalism two years before the 2018 presidential elections and received public support from Pentecostal leaders. Another is the mayor of the city of Rio de Janeiro, who is also a Bishop in one of Brazil's major Pentecostal churches. Furthermore, the 2016 impeachment against President Dilma Rousseff in Brazil was led by a Pentecostal congressman. Given this context, to avoid the risk of electoral drawback, Brazilian candidates started to take into consideration the demands of Pentecostal groups in their speech/strategy (Schmidt and Engler (2016) and Burity (1997)).

Pentecostals have gained political influence not only in Brazil, but also in other countries from Latin America. For instance, Pentecostals from Chile have also been campaigning to raise their own candidates to congress and to support right-wing candidates to stop progressive policies. Moreover, in Colombia, the Pentecostal vote was an important factor in the victory of the 'no' option in the 2016 Peace Agreement referendum that intended to end the war with FARC (Revolutionary Armed Forces of Colombia). The agreement not only established the possibility of FARC integrating into the political system, but also considered issues like gender inclusion and LGBTQI demands.

3 DATA

3.1 Data Source: SIL Exposure

Although there is no data on the missions carried out by SIL, there is data available on the languages into which the Bible has been translated and the year of the translation.

[9]Evangelical Caucus is an organized group of Evangelical lawmakers in the Brazilian government and legislature.

These data is obtained from the *Joshua Project*, a Christian organization based in the US.[10] *Joshua Project* seeks to coordinate the work of missionary organizations to identify the ethnic groups of the world which have the fewest followers of Evangelical Christianity. For each language spoken in the world, the *Joshua Project* provides information on whether the New Testament, or at least some portions of the Bible, are translated and the year in which the translation was made. Furthermore, it facilitates a copy of the translated Bible, in which it is possible to verify whether the copyrights belong to SIL. After verifying the copyrights of a random selection of Bibles translated into indigenous languages from Brazil, I find all were produced by SIL.

Figure A6 in the Appendix, presents a image of the data provided by *Joshua Project* for a particular indigenous language. *Joshua Project* presents the year in which the first and the last edition of the Bible has been published, for both the Old Testament and the New Testament. For the purpose of this project, I will consider the year in which the first edition of the New Testament is published. In the example of Figure A6 the fist edition of the New Testament was published in 1984. Note that for some languages, while the complete translation of the New Testament is not published, there are some portions of the Bible which have been translated and are published.

Information on the geographic location of each spoken indigenous language in Brazil, and the population speaking each language, is obtained from the 14th edition of *Ethnologue*, published in 2000.[11] *Ethnologue* is an active research project which catalogs all the known languages in the world. For each language spoken in Brazil, *Ethnologue* defines specific polygons indicating the geographic location where it is spoken. The exact year in which the 14th edition of *Ethnologue* data was gathered varies among the different languages, being close to 1980. Figure 4 presents a set of maps of Brazil which indicate the geographic location of the different indigenous speaking communities, and whether the Bible was translated into the language of these communities, for each decade since 1970.[12]

Moreover, the data offered by Giuliano and Nunn (2018) cleanly categorizes languages into distinct linguistic families and subfamilies. I use this data to measure linguistic similarities between languages (See Section A in the Appendix for more details on language distance).

[10] The web page of the organization is https://joshuaproject.net/.

[11] Source: Grimes, Barbara F. (ed.), 2000. Ethnologue: Languages of the World, Fourteenth edition. Dallas, Texas: SIL International. Online version: http://www.ethnologue.com/14.

[12] Figure A4 in the Appendix illustrates the data on Bible translations for all countries located in Latin America, were there is also a significant geographical and time variation.

3.2 Data Source: Voting Outcomes

The voting outcomes considered in the study are: (i) the vote share obtained by far-right candidates in the presidential elections and (ii) the vote share obtained by candidates associated with Pentecostal churches in the federal elections. *Tribunal Superior Eleitoral (TSE)* provides official data at the municipality level on all election results in Brazil since 1994. Specifically, this dataset contains the number of votes received by each candidate, the number of voided votes and the number of blank votes. In order to classify far-right candidates in the presidential elections, I followed existing candidates' classifications and checked their political speech through articles from newspapers around the election period. Table A1 in the Appendix presents a list of the candidates who have been classified as "extreme right-wing".

Given that Brazil's official records do not contain the religious affiliation of candidates, the classifications for candidates associated with Pentecostal congregations is based on Lacerda (2018). To classify Evangelical candidates, Lacerda (2018) relies on religious designations in candidacy names, literature review associating candidates with churches, direct contact with the major Pentecostal churches and website searches of the major national and regional newspapers. The main caveat of Lacerda (2018) classification is that selection can be biased toward the identification of the most popular candidates. In addition, I use of data provided by Gomes (2021), which includes information about the specific Pentecostal Church affiliation of each evangelical candidate elected from 1933 to 2018.

3.3 Data Source: Religion and Others

The *Brazilian Demographic Census* obtained from *IPUMS* provides the religious affiliation and other socioeconomic variables of interest, such as literacy, ethnicity and income, at the individual level. For this study I constructed a panel-data at the municipality level, therefore, the unit of analysis used needed to account for political boundary changes across census years. Then, the census micro-data is aggregated at the municipality level, considering the consistent boundaries for the 1980, 1991, 2000 and 2010 censuses. One advantage of working with micro-census data, is that I am able to determine the share of population that identifies with each religious congregation by ethnic group.

3.4 Data Construction

An empirical challenge that needs to be overcome in order to construct the municipality-level panel data, is to define which indigenous languages are spoken in each municipality and determine the number of speakers in each municipality. To define which language is spoken in each municipality, I consider whether each *Ethnologue* geo-located polygon overlapped with a municipality. A municipality is considered to speak a particular indigenous language if at least some area of the municipality overlaps with the geographic location assigned by *Ethnologue* to the speakers of that language. Furthermore, the population counts within the intersection of the *Ethnologue* polygon and the municipality must exceed zero. To verify this, I utilized data from WorldPop, which provides population counts for every 100-meter grid.[13]

Carrying out this process, it follows that indigenous languages are spoken in 373 municipalities (considering IPUMS consistent boundaries over time). Figure 5 presents a map illustrating the municipalities where indigenous languages are spoken. These municipalities concentrate 29% of Brazil's total population. However, when excluding the municipalities of Rio de Janeiro and São Paulo, the total population of the municipalities account for 11% of Brazil total population. Table 1 presents some summary statistics comparing the municipalities of Brazil where indigenous languages are spoken and not. On average, when excluding the municipalities of Rio de Janeiro and São Paulo, municipalities where indigenous languages are spoken have a lower population density and lower levels of urbanization. However, the education level of the population seem to be quite similar.

The number of people who speak each indigenous language per municipality is determined by estimating the indigenous population distribution within each Ethnologue polygon. In order to do this, I use data from the WorldPop that provides the population count for every 100 meter grid. Then, each grid's population is multiplied by the share of indigenous population of the municipality where it is located. This results in a estimation of the indigenous population count for every 100 meter grid. To get to know which language is spoken in each of these 100 meter grids I overlap them with the Ethnologue polygon. With this procedure I estimated the population that speaks each indigenous language at a grid level of 100 meters. I then aggregated the data at the municipality

[13] WorldPop provides the estimated total number of people per grid-cell in 2000. *"The projection is Geographic Coordinate System, WGS84. The units are number of people per pixel with country totals adjusted to match the corresponding official United Nations population estimates prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2019 Revision of World Population Prospects). The mapping approach is Random Forest-based dasymetric redistribution."*

level to have it at the unit of analysis. This allocation process has the advantage that it takes into account the fact that many areas in Brazil have a very low population density. Figure 6 provides an example of the data used to estimate the indigenous population distribution within each Ethnologue polygon.

Table 2 indicates for each period the number of municipalities in the sample where the Bible has not been translated into any indigenous languages, where there has been one Bible translation and where more than one Bible translation has been made. In addition, Table 2 presents, for each time period, the share of the indigenous population for whom the Bible has been translated into their native language.

4 EMPIRICAL STRATEGY AND RESULTS

The translation of the Bible into a specific indigenous language is used as a proxy to measure how exposed a municipality is to SIL's activity. Despite some of the indigenous groups understanding Portuguese, the translation of the Bible into the indigenous language provides evidence that SIL members had reached the population speaking the language. Then, the identification strategy exploits the staggered translation of the Bible into each language. Outcomes are compared before and after an additional Bible translation and across municipalities where the different languages are spoken. Therefore, the setting include municipalities of Brazil where indigenous languages are spoken.

4.1 Pre-Trend Evaluation

Before going to the main specification, I present a simpler analysis to provide some evidence for the parallel trend assumption. I estimate the following equation

$$\begin{aligned} y_{mt} = &\sum_{p} \alpha_p YearSinceTrans_{mtp} \times Indigenous_{1980,m} \\ &+ \sum_{p} \beta_p YearSinceTrans_{mtp} + \psi_m + \psi_t + \epsilon_{mt} \end{aligned} \tag{1}$$

where $YearSinceTrans_{mtp}$ takes value 1 if the first Bible translation in municipality m occurs p years away from the current year t, and zero otherwise; $p < 0$ refers to years before the first Bible translation and $p > 0$ to years after the first Bible translation. Then, β_p is a vector of coefficients that captures the effect of the number of years relative to the first translation for municipalities with no indigenous populations. This is an out of sample estimate, and therefore, I will focus on α_p. The parameter α_p is a vector of

coefficients that reflects the differential effect of the share of the population speaking indigenous languages in 1980, for each year with respect to the year when the first Bible was translated in the municipality.[14] Then, ψ_t refers to time fixed effects and ψ_m to municipality fixed effects. Finally, ϵ_{mt} refers to the robust standard errors clustered at the language level.

It is important to notice that 30% of the municipalities in the sample speak more than one indigenous language. Therefore, some variation is lost with this specification as it is only capturing the effect of the first translation of the Bible in each municipality. However, this analysis helps to better understand the dynamic effect, and study whether there is evidence of pre-trends. Equation 1 is estimated using both the imputation approach of Borusyak, Jaravel, and Spiess (2021) and ordinary least squares (OLS). The imputation approach of Borusyak, Jaravel, and Spiess (2021) allows for comparisons under heterogeneous treatment effects, while OLS estimations have implicit assumptions about treatment effect homogeneity across groups first treated at different times.

Figure 8 plots the coefficients α_p that result from estimating Equation 1 using OLS, while Figure A7 in the Appendix plots the estimated coefficients using Borusyak, Jaravel, and Spiess (2021) imputation approach. Both estimations follow a similar pattern, but coefficients of the treatment effect are slightly higher when using Borusyak, Jaravel, and Spiess (2021) imputation approach. This suggests that the potential heterogeneous effect across municipalities first treated at different times is not a big concern in this set-up.

In Figure 8-a the dependent variable is the share of Pentecostal population, while in Figure 8-b it is the share of the population who identifies with any Evangelical affiliation. In both cases results show no evidence of pre-trends. Also, in both cases, the coefficients seem to increase when more years have passed since the Bible has been translated into at least one of the languages spoken in the municipality. Finally, it can be observed that after the first translation was made, the estimated coefficient is higher when the dependent variable is the share of Pentecostal population. This seems to indicate that SIL work had an effect on Pentecostal Evangelicals, but not necessarily on Evangelicals who are not Pentecostals.

The analysis of pre-trends in voting outcomes is limited by data availability. Election results are only available since 1994 at the municipality level. However, by grouping the number of years since first translation in intervals of 5 years I explore whether there is evidence of pre-trends in voting outcomes. In Figure 8-c the dependent variable is the

[14] As the dependent variable is periodic over ten years, the number of years since the first Bible translation presents a lot of noise. To overcome this issue, the number of years since the first translation, p, are grouped into intervals. Figure A8 in the Appendix illustrates the histogram of the years since the first translation: year by year, grouped in intervals of 5 years and grouped in intervals of 10 years.

vote share obtained by far-right candidates, while in Figure 8-d the dependent variable is the vote share obtained by Evangelical candidates. Results present a similar pattern as before, suggesting there is no evidence of pre-trends. Table A2 in the Appendix presents the results of the estimated α_p and β_p of Equation 1 estimated by OLS. Note that the β_p coefficients are nearly zero, indicating that if the indigenous population is zero, the translation of the Bible has almost no effect.

4.2 Main Specification

Next, I present the main specification. There are two additional sources of variation that are exploited. First, the fact that some municipalities speak more than one language. Second, the size of the indigenous population that speaks each language. Then, the following equation is estimated

$$y_{mt} = \gamma_1 SILexposure_{mt} + \gamma_2(\psi_t \times X_{m,1980}) + \psi_m + \psi_t + \epsilon_{mt} \tag{2}$$

where y_{mt} is the outcome of interest for municipality m at time t, for instance the share of the population that identifies with Pentecostal affiliations. Then, the main explanatory variable of interest, $SILexposure_{mt}$, is constructed as

$$SILexposure_{mt} = \frac{\sum_l Indigenous_{1980,ml} \times PostTrans_{lt}}{TotalPopulation_{1980,m}} \tag{3}$$

where $Indigenous_{1980,ml}$ is the indigenous population speaking language l, located in municipality m in 1980 and $PostTrans_{lt}$ is a dummy variable that takes value 1 if the Bible is translated into language l at time t. Finally, $TotalPopulation_{1980,m}$ is the total population of municipality m in 1980. Notice that the only variation over time is given by the translations of the Bible into each language. Therefore, $SILexposure_{mt}$ is interpreted as the share of the population that has been exposed to SIL's work in municipality m at time t. Figure 7 illustrates the variable $SILexposure_{mt}$ for the different time periods and municipalities. The main specification intends to capture the effect across municipalities of each additional Bible translation depending on the size of the population speaking the language.

Furthermore, Equation 2 includes the interaction of time fixed effect with characteristics of the municipalities in 1980. The initial characteristics included are: mean income,

share of urban population, share of black population, share of the population who finished school, share of the population over 60 years old and share of the population with at least one television in their house.[15] In addition, ψ_t refers to the time fixed effects that controls for any time-invariant unobserved determinant and ψ_m refers to the municipality fixed effects that capture changes over time that affect all municipalities in a similar way. Finally, ϵ_{mt} refers to the robust standard errors clustered at the language level. The specification is estimated including only those municipalities where it was determined that indigenous languages are spoken.

Interpreting γ_1 as the causal effect of SIL assumes parallel-trends: the outcomes of interest for municipalities which had the Bible translation earlier versus later would have evolved along parallel trends absent the difference in the Bible translation timing. In other words, I assume that, conditional on the baseline controls, there is no other variable that is correlated with both the outcome of interest and the timing of the translation. In Section 4.1 evidence to support the interpretation of γ_1 is provided by evaluating pre-trends.

Despite there being no evidence that SIL targets municipalities where Pentecostals were already growing, there remain some potential threats to the identification strategy. For instance, there may be time-varying unobserved characteristics that might affect the timing of SIL translation or that might affect SIL and politician presence at the same time. In this sense, a concern would be if areas where SIL has easier access, politicians too may find access easier. To isolate the remaining endogenity concerns, I predict SIL exposure using language distance. In this sense, I provide evidence that the timing of the translation of the Bible is associated with linguistic similarities to languages with the Bible already translated that are spoken outside Brazil.

The organization emphasizes that it aims to translate the Bible into all existing languages, all languages being equally relevant. In this sense, SIL does not indicate a priority for any particular language. Therefore, given the work it requires to translate the Bible into a specific language, it is natural to think that it is more likely that the Bible is translated into a particular language if there already exist other Bibles translated into similar languages spoken in other regions or in other countries. The main reasoning is that translating the Bible into language l will be less costly if there already exists a Bible translated into another language which is similar to language l. In order to test this hypothesis, I estimate the following equation:

$$(4) \qquad PostTrans_{lt} = \gamma_1 CloseTranslation_{lt} + \gamma_2(\psi_t \times Population_l) + \psi_l + \psi_t + \epsilon_{lt}$$

[15] Evangelicals control two of the seven biggest TV channels in Brazil (TV Record and TV Gazeta).

$$(5) \qquad CloseTranslation_{lt} = \frac{1}{J}\sum_{j} 1\{t > YearTran_j\} \times (1 - Distance_{lj}) \quad \text{for } j \neq l$$

where $PostTrans_{lt}$ takes value 1 if the Bible is translated into language l at time t. Languages l include all the existing indigenous languages in Brazil. Then, j refers to all existing languages in the world, excluding the languages spoken in Brazil. $Distance_{lj}$ refers to the linguistic distance between language l and language j, which is calculated following Desmet, Weber, and Ortuño-Ortín (2009) and Desmet, Ortuño-Ortín, and Wacziarg (2012) procedure.[16] $YearTran_j$ refers to the year the Bible has been translated into language j. Then, $CloseTranslation_{lt}$ is a weighted average of distance to all foreign languages for which the Bible has been translated before time t. The variable $CloseTranslation_{lt}$ is rescaled between 0 and 1 for comparability reasons. Moreover, $Population_l$ refers to the population speaking language l, ψ_l are language fixed effects and ψ_t time fixed effects.

Table 3 presents the result of estimating Equation 4. Notice that Close Translation has a positive and highly significant coefficient. The higher $CloseTranslation_{lt}$ is, the more likely the Bible has been translated into language l at time t. This suggests that linguistic similarities and existing Bible translations play an important role in the timing of the translation of the Bible. This result is quite intuitive considering that the whole process of translating the Bible into a particular language is very demanding and having similar translations might facilitate the work.

Then, to predict SIL exposure I construct the following variable

$$(6) \qquad PredSILexposure_{mt} = \frac{\sum_l Indigenous_{1980,ml} \times CloseTranslation_{lt}}{TotalPopulation_{1980,m}}$$

where $CloseTranslation_{lt}$ is defined by Equation 5 and represents a weighted average of all foreign languages for which the Bible has been translated before time t. Then, $CloseTranslation_{lt}$ is interacted by the indigenous population speaking language l, located in municipality m in 1980. Table 4 presents the results of regressing the Predicted SIL exposure on the actual SIL exposure. Results present a positive and highly significant coefficient, indicating that language distance with respect to languages spoken outside Brazil with the Bible translated is a good instrument for SIL exposure.

[16] See Section A of the Appendix for details on how languages are interrelated and how the distance between them is calculated.

4.3 SIL's Effect on Religious Affiliations

Panel A of Table 5 presents the main coefficients that result from estimating Equation 2. The outcome variable in each of the columns represents the share of the population that identifies with each of the different religious affiliations. Results indicate that Pentecostal Evangelicals are the only congregation that increased their affiliations when SIL exposure is higher. Specifically, the results suggest that a 10 percentage point (p.p.) increase in the population exposed to SIL's work led to a 2 p.p. increase in the Pentecostal population share. This increase would be equivalent to a 25% rise relative to its mean. Panel B of Table 5 presents the main coefficients that result from estimating the effect of the Predicted SIL exposure defined by Equation 6. Results also indicate that Pentecostal Evangelicals are the only congregation that increased its affiliations when SIL exposure is higher.

Results from columns (2) to (4), in panels A and B of Table 5, indicate that the exposure to SIL did not convert one specific religious affiliation into Pentecostal Evangelical. The negative coefficients from columns (2) to (4) can be interpreted as a substitution effect from these other religious affiliations towards Pentecostal Evangelicals. Regarding Evangelicals who are not Pentecostals, while they also view the Bible as central in their religion, SIL exposure did not increase its affiliations. A possible explanation for this is the Pentecostal's entrepreneurial approach in Brazil, which allows for easy establishment of churches without strict regulations, unlike traditional denominations such as Methodists.

As an additional step towards understanding the effect of SIL's presence, I classify the Pentecostal Evangelical population by ethnic group as defined in the Brazilian census. By adding the census micro-data provided by IPUMS, I classified the Pentecostal population into two categories: (i) "indigenous" or "brown" population and (ii) all other ethnic groups. Given that the category "Indigenous" is not defined in all Brazilian census since 1980, to be consistent over time I grouped the categories "indigenous" and "brown" into one. Table A3 in the Appendix present the results by ethnic group. In column (1) the dependent variable corresponds to the Pentecostal population that is classified in the Brazilian census as "indigenous" or "brown" over total population, while in column (2) the dependent variable corresponds to the Pentecostal population belonging to all other ethnic groups over the total population. Results indicate that the direct effect of SIL presence on Pentecostal affiliations is through the "indigenous" and "brown" population.

4.4 SIL's Effect on Voting Outcomes

In this section I estimate Equation 2 using as dependent variables: (i) the vote share obtained by far-right candidates in the presidential elections and (ii) the vote share obtained by candidates associated with Pentecostal churches in the federal elections.[17] Notice that election results are only available since 1994 at the municipality level, and therefore, the period included is from 1990 to 2010.

Results analyzing the effect of SIL exposure on voting outcomes are reported in Table 6. Panel A presents the main coefficients that result from estimating Equation 2. Results in column (1) indicate that in municipalities with higher exposure to SIL the vote share obtained by far-right candidates is higher. Specifically, a 1 p.p. increase in SIL exposure led to a 0.02 p.p. increase in the share of votes obtained by far-right candidates. Results in column (2) in Table 6 suggest that candidates associated with Evangelical affiliations also obtained a higher vote share. Specifically, an increase in 1 p.p. of the population subject to the influence of SIL exposure led to a 0.1 p.p. increase in the share of votes obtained by candidates associated with Evangelical congregations. Panel B of Table 6 presents the variation in the voting outcomes generated by the Predicted SIL exposure constructed with language distance.

4.5 Pentecostals Effect on Voting Outcomes

In order to uncover the causal effect of Pentecostal growth on voting outcomes I estimate the following equation

$$y_{mt} = \gamma_1 Pentecostals_{mt} + \gamma_2(\psi_t \times X_{m,1980}) + \psi_m + \psi_t + \epsilon_{mt} \tag{7}$$

and instrument $Pentecostals_{mt}$ with the actual SIL exposure defined by Equation 3 and also with the predicted SIL exposure defined by Equation 6. The exclusion restriction assumption in the first case implies that, conditional on the baseline controls, the translation of the Bible only affects voting outcomes through religious affiliations. In the second case, conditional on the baseline controls, the translation of the Bible into languages spoken outside Brazil that are linguistically similar to indigenous languages inside Brazil, only affects voting outcomes through its effects on religious affiliations. Notice that columns (1) and (2) in Table 6 present the reduced form results, while column (3)

[17] See Section 3.2 for more details on how the candidates have been classified

in Table 6 presents the first stage result.

Table 7 presents the 2SLS estimations. Panel A presents the results using the actual SIL exposure as IV, while Panel B presents the results using the predicted SIL exposure measured with linguistic distance. While both estimations led to very similar conclusions, the preferred specification is the one using as IV the predicted SIL exposure given that it mitigates remaining endogeneity concerns. Results in Panel B indicate that a 1 p.p. increase in the share of the Pentecostal population leads to an increase of 0.16 p.p. in the share of votes obtained by far-right candidates, which is equivalent to a 16% increase with respect to the mean. Furthermore, estimations indicate a largely positive and significant effect of Pentecostal affiliation on the vote share of candidates associated with Evangelical congregations. A 1 p.p. increase in the share of Pentecostal affiliations leads to an increase of 0.9 p.p. (18% increase with respect to the mean) in the vote share obtained by Evangelical candidates. These results suggest that Pentecostal growth is an important driving force in the increasing support for conservative candidates in Brazil's recent history.

A potential concern could be related to cultural similarities between indigenous populations in Brazil and those in nearby regions. To mitigate this concern, in the robustness check section, I constructed the predicted SIL exposure excluding the languages spoken in Brazil, as well as those spoken in Bolivia, Colombia, Paraguay, and Peru.

Notice that these elasticities are estimated in municipalities where indigenous languages are spoken. Therefore, we can not assume that the same result will hold in other municipalities of Brazil as the population might have different characteristics and react differently to the Pentecostal political influence. In order to evaluate this, in Section 5 I evaluate whether spillover effects of SIL exposure generate a variation in Pentecostal affiliations in municipalities with no indigenous speakers.

4.6 Pentecostals Effect on Bolsonaro's Support in 2018

While Datafolha's survey indicates that nearly 70% of Evangelicals voted for Bolsonaro in Brazil's 2018 presidential elections, different population characteristics may be driving this correlation. In this section, I explore the effect of Pentecostals on support for Jair Bolsonaro in Brazil's 2018 presidential elections. As Bolsonaro did not participate in previous presidential elections, and no candidate is comparable in terms of political speech and popularity, it is not possible to perform a panel data study. However, understanding what influenced the share of votes obtained by Bolsonaro in the 2018 elections is an extremely interesting and relevant outcome to study. Therefore, focusing on municipalities

where indigenous languages are spoken, the following equation is estimated

$$y_m = \gamma_1 PredSILexp_{m,1980} + \gamma_2 FarRight_{m,2000} + \gamma_3 X_m + \psi_s + \psi_d + \upsilon_m \tag{8}$$

where y_m is the outcome of interest for municipality m, for instance the share of votes obtained by Bolsonaro in the 2018 presidential elections in municipality m. Then, the main explanatory variable of interest, $PredSILexp_{m,1980}$, is the cross-section equivalent of Equation 6 when $t = 1980$.

Equation 8 also includes as control $FarRight_{m,2000}$, which refers to the share of votes obtained by the most extreme right-wing candidates in the 2000 presidential elections in municipality m.[18] This control is added to isolate the potential bias generated by municipalities that usually tend to vote for extreme right-wing candidates. Furthermore, X_m^T is a vector of control variables and a constant. The control variables included are; share of urban population, share of population over 60 years old, mean income, share of the population who finished school, share of female population, ethnic composition, percentage of the population with at least one television. Finally, ψ_s are state fixed effects, ψ_d is an indicator for the number of languages spoken in the municipality and υ_m is the error term.

Panel A of Table 8 presents the result of estimating Equation 8, using as dependent variable the share of votes obtained by Bolsonaro in the 2018 presidential elections and the share of Pentecostal population in 2010. The estimated coefficients are positive and significant for both the vote share obtained by Bolsonaro and the share of Pentecostal population. This result suggests that in municipalities with higher exposure to *SIL* Bolsonaro obtained a higher vote share in the 2018 presidential elections.

Panel B of Table 8 presents the 2SLS estimation that results from instrumenting the share of the Pentecostal population in 2010 with the $PredictedSILexp_m$. This exercise suggests that an increase of 1 percentage point in the share of the Pentecostal population led to a 0.43 percentage point increase in the vote share obtained by Bolsonaro in 2018. Considering Datafolha (2016) indicates Pentecostal affiliation reached 22% of the population in 2016, this would suggest that 20% (9.4 p.p. out of 46 p.p.) of the votes obtained by Bolsonaro in 2018 can be attributed to Pentecostals.

[18] See Table A1 in the Appendix for details on the candidates considered as extreme right-wing.

5 SPILLOVER EFFECTS OF SIL

In order to estimate the elasticity of Pentecostals to voting outcomes in all Brazil, I first explore whether SIL activity generated spillover effects in nearby municipalities. Regions near municipalities directly targeted by SIL might suffer spillover effects driven for instance by commuting or migration patterns. Then, I construct the following measure

$$IndirectSILexposure_{mt} = \sum_{o} \frac{d(m,o)^{-\delta}}{\sum_m d(m,k)^{-\delta}} \times PredictedSILexposure_{o,t-1} \tag{9}$$

where $PredSILexposure_{o,t-1}$ is the predicted exposure of SIL in municipality o at time $t-1$ using linguistic distance as defined by Equation 6. Notice that $PredSILexposure_{o,t-1}$ is in time $t-1$ as spillover effects might not occurred immediately. Then, $d(m,o)$ is the euclidean distance between the population-weighted centroid of municipality m and municipality o.[19] Finally, δ refers to the elasticity of migration to roads, which is set at 1.2 based on Morten and Oliveira (2018). The parameter δ controls how much the indirect exposure declines with travel time. Notice that in $IndirectSILexposure_{mt}$, the only time variation is given by the Predicted SIL exposure in nearby municipalities.[20]

Then, the following equation is estimated

$$\begin{aligned} y_{mt} = \gamma_1 PredictedSILexposure_{mt} + \gamma_2 IndirectSILexposure_{mt} \\ +\gamma_3(\psi_t \times X_{m,80}) + \psi_m + \psi_t + \epsilon_{mt} \end{aligned} \tag{10}$$

The only difference between Equation 10 and Equation 2 is that it adds the Indirect SIL exposure variable. The estimated coefficients of Equation 10 are presented in Table A4 in the Appendix. The estimations in column (1) include municipalities where no indigenous languages are spoken and in column (2) include all municipalities of Brazil. The estimated coefficient of the variable Indirect SIL Exposure on Pentecostal affiliations is positive and highly significant for the different samples. In particular, considering results in Panel A column (2), municipalities that go from the 50th to the 75th percentile of indirect SIL exposure increase 0.2 p.p the share of Pentecostal affiliation. Also, the effect of Indirect SIL Exposure is positive and significant on voting outcomes. [21]

[19] Figure A9 in the Appendix presents a map of the population-weighted centroids in Brazil. This has been calculated using the population count at a 100 meter grid provided by Worldpop.

[20] This measure can also be constructed using the travel time between municipalities or the distance by road. However, the indirect SIL exposure is then used as an instrument for Pentecostalism. As these alternative measures may have some endogeneity problems, the euclidean distance between each municipality is used.

[21] To mitigate potential concerns related to spatial correlation as a robustness check I clustered the standard errors at bigger geographical levels.

In order to have a measure of the total effect of SIL, I construct the following variable

$$TE_m = \widehat{\gamma_1} PredictedSILexposure_m + \widehat{\gamma_2} IndirectSILexposure_m \tag{11}$$

where γ_1 and γ_2 result from estimating Equation 10 using all municipalities in Brazil when the dependent variable is the share of Pentecostal population. Figure 9 presents a set of maps summarizing the measure of the total effect of SIL exposure for the different time periods.

Leveraging the variation in Pentecostal affiliations generated by the total effect of SIL exposure, I calculate the implied elasticity of Pentecostals to voting outcomes for all municipalities of Brazil. This exercise is only valid under the assumption that, conditional on the baseline controls, TE_m only affects voting outcomes through its effects on religious affiliations. Results are presented in Table 9. Panel A presents the elasticity of Pentecostals to vote share obtained by Evangelical candidates in the federal elections. The estimations with the three different samples are highly positive and significant, however, the magnitudes are not the same. In municipalities where no indigenous languages are spoken, the elasticity of Pentecostal affiliations to Evangelical vote share is 0.3, while the elasticity including all municipalities of Brazil reaches 0.9. These results indicate that, in municipalities where there are no indigenous speakers, the political influence of Pentecostals is lower. Descriptive statistics suggest that these municipalities, on average, are more rural and the population density is lower (excluding Rio de Janeiro and Sao Paulo). However, there do not seem to be differences in the education levels measured by literacy rate nor school attendance.

I then explore whether the Pentecostal political influence depends on the levels of education, income or the rural nature of the population. In order to do this, I compare the results obtained by estimating Equation 10 when including different samples. For instance, I separate the municipalities of Brazil between those that are below and above the 50th percentile (pct) of the literacy rate in 1980. Then, I follow the same process considering the distribution of the level of school attendance, mean income and level of urbanization.

The estimated elasticities of the share of Pentecostal affiliations to Evangelical vote share for the different samples are presented in Table A5 of the Appendix. Column (1) includes the municipalities of Brazil below the 50th pct of literacy rate, while column (2) includes the ones that are above the 50th pct. Despite the coefficient being positive and highly significant, the magnitudes are very different. Results indicate that Pentecostals

are more capable of shaping political preferences in populations that are less educated. Additionally, estimations in column (3) and (4) divide the sample between the distribution of school attendance and lead to the same conclusion. Column (5) includes the municipalities of Brazil below the 50th pct of mean income, while column (6) includes those that are above the 50th pct. The elasticities estimated in column (5) and (6) indicate that while the effect is positive and highly significant, in poorer municipalities the Pentecostal political influence is even higher. Results in column (7) and (8) indicate that the magnitude of the elasticity also varies with the level of urbanization. In more rural municipalities the elasticity is much higher. This suggests that Pentecostal institutions have stronger influence in more isolated areas.

6 MECHANISMS

So far it has been shown that Pentecostal affiliation growth was accompanied by a rise in the vote share of far-right and Evangelical candidates, the latter being much higher. In this section I explore whether the church organization advantage is a mechanism that can explain the main results. As Pentecostals frequently attend ceremonies where the Pastor tends to emphasize the institution's support for his candidate, this might enable external mobilization favoring church-endorsed candidates.

To test this, I exploit the fact that Pentecostal churches in Brazil have very different structures and sizes. For instance, the two major Pentecostal churches, the Assembly of God (AG) and the Universal Church of the Kingdom of God (UCKG), have significant organizational differences (Cammett, Novaes, and Tuñón, 2022). The UCKG has a highly centralized ecclesial structure among Evangelical churches, while the AG is divided among several ministries (Cammett, Novaes, and Tuñón, 2022). Furthermore, as AG does not have rigorous candidate-selection control, their members' votes may be dispersed among several candidates.

I use the data provided by Gomes (2021), where for each evangelical deputy elected from 1933 to 2018, there is information on the Church associated with the candidate. Unfortunately I do not have information of the Church affiliation of candidates who have not been elected. Then, I estimate Equation 10 using three different dependent variables: (i) vote share obtained by candidates associated with UCKG, (ii) vote share obtained by candidates associated with AG, and (iii) vote share obtained by candidates associated with other small Pentecostal churches. In the estimation I include municipalities where at least one candidate of each group was elected. Following this process I remain with 70% of the municipalities in Brazil. By instrumenting the share of Pentecostals with the

Indirect SIL exposure defined by Equation 9, I estimate its elasticity to the vote share of the different candidates.

Results are presented in Table A6 on the Appendix. The dependent variable in column (1) refers to the vote share obtained by candidates associated with the big centralized church (UCKG), column (2) to the big decentralized church (AG) and column (3) to small Pentecostal churches. Results indicate that Candidates endorsed by major Pentecostal churches with a centralized structure are the ones who are more successful at capturing votes. While the coefficient for candidates associated with the decentralized church is positive, it is not significant. In addition, it can be seen that candidates who belong to a small Pentecostal church do not have the same advantage. This suggests that identifying with a Pentecostal affiliation does not automatically guarantee electoral support, but the organization advantage of the institution is a key element.

7 ROBUSTNESS CHECKS

7.1 Excluding Different Brazilian Regions.

Given that Brazil is a big country, and regions are quite heterogeneous, a possible concern is that results might be driven by a specific region. In order to rule out this potential threat, the main analysis is estimated excluding each of Brazil's big regions: Midwest, Southeast, South, Northeast and North. Figure A5 in the Appendix presents a map indicating the boundaries of the large regions of Brazil.

Table A8 in the Appendix presents the results of estimating Equation 2 when excluding each of the different large regions from the sample. The estimates are positive and significant in all specifications for the three main outcomes of interest: share of Pentecostal affiliations, vote share obtained by far-right candidates and vote share obtained by Evangelical candidates. This exercise mitigates the concern that results might be driven by a particular region in Brazil.

7.2 Alternative Specifications.

This section explores whether the results are robust to alternative specifications. First, from comparing the results in Table 6 and Table A4 we observed that the direct effect of SIL is not biased by the indirect effect. The coefficients estimated for the direct effect of SIL exposure on the different outcomes remain very similar in magnitude and significant when adding the indirect effect. This results mitigate potential concerns related to spatial

correlation.

Table A8 displays the results of the main specifications including different sets of controls. Column (1) presents the results of the baseline estimation. Then columns (2) to (5) add an indicator on whether there is more than one language spoken in the municipality interacted with year fixed effects. Adding this control does not seem to affect the estimations, reducing the concern that there is a differential effect in municipalities with several languages. Additionally, column (3) adds the share of the population who identify with a Catholic affiliation in 1980 interacted with year fixed effects. Results remain highly robust to these specifications for all the dependent variables. Furthermore, the magnitude of the estimated coefficients do not vary much.

To be even more rigorous, column (4) includes the interaction between year fixed effects and region fixed effects, where region refers to the five large geographic regions defined in Brazil.[22] The results also remain robust to this specification. The magnitude of the coefficient when the outcome is far-right vote share remains very similar, while for the other outcomes the magnitude of the coefficient is a bit smaller. Column (5) is even more restrictive as it adds the interaction between year fixed effects and state fixed effects. The results remain positive and highly significant.

7.3 Alternative Predicted SIL Exposure.

This section aims to address potential concerns regarding cultural similarities between indigenous populations in Brazil and those in nearby regions. In order to do this, I constructed the predicted SIL exposure variable defined by Equation 4 with a minor difference. Specifically, when constructing the variable $CloseTranslation_{lt}$, defined by Equation 5, j will refer to all existing languages in the world, excluding the languages spoken in Brazil and also the languages spoken in Bolivia, Colombia, Paraguay and Peru.

Table A9 displays the results of regressing the alternative measure of SIL exposure on the main outcomes of interest. The results support the main finding that the growth in Pentecostal affiliations was accompanied by an increase in the vote share of far-right and Evangelical candidates, with the latter experiencing a significantly higher rise.

[22] See the Map presented in Figure A5 in the Appendix for a geographical illustration.

8 CONCLUSIONS

The idea that religiosity would gradually disappear was shared by most 19th century social thinkers, such as Max Weber, Karl Marx, and Sigmund Freud. However, Norris and Inglehart (2011) show that the world has more people with traditional religious beliefs than ever before, particularly in impoverished contexts, in which popular religions with political influence have risen. A clear example is the rise of Pentecostal Evangelism, which represents one of the fastest-growing segments of global Christianity, accounting for at least a quarter of the world's Christian population. This growth is mostly concentrated in countries from Latin America, Asia and Africa.

Pentecostal Evangelicals are playing an increasingly relevant role in politics in Latin America. Their churches promote pastors as political candidates and support far-right candidates, such as Jair Bolsonaro. According to a survey of Latinobarómetro (2018), in Latin America, the Church (of any congregation) is considered the most reliable institution. Therefore, the Pentecostal upsurge and its strong involvement in politics may have relevant implications on its social and political landscape. In this paper I provide evidence that the Pentecostal rise in Brazil has increased support for both Evangelicals and far-right candidates, especially in municipalities with a less educated, poorer and more rural population. These results indicate that religious institutions can have a strong influence in political outcomes.

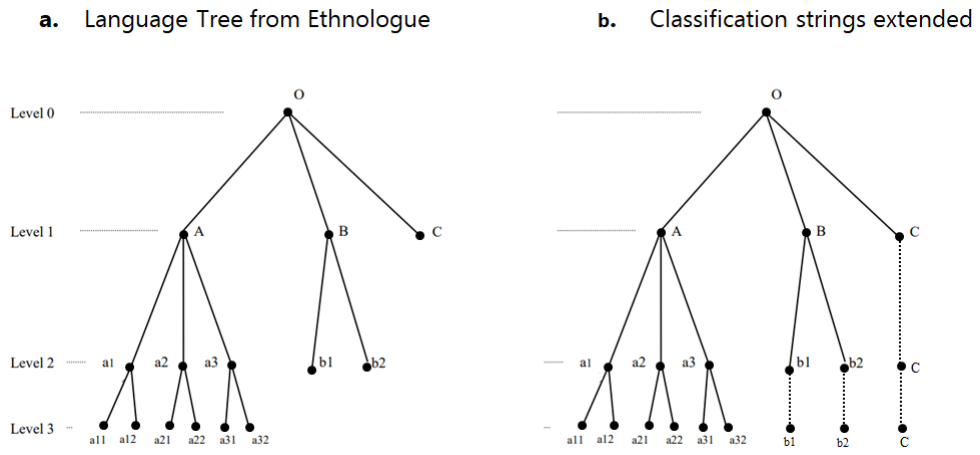
There remain a number of open questions. For instance, the set up constructed allows for future research questions associated with the classical debate of Catholicism vs. Protestantism, where different outcomes related to Development Economics could be studied. Furthermore, it builds a basis for future research questions related to the political entrenchment of Pentecostalism. The relationship between Pentecostalism and support for militarized actions or sexual education, are some examples of topics worthy of inclusion in future research agendas as they are extremely relevant in today's political debate.

APPENDIX

A Language Distance

A language family is a group of languages which descend from a common ancestral language. Language families can be divided into smaller phylogenetic units, conventionally referred to as branches since the history of a language family is often represented as a tree diagram. Figure A1-a presents one example of a linguistic tree as defined by Ethnologue. According to Desmet, Weber, and Ortuño-Ortín (2009), the distance separating languages is defined by the number of branches or nodes separating them in the linguistic trees. One of the challenges when measuring the distance is that the number of branches/nodes varies among linguistic families and subfamilies. In order to solve for this issue, following Desmet, Weber, and Ortuño-Ortín (2009) and Desmet, Ortuño-Ortín, and Wacziarg (2012), all the classification strings are extended to the same length. Figure A1-b provides an example of this procedure. In Figure A1, language a11, b1 and C share the first node in the genealogical classification (i.e., O), but language a11 has a total of 4 nodes, language b1 a total of 3 nodes and language C a total of 2 nodes. In this example, it is considered that all three languages (a11, b1 and C) would share 1 out of 4 nodes, which means that they are all equally related.

Figure A1: Languages Genealogical classification Path



Source: Based on Desmet, Ortuño-Ortín, and Wacziarg (2012).

According to Desmet, Weber, and Ortuño-Ortín (2009), the distance between language i and language j can be calculated following Equation 4.

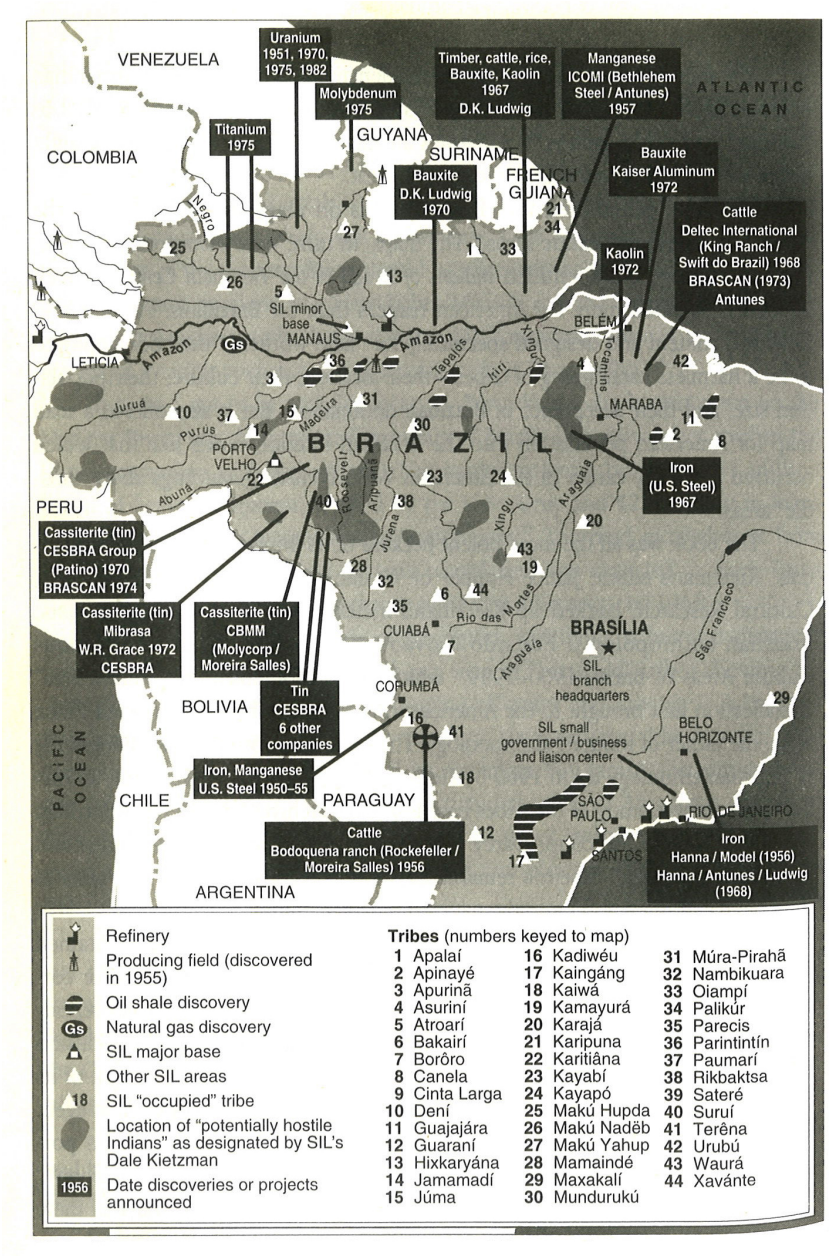
$$Distance_{ij} = 1 - \left(\frac{L}{M}\right)^{\delta} \tag{12}$$

$Distance_{ij}$ depends on L which is the number of shared branches between language i and language j and on M which is the maximum number of branches between any two languages. In the example presented in Figure A1, M is equal to 4.[23] Also, δ is a parameter that determines how fast the distance between the languages declines as the number of shared branches increases, which following Desmet, Weber, and Ortuño-Ortín (2009) is set equal to 0.05.

[23]For the case of the indigenous languages spoken in Brazil, M is equal to 5.

B Tables and Figures

Figure A2
SIL "Occupied" Tribes and Major Base

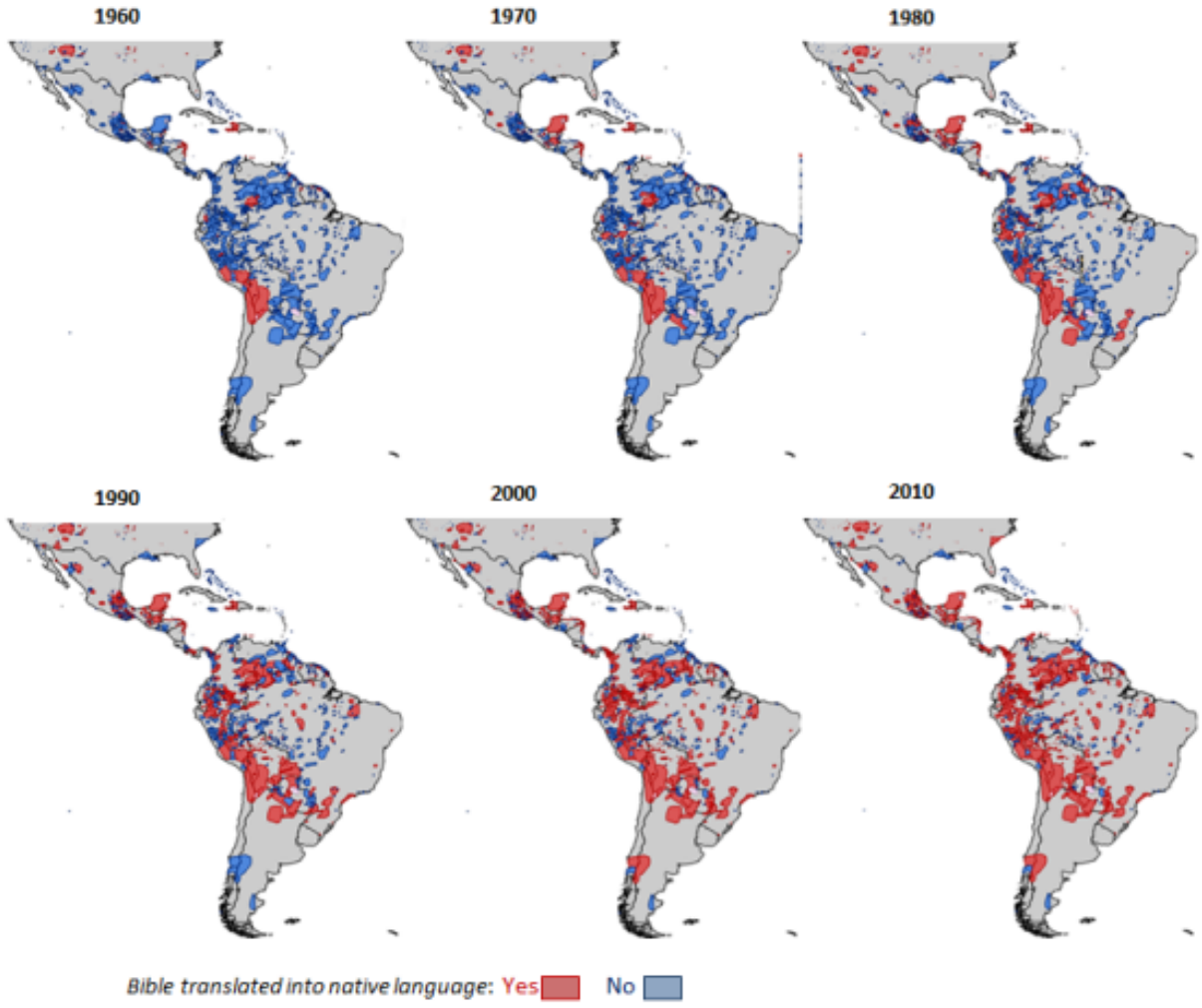


Source: Colby and Dennett (1996).

Figure A3
SIL Activity

Source: Aldridge (2018) and Wycliffe

Figure A4
Indigenous Language Location & Bible Translation in Latin America



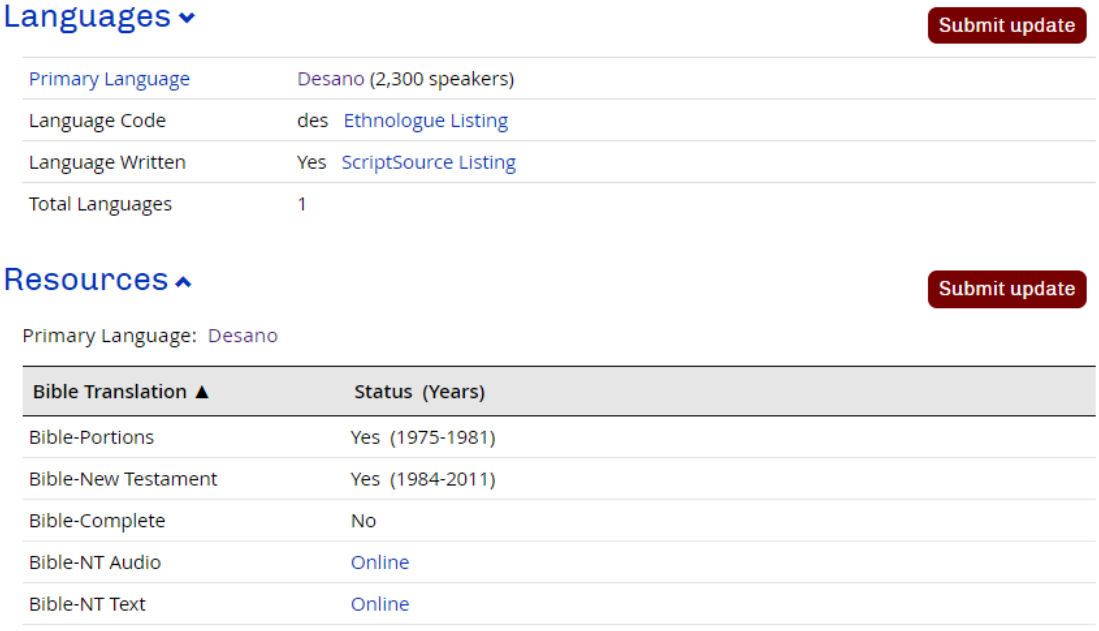
Source: Own elaboration using data from Joshua Project & Ethnologue.

Table A1
Right-Wing Candidates Considered in Each Election.

Elections	**Candidates**	**Political Party**
1998	Enéas Carneiro	Party of the Reconstruction of the National Order
	Jose Maria Eymael	Christian Democratic Party
2006	Luciano Bivar	Social Liberal Party
	Jose Maria Eymael	Christian Democratic Party
2014	Everaldo Dias Pereira	Social Christian Party
	Jose Maria Eymael	Christian Democratic Party

Figure A5
Brazil Big regions

Figure A6
Example of Joshua Project Data



Languages

Submit update

Primary Language	Desano (2,300 speakers)
Language Code	des Ethnologue Listing
Language Written	Yes ScriptSource Listing
Total Languages	1

Resources

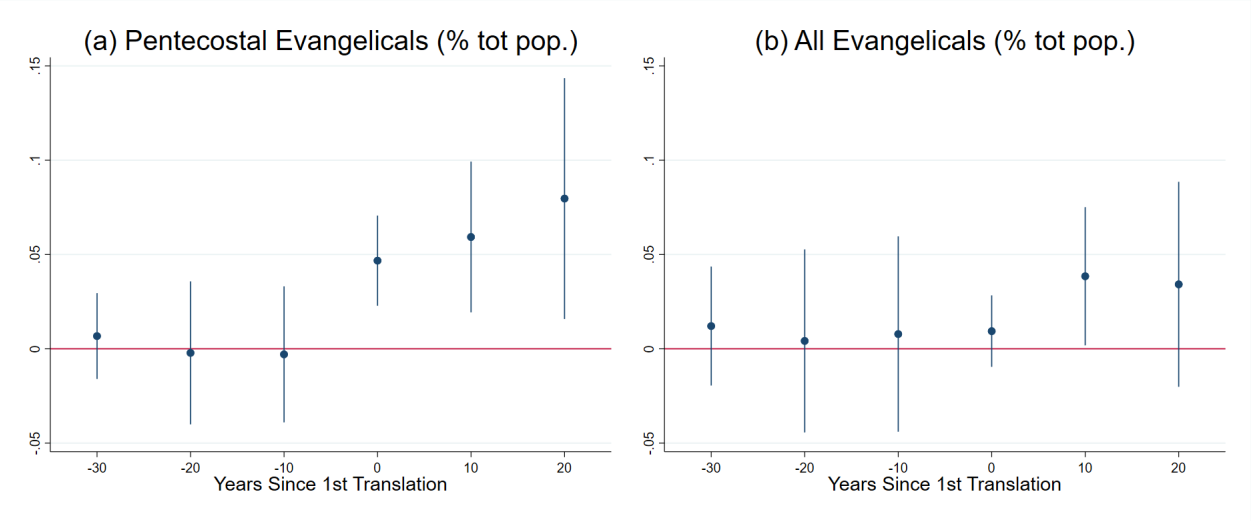
Submit update

Primary Language: Desano

Bible Translation ▲	Status (Years)
Bible-Portions	Yes (1975-1981)
Bible-New Testament	Yes (1984-2011)
Bible-Complete	No
Bible-NT Audio	Online
Bible-NT Text	Online

Source: https://joshuaproject.net/

Figure A7
Pre-trend Analysis - α_p Estimation



Estimated using Borusyak, Jaravel, and Spiess (2021) imputation approach.

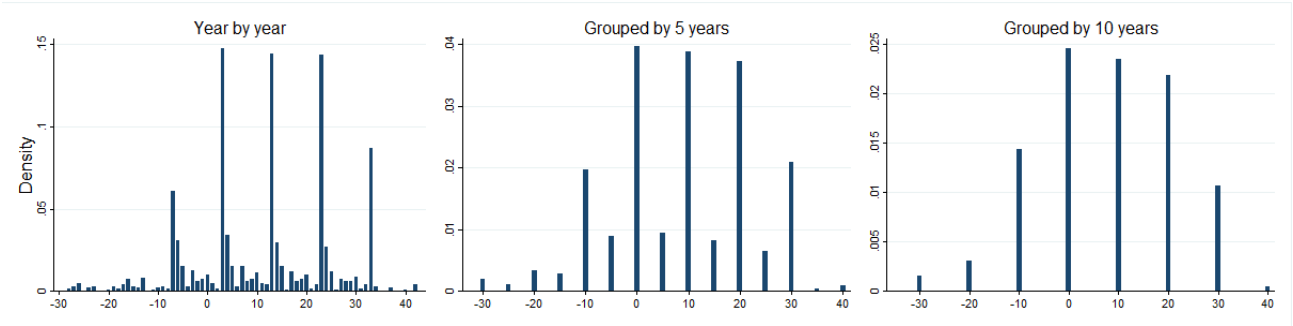
Table A2
Pre-trend Analysis - Religious Affiliations

	Pentecostals		All Evangelicals	
	(1)	(2)	(3)	(4)
Post1stTrans, p = -30	0.002	0.014	-0.001	0.008
	(0.027)	(0.020)	(0.030)	(0.021)
Post1stTrans, p = -20	-0.007	-0.000	-0.004	0.003
	(0.013)	(0.010)	(0.014)	(0.011)
Post1stTrans, p = 0	-0.005	-0.008	0.001	-0.001
	(0.007)	(0.005)	(0.010)	(0.007)
Post1stTrans, p = 10	-0.007	-0.013	0.002	0.001
	(0.014)	(0.009)	(0.020)	(0.013)
Post1stTrans, p = 20	-0.028	-0.023*	-0.007	0.001
	(0.020)	(0.012)	(0.029)	(0.018)
Post1stTrans × Indigenous, p = -30	-0.035	-0.035	-0.072	-0.022
	(0.088)	(0.076)	(0.089)	(0.072)
Post1stTrans × Indigenous, p = -20	0.040	0.041	-0.086*	-0.072*
	(0.058)	(0.048)	(0.047)	(0.041)
Post1stTrans × Indigenous, p = 0	0.142***	0.155***	0.011	0.002
	(0.032)	(0.035)	(0.020)	(0.018)
Post1stTrans × Indigenous, p = 10	0.178***	0.171***	0.078**	0.066*
	(0.038)	(0.036)	(0.036)	(0.037)
Post1stTrans × Indigenous, p = 20	0.286***	0.223***	0.143***	0.102**
	(0.034)	(0.047)	(0.046)	(0.042)
Year FE	yes	yes	yes	yes
Municipalities FE	yes	yes	yes	yes
Year FE $\times X_{m,1980}$	no	yes	no	yes
Observations	1,491	1,491	1,491	1,491
R^2	0.850	0.880	0.893	0.919
Mean Dep. var	0.08	0.08	0.15	0.15

Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variables correspond to the share of total population who identifies with each religious affiliation. Initial Characteristics included: share of urban population, share of population over 60 years old, mean income, share of the population who finished school, share of black population, share of females.

Figure A8

Histogram - Years Since 1st Bible Translation in Municipalities



Source: Own elaboration using data from Joshua Project & Ethnologue.

Table A3
SIL's Effect on Pentecostal Affiliations by Ethnic Group

Ethnic group	Pentecostals	
	Indigenous	Others
	(1)	(2)
Panel A: OLS		
SIL exposure	0.185***	0.022
	(0.065)	(0.018)
R^2	0.834	0.880
Panel B: OLS		
Predicted SIL exposure	0.664***	0.011
	(0.067)	(0.021)
R^2	0.843	0.879
Municipality FE	yes	yes
Year FE	yes	yes
Year FE $\times X_{m,1980}$	yes	yes
N	1,492	1,492
Mean Dep. Var	0.041	0.043

Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. Dependent variables correspond to the share of total population. Indigenous include the categories Brown and Indigenous defined in the Brazilian census. Initial Characteristics included: share of urban population, share of population over 60 years old, mean income, share of the population who finished school, ethnic composition and percentage of the population with at least one television.

Figure A9
Population-Weighted Centroids

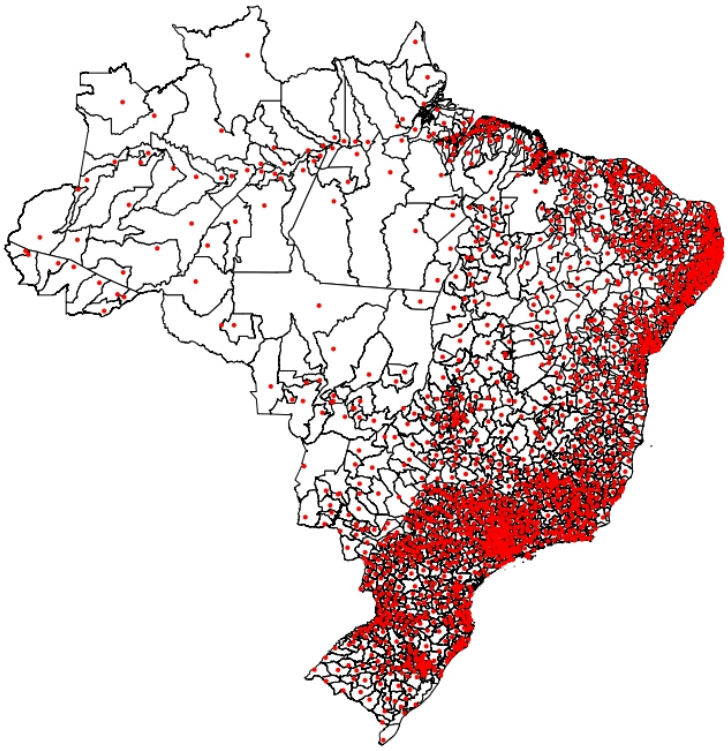


Table A4
Spillover Effects

Municipalities included	Non-Indigenous Speakers	All Brazil
	(1)	(2)
Panel A	Dep. var. Pentecostals (% total pop.)	
Predicted SIL exposure		0.602***
		(0.209)
Indirect SIL Exposure	30.055***	10.522***
	(3.290)	(2.173)
R^2	0.895	0.891
Mean Dep. var	0.07	0.08
Panel B	Dep. var. Evangelical vote share	
Predicted SIL exposure		0.246
		(0.351)
Indirect SIL Exposure	8.924***	10.874***
	(3.408)	(2.053)
R^2	0.503	0.496
Mean Dep. var	0.04	0.04
Panel C	Dep. var. Far-right vote share	
Predicted SIL exposure		0.133
		(0.083)
Indirect SIL Exposure	2.457***	0.676**
	(0.441)	(0.337)
R^2	0.837	0.828
Mean Dep. var	0.01	0.01
N	4,986	6,095
Municipality FE	yes	yes
YearFE	yes	yes
YearFE $\times X_{m,1980}$	yes	yes

Robust standard errors clustered at the municipality level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. Time period included: 1990, 2000 and 2010.

Table A5

Heterogeneous Effects of Pentecostal Affiliations on Evangelical Vote Share.

	Dep. var: **Evangelical vote share**							
Municipalities included	Below 50th pct. Literacy rate (1)	Above 50th pct. Literacy rate (2)	Below 50th pct. School rate (3)	Above 50th pct. School rate (4)	Below 50th pct. Mean income (5)	Above 50th pct. Mean income (6)	Below 50th pct. Urban rate (7)	Above 50th pct. Urban rate (8)
Pentecostals	2.006***	0.345**	1.443***	0.836***	1.359***	0.716***	1.368***	0.213*
IV: TE SIL	(0.369)	(0.137)	(0.269)	(0.164)	(0.264)	(0.191)	(0.181)	(0.128)
Municipality FE	yes	yes	yes	yes	yes	yes	yes	yes
YearFE	yes	yes	yes	yes	yes	yes	yes	yes
YearFE $\times X_{m,1980}$	yes	yes	yes	yes	yes	yes	yes	yes
Mean Dep. var	0.03	0.04	0.06	0.04	0.03	0.05	0.03	0.05
N	3,055	3,040	3,051	3,044	3,060	3,035	3,048	3,047
Mun. with ind. speakers	15.10%	21.47%	15.98%	20.59%	12.23%	24.36%	20.02%	16.55 %
Cragg-Donald F statistic	107.466	202.822	240.105	208.813	217.247	237.042	309.953	248.771

Robust standard errors clustered at the municipality level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. Time period included: 1990, 2000 and 2010.

Table A6
Mechanisms

Dep. var	Vote share obtained by elected candidates associated with		
	UCKG church	AG church	Small Pentecostal church
	(1)	(2)	(3)
2SLS estimation			
Pentecostals	0.917**	0.543	-0.680
(IV: Indirect SIL Exposure)	(0.385)	(0.370)	(1.011)
N	4,256	4,256	4,256
Municipality FE	yes	yes	yes
YearFE	yes	yes	yes
YearFE $\times X_{m,1980}$	yes	yes	yes
Mean Dep. var	0.01	0.02	0.02
Cragg-Donald Wald F statistic	23.492	23.492	23.492

Coefficients that result from instrumenting the share of Pentecostal population with the indirect SIL exposure defined by Equation 9. The municipalities included in the estimation are those where there is at least one elected candidate from each of the three congregations: AG, UCKG and small Pentecostal church. Time period included: 1990, 2000 and 2010.Robust standard errors clustered at the municipality level in parentheses. * $p < 0.10$, ** $p < 0.05$, $^{***}p < 0.01$.

Table A7
Robustness Check - Excluding Different Brazilian Regions

Region Excluded	Midwest	South	Southeast	Northeast	North
	(1)	(2)	(3)	(4)	(5)
Dep. var.	Pentecostal affiliations (% total population)				
SIL exposure	0.125**	0.239***	0.238***	0.191***	0.273***
	(0.052)	(0.053)	(0.054)	(0.050)	(0.055)
N	1,244	1,348	1,060	1,016	1,300
adj. R^2	0.892	0.889	0.879	0.895	0.882
Mean Dep. var	0.08	0.09	0.08	0.10	0.08
Dep. var.	Far-right vote share				
SIL exposure	0.021**	0.016**	0.016**	0.015**	0.017**
	(0.010)	(0.007)	(0.007)	(0.006)	(0.007)
N	923	1,001	795	752	965
R^2	0.873	0.849	0.828	0.852	0.855
Mean Dep. var	0.01	0.01	0.01	0.01	0.01
Dep. var.	Evangelical vote share				
SIL exposure	0.125*	0.075***	0.088***	0.105***	0.061**
	(0.066)	(0.022)	(0.025)	(0.014)	(0.026)
N	923	1,001	795	752	965
R^2	0.525	0.544	0.534	0.632	0.530
Mean Dep. var	0.05	0.06	0.05	0.06	0.06
Municipality FE	yes	yes	yes	yes	yes
YearFE	yes	yes	yes	yes	yes
YearFE $\times X_{m,1980}$	yes	yes	yes	yes	yes

Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

Table A8
Robustness Check - Additional Specifications

	(1)	(2)	(3)	(4)	(5)
	Pentecostal affiliations (% total population)				
SIL exposure	0.195***	0.197***	0.178***	0.136**	0.141***
	(0.067)	(0.048)	(0.045)	(0.052)	(0.043)
N	1428	1428	1428	1428	1428
adj. R^2	0.861	0.885	0.887	0.902	0.925
	Far-right vote share				
SIL exposure	0.016**	0.014**	0.014**	0.014**	0.007**
	(0.007)	(0.006)	(0.006)	(0.005)	(0.003)
N	1,109	1,109	1,109	1,109	1,109
adj. R^2	0.845	0.846	0.848	0.857	0.914
	Evangelical vote share				
SIL exposure	0.097***	0.084***	0.086***	0.044**	0.072***
	(0.026)	(0.024)	(0.024)	(0.017)	(0.023)
N	1,109	1,109	1,109	1,109	1,109
R^2	0.530	0.536	0.536	0.603	0.702
Municipality FE	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes
Year FE $\times X_{m,1980}$	yes	yes	yes	yes	yes
$\times$ *Number of Languages*		yes	yes	yes	yes
$\times Catholic1980$			yes		
$\times$ *Large Regions FE*				yes	
$\times$ *State FE*					yes

Unit of analysis: municipality-year level. 373 municipalities included. Robust standard errors clustered at the municipality level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. The variables included in Initial Characteristics are: share of urban population, share of population over 60 years old, mean income, share of population who finished school, share of female population, ethnic composition and percentage of population with at least one television.

Table A9
Robustness Check - Alternative Predicted SIL Exposure

	Far-right vote share (1)	Evangelical vote share (2)	Pentecostal affiliations (3)
Alternative			
Predicted SIL exposure	0.087***	1.118***	0.739***
	(0.032)	(0.302)	(0.130)
R^2	0.824	0.478	0.887
Municipality FE	yes	yes	yes
YearFE	yes	yes	yes
YearFE $\times X_{m,1980}$	yes	yes	yes
Observations	1,109	1,109	1,109
Mean Dep. var	0.01	0.05	0.10
Time period	1991-2010	1991-2010	1991-2010

Unit of analysis: municipality-year level. 373 municipalities included. Time period included: 1991, 2000 and 2010. Robust st. errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. The alternative Predicted SIL exposure is constructed excluding languages from Brazil, Bolivia, Colombia, Peru and Paraguay. Dependent variables in column (3) correspond to the share of total population. Initial Characteristics included: share of urban population, share of population over 60 years old, mean income, population density, share of the population who finished school and ethnic composition.

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Tables

TABLE 1
SUMMARY STATISTICS OF MUNICIPALITIES IN 1980

	All Brazil		**Municipalities where indigenous languages are spoken**	
	(1)	**(2)**	**(3)**	**(4)**
Nº of municipalities	2040	1,678	373	274
Brazil's population	100%	69.5%	29.4%	11.0%
Population density	127	79	273	20
Share of Pentecostal affiliations	3.0%	2.6%	4.4%	3.9%
Literacy rate	51.2%	48.0%	55.2%	51.4
Urban rate	49.1%	44.4%	47.3%	38.0%
Share of indigenous population*	0.6%	0.8%	2.2%	2.9%
Share of white population	51.1%	46.0%	56.2%	51.5%
Number of TVs per population	36.7%	29.4%	37.0%	25.4%
Bolsonaro vote share**	40.0%	36.2%	46.1%	43.0%

Note: This table presents a summary statistics for all municipalities of Brazil and for those where indigenous languages are spoken. Statistics in columns (2) and (4) are calculated excluding the States of Rio de Janeiro and Sao Paulo. *Presents the share of indigenous population in 2010. **Refers to the % of total votes in the first round of 2018 presidential elections. *Source: Own elaboration using Ethnologue & IPUMS data.*

TABLE 2
MUNICIPALITIES WHERE INDIGENOUS LANGUAGES ARE SPOKEN

Bible Translations	**1980**	**1990**	**2000**	**2010**
No translation	232	83	62	42
One language translated	121	233	233	237
More than one language translated	4	41	62	78
Ind. speakers with the Bible translated (% indigenous speakers; avg. municipalities)	28.3	67.8	76.7	84.6

Source: Own elaboration using WorldPop, Ethnologue & IPUMS data.

TABLE 3
TIMING OF THE BIBLE TRANSLATION

	Translated (1)
Close Translations	0.256^{***}
	(0.097)
Language FE	yes
Year FE	yes
Year FE $\times LanguageSpeakers$	yes
N	1395
adj. R^2	0.567
Mean Dep. Var	0.21

Unit of analysis: language-year level. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, $^{***}p < 0.01$. Includes years 1950, 1960, 1970, 1980, 1990, 2000, 2010 & 2020. Includes 174 indigenous languages spoken in Brazil.

TABLE 4
PREDICTING SIL EXPOSURE

	SILexposure (1)
Predicted SIL exposure	1.407***
	(0.162)
Municipality FE	yes
Year FE	yes
Year FE $\times X_{m,1980}$	yes
N	1,492
adj. R^2	0.831
Mean Dep. var	0.01

Unit of analysis: municipality-year level. 373 municipalities included. Time period: 1980 to 2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Initial Characteristics included: share of urban population, share of population over 60 years old, mean income, share of the population who finished school, share of Roman Catholic population, ethnic composition and percentage of the population with at least one television.

TABLE 5
SIL'S EFFECT ON RELIGIOUS AFFILIATIONS

	Pentecostals (1)	Evangelicals (Not Pent.) (2)	Roman Catholics (3)	Other religion (4)	No religion (5)
Panel A					
SIL exposure	0.206***	-0.067	-0.082	-0.042	-0.016
	(0.063)	(0.045)	(0.079)	(0.049)	(0.038)
R^2	0.861	0.892	0.920	0.790	0.862
Panel B					
Predicted SIL exposure	0.675***	-0.095	-0.478*	-0.138*	0.037
	(0.084)	(0.059)	(0.259)	(0.074)	(0.077)
R^2	0.864	0.891	0.921	0.791	0.862
Municipality FE	yes	yes	yes	yes	yes
YearFE	yes	yes	yes	yes	yes
YearFE $\times X_{m,1980}$	yes	yes	yes	yes	yes
N	1,492	1,492	1,492	1,492	1,492
Mean Dep. Var	0.08	0.07	0.79	0.02	0.04

Unit of analysis: municipality-year level. 373 municipalities included. Time period: 1980 to 2010. Robust st. errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, $^{***}p < 0.01$. Dependent variables correspond to the share of total population. Other religion counts for Buddhist, Hindu, Jewish, Muslim and Others. $X_{m,1980}$ includes: population density, share of the population over 60 years old, share of female population, mean income, share of the population who finished school, ethnic composition and percentage of the population with at least one television.

TABLE 6
SIL'S EFFECT ON VOTING OUTCOMES

	Far-right vote share (1)	Evangelical vote share (2)	Pentecostal affiliations (3)
SIL exposure	0.016**	0.099***	0.075***
	(0.007)	(0.026)	(0.018)
R^2	0.824	0.472	0.885
Predicted SIL exposure	0.202*	1.199	1.287***
	(0.114)	(0.781)	(0.346)
R^2	0.825	0.473	0.887
Municipality FE	yes	yes	yes
YearFE	yes	yes	yes
YearFE $\times X_{m,1980}$	yes	yes	yes
Observations	1,109	1,109	1,109
Mean Dep. var	0.01	0.05	0.10
Time period	1991-2010	1991-2010	1991-2010

Unit of analysis: municipality-year level. 373 municipalities included. Time period: 1980 to 2010. Robust st. errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. Dependent variable in column (3) correspond to the share of total population. Initial characteristics included: population density, share of the population over 60 years old, share of female population, mean income, share of the population who finished school, ethnic composition.

TABLE 7
PENTECOSTAL EFFECT ON VOTING OUTCOMES

	Far-right vote share (1)	Evangelical vote share (2)
Panel A: 2SLS		
Pentecostal affiliations	0.208**	1.294***
IV: SIL exposure	(0.083)	(0.266)
Cragg-Donald F statistic	13.946	13.946
Panel B: 2SLS		
Pentecostal affiliations	0.157**	0.932**
IV: Predicted SIL exposure	(0.063)	(0.439)
Cragg-Donald F statistic	36.217	36.217
Municipality FE	yes	yes
Year FE	yes	yes
Year FE $\times X_{m,1980}$	yes	yes
N	1,109	1,109
Mean Dep. Var	0.01	0.05

Unit of analysis: municipality-year level. 373 municipalities included. Time period: 1980 to 2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. Initial Characteristics included: population density, share of the population over 60 years old, share of female population, mean income, share of the population who finished school, ethnic composition.

TABLE 8
BOLSONARO AND PENTECOSTALS

	Bolsonaro vote share (1)	Pentecostals (% total population) (2)
Panel A		
Predicted SIL exposure	0.184**	0.432***
	(0.088)	(0.098)
adj. R^2	0.822	0.641
Panel B: 2SLS		
Pentecostals	0.426**	
IV: Predicted SIL exposure	(0.211)	
Controls	yes	yes
State FE	yes	yes
Number of languages FE	yes	yes
N	372	372
Mean Dep. Var	0.46	0.14
Cragg-Donald Wald F statistic		11.896

Unit of analysis: municipality level. 373 municipalities included. Cross-section analysis. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. The dependent variable in column (1) refers to the vote share obtained by Bolsonaro in the first round of 2018 presidential elections. The dependent variable in column (2) refers to the share of Pentecostals in 2010. The control variables included are: vote share obtained by far-right candidates in 2010, share of urban population in 1980, share of population over 60 years old in 1980, mean income in 1980, share of the population who finished school in 1980, share of female population in 1980, ethnic composition in 1980, percentage of the population with at least one television in 1980, indicator for the number of languages spoken in the municipality.

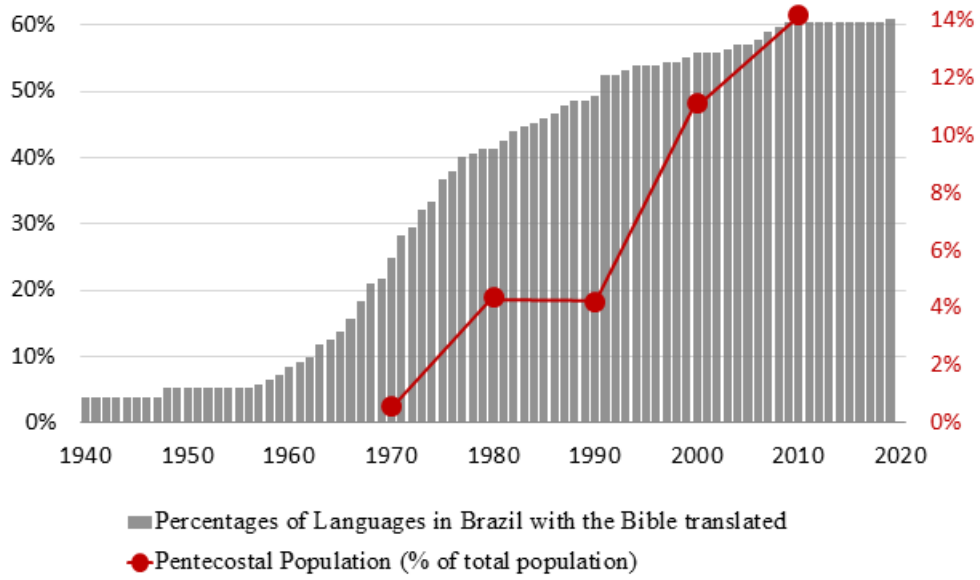
TABLE 9
EFFECT OF PENTECOSTAL GROWTH ON VOTING OUTCOMES

Municipalities included	Non-Indigenous Speakers (1)	All Brazil (2)
Panel A	Dep. var.: Evangelical vote share	
Pentecostals	0.298**	0.906***
IV: Total Effect SIL	(0.123)	(0.124)
Mean Dep. var	0.04	0.04
Panel B	Dep. var.: Far-right vote share	
Pentecostals	0.079***	0.056**
IV: Total Effect SIL	(0.019)	(0.025)
Mean Dep. var	0.01	0.01
N	4,986	6,095
Municipality FE	yes	yes
YearFE	yes	yes
YearFE $\times X_{m,1980}$	yes	yes
Cragg-Donald Wald F statistic	806.765	505.474

Unit of analysis: municipality-year level. 373 municipalities included. Time period included: 1991, 2000 and 2010. Robust standard errors clustered at the municipality level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

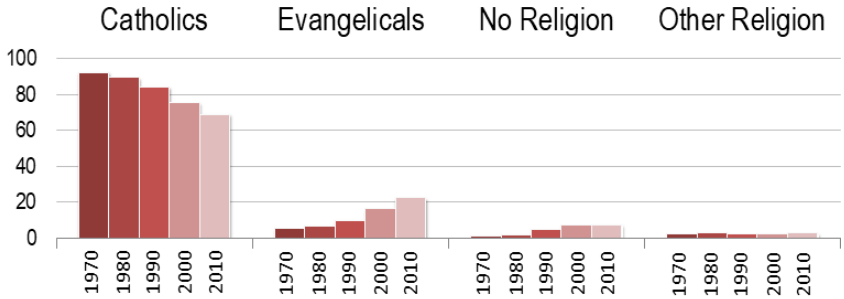
Figures

FIGURE 1
Bible Translation Timing & share of Pentecostal population



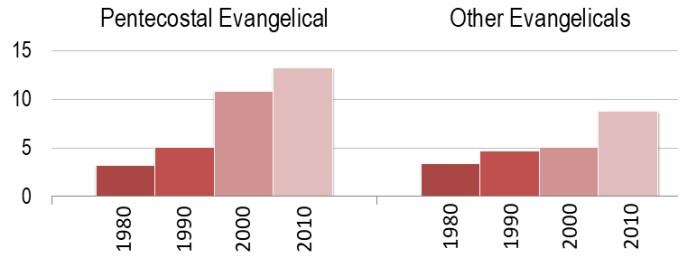
Note: The left axis of the graph presents the share of languages with the Bible translated in Brazil over time. The right axis of the graph presents the share of Pentecostal population in municipalities where indigenous languages are spoken. Data on the Pentecostal population for 1970 is an approximation.
Source: Own elaboration using Joshua Project and IPUMS data.

FIGURE 2
Religious Composition of Brazil.
(Percent of the population that identifies with each group)



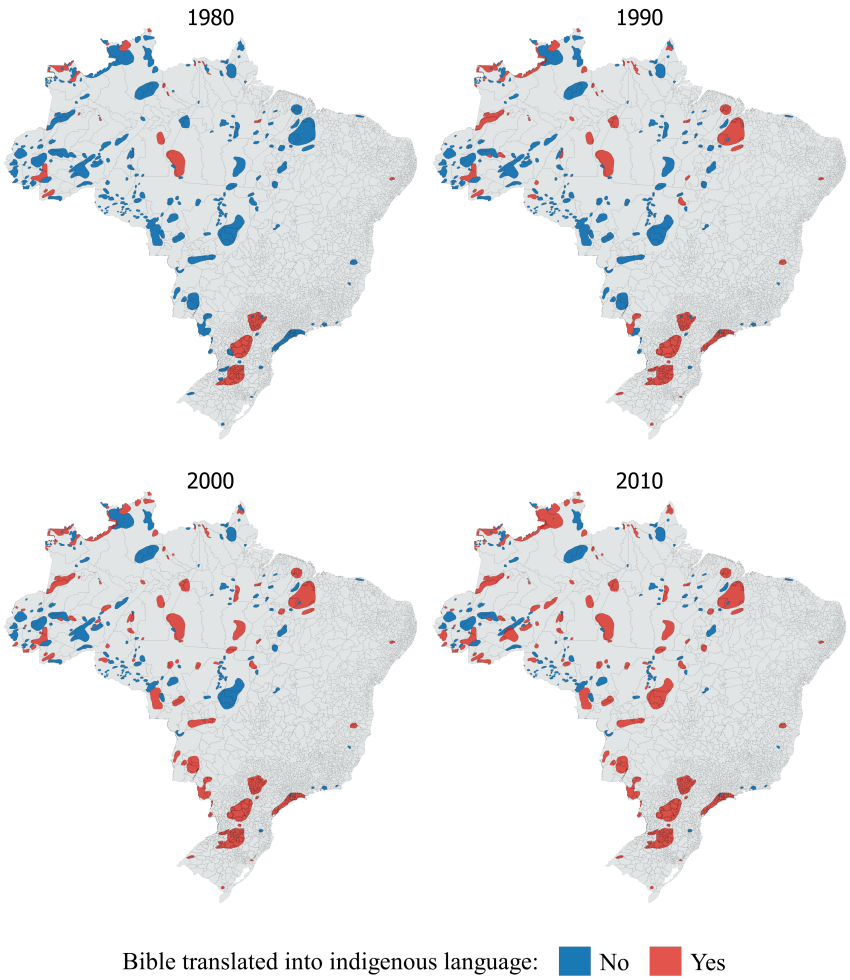
*Other religion counts for: Buddhist, Hindu, Jewish, Muslim, Others.
Source: Brazil Census data.

FIGURE 3
Evangelical Decomposition in Brazil.
(Percent of the population that identifies with each group)



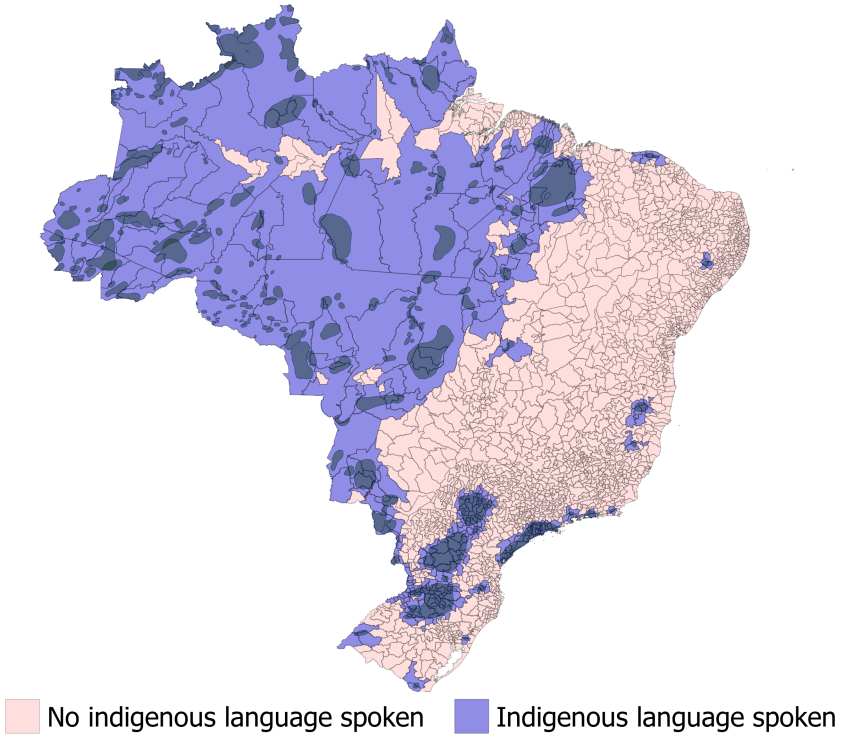
*Other Evangelicals counts for Historical Evangelicals and Unclassified Evangelicals.
Source: Brazil Census data.

FIGURE 4
Indigenous Language Location & Bible Translation in Brazil



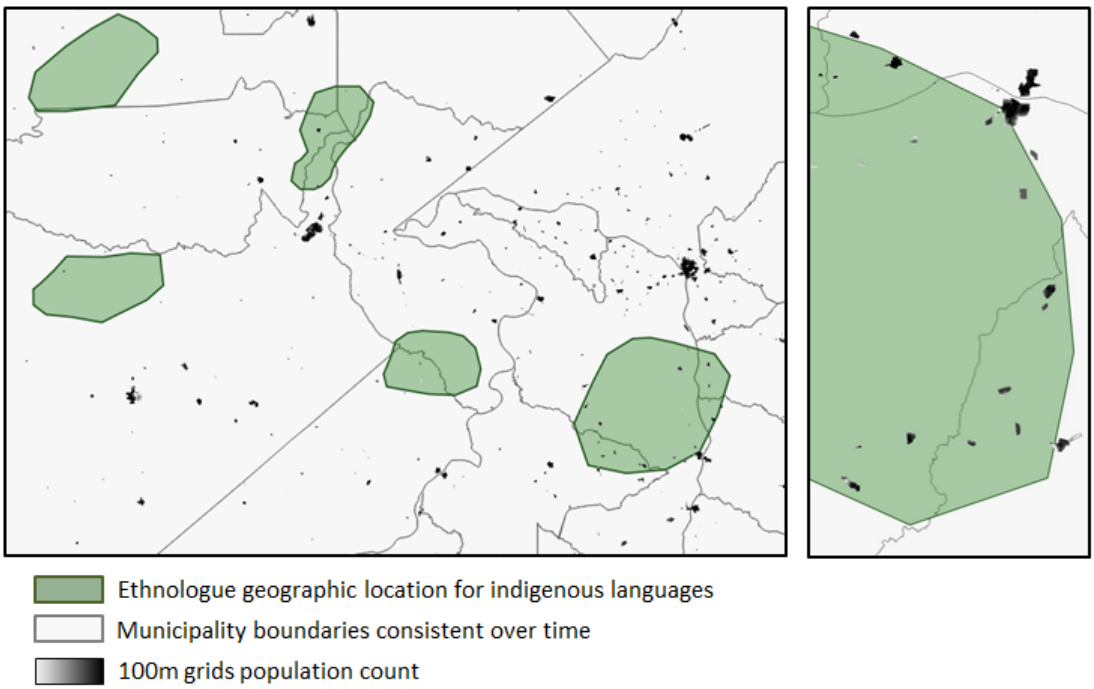
Note: This figure presents a set of maps indicating the geographic location of different indigenous languages spoken in Brazil according to Ethnologue data. When the polygons are in red it indicates that there exists a translation of the New Testament in that particular language, while if it is in blue there is no translation made. *Source: Own elaboration using Joshua Project and Ethnologue.*

FIGURE 5
Municipalities Where Indigenous Languages are Spoken



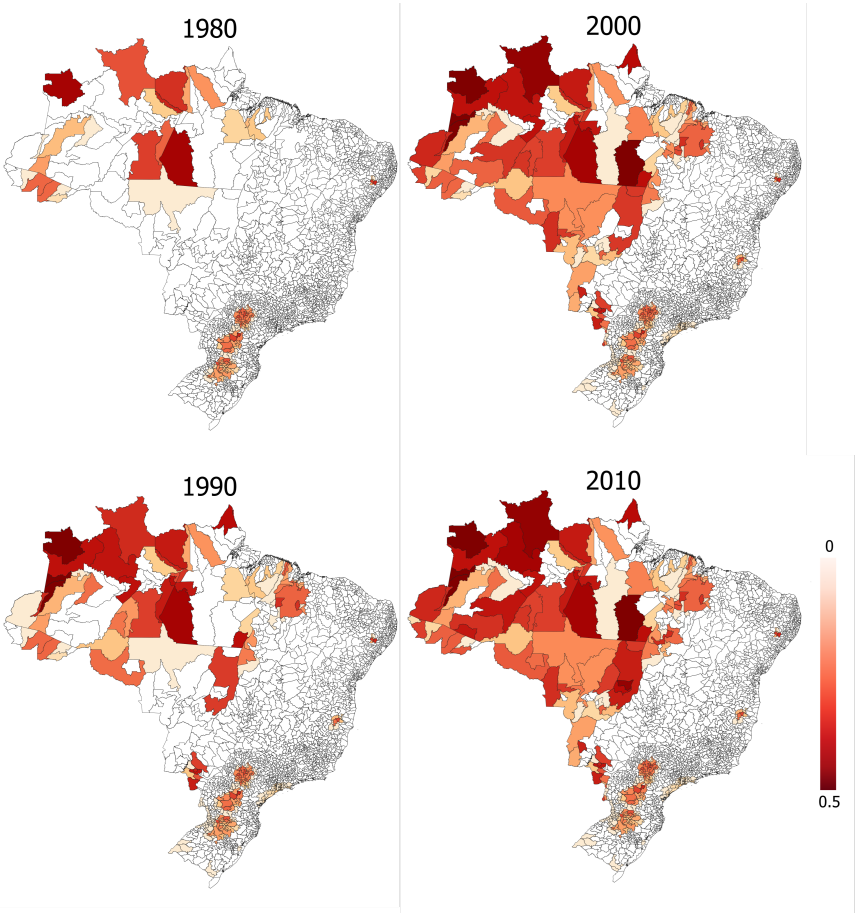
Source: Own elaboration using Ethnologue & IPUMS data.

FIGURE 6
Determining Number of Speakers in each Municipality



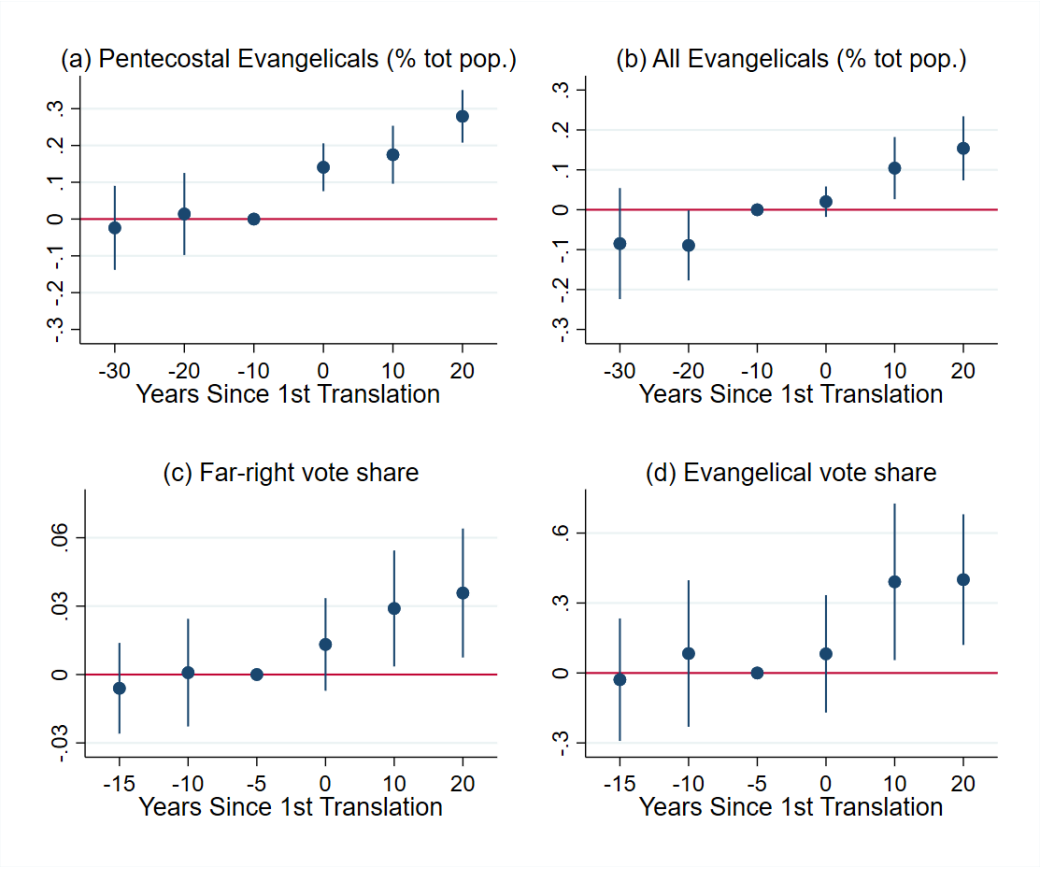
Note: the figure presents an example of how Ethnologue and municipality boundaries overlap. For the purpose of the project I need to define how the population speaking each indigenous language, that is given at the Ethnologue level, splits between municipalities. Using the 100 meters population count provided by WorldPop and the share of indigenous population in each municipality, I estimate the distribution of the population within each Ethnology polygon.

FIGURE 7
SIL Exposure



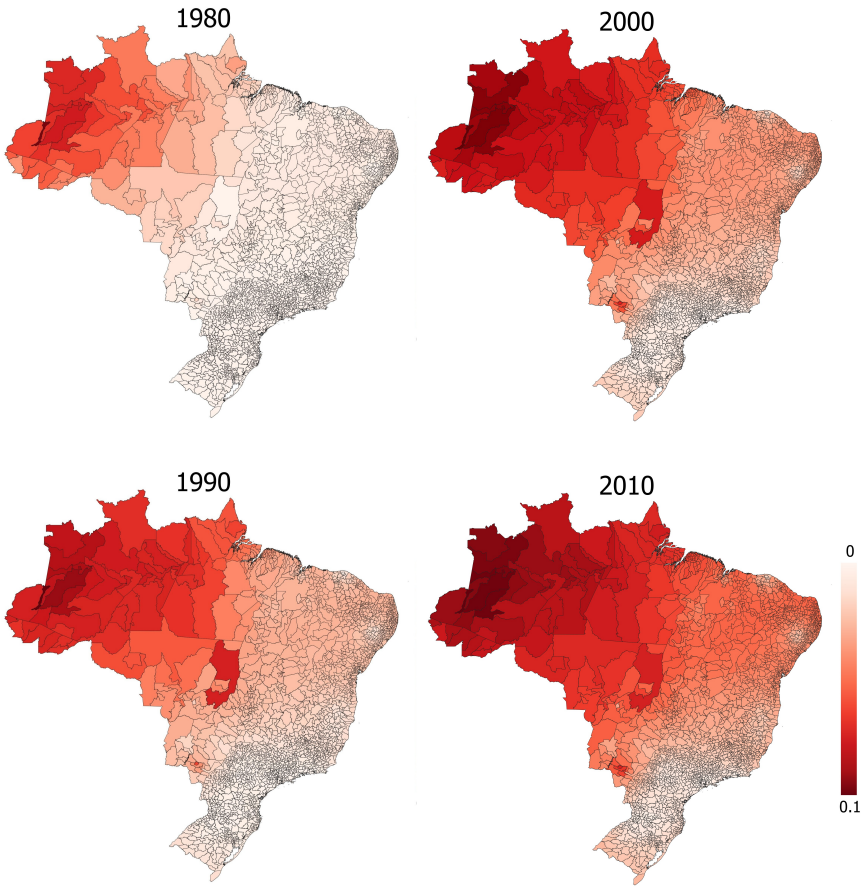
Note: These maps illustrate the direct exposure to SIL defined by Equation 3 over time for each municipality. It can be interpreted as the additional share of the population that has the Bible translated into its native language.

FIGURE 8
Pre-trend Analysis - α_p Estimation



Note: These graphs report the α_p coefficients that result from estimating Equation 1 by OLS for different dependent variables (see Figure A7 for estimation using Borusyak, Jaravel, and Spiess (2021) imputation approach). The parameter α_p reflects the differential effect of the share of the population speaking indigenous languages in 1980, for each year with respect to the year when the first Bible was translated in the municipality. Confidence intervals are based on robust standard errors clustered at the language level.

FIGURE 9
Total effect SIL



Note: These maps illustrate the total effect of SIL defined by Equation 11 over time for each municipality. This variable is constructed by adding the SIL exposure measured with linguistic distance and the spillover effects.