Brother Votes for Brother: The Effects of Pentecostal Political Influence in Brazil*

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Abstract

Pentecostals are playing an increasingly important role in Latin American politics, supporting pastors and far-right candidates for elected office. In this paper, I use the staggered translation of the Bible into indigenous languages by the Summer Institute of Linguistics (SIL), a 20th century US evangelical organization, to isolate exogenous variation in the growth of the Brazilian Pentecostal movement. Focusing on municipalities in which indigenous languages are spoken, I find that the growth of Pentecostalism had substantial effects on political outcomes, increasing the vote share of right-wing candidates in presidential elections and the vote share of candidates associated with evangelical churches.

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

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1 Introduction

In recent decades, Latin America has experienced one of the most significant religious transformations worldwide: the decline of Catholicism and the rapid expansion of Pentecostal evangelicalism. Pentecostal leaders promote a socially conservative agenda and are deeply involved in politics, from guiding the electoral choices of their followers to promoting pastors as candidates. In Brazil, historically the world's largest Catholic country, Pentecostal expansion has coincided with the rise of far-right movements.

A growing body of research examines the diverse factors driving the rise of far-right movements globally, including austerity reforms (Dal Bó et al., 2023), migration patterns (Bazzi et al., 2023), exposure to refugees (Steinmayr, 2021), 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, reliable estimates of its causal impact on political outcomes remain scarce.[1]

In this paper, I develop a novel empirical strategy to estimate the causal effect of Pentecostal expansion on political outcomes in Brazil. I exploit the staggered translation of the Bible into indigenous languages by the Summer Institute of Linguistics (SIL), a twentieth-century US evangelical organization. The timing of these translations provides a measure of exposure to SIL activity over time and across municipalities with indigenous-language presence. I first show that SIL exposure increased Pentecostal affiliation. I then leverage this variation to estimate the political effects of Pentecostal growth, finding that Pentecostal expansion increased electoral support for right-wing presidential candidates and for evangelical politicians in federal elections.

Around 1960, SIL began working among indigenous language communities across Brazil. Its translation projects were highly involved and typically lasted around ten years, during which missionaries worked closely with local communities to learn their languages. Although SIL's presence in tribal areas was limited, as missionaries resided in central towns and were not allowed to establish churches or schools, they maintained continuous contact with indigenous populations. In this context, a Bible translation reflects not only the availability of religious texts, but also sustained exposure to SIL missionary presence. Importantly, even for bilingual indigenous individuals, contact with SIL members entailed exposure to evangelical proselytizing efforts. Such exposure may have increased evangelical religious salience in settings where Pentecostal churches, with their entrepreneurial approach to expansion, were especially well positioned to grow.

To measure the timing of SIL activities, I collect novel data from the *Joshua Project*.

[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.

This is a US evangelical organization that keeps records of when the Bible was translated into different languages across the world. It also provides a copy of the translation, which I used to verify that the copyright belongs to SIL. To the best of my knowledge, this data had not been used before in any empirical study. I use the timing of the translation of the Bible as a proxy to measure SIL exposure in each municipality. For this purpose, I combine information on the year of translation into each language from the *Joshua Project* with geo-localized data on the indigenous languages spoken in 1980 in Brazil from the *Ethnologue*. I then map languages to municipalities using detailed population count data for every 100-meter grid cell. This allows me to estimate the population speaking each indigenous language within each municipality.

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 confirms the absence of pre-existing trends in the main outcomes, supporting the assumption that the timing of SIL translations is as good as random, conditional on controls. Next, I construct a time-varying municipality-level measure of exposure to SIL from 1980 to 2010. This measure captures two additional sources of variation: (i) the presence of multiple indigenous languages within a municipality, and (ii) the size of the indigenous population speaking each language. For each municipality and year, I compute the share of the population speaking indigenous languages with a Bible translation. I fix population weights at their 1980 levels so that all time variation is driven solely by the timing of Bible translations. This variable serves as my main regressor in specifications that include municipality fixed effects, year fixed effects, and interactions of year fixed effects with baseline (1980) municipal characteristics, such as mean income, urbanization, school attendance, and ethnic composition.

The first set of results indicates that exposure to SIL increased the share of Pentecostal affiliations in municipalities where indigenous languages are spoken. This increase appears to stem from a substitution across religious affiliations rather than the conversion of a single group. To further understand the impact of SIL's presence, I classify the Pentecostal population by ethnic group, as defined in the Brazilian census. The results indicate that the effect of SIL's presence on Pentecostal affiliation is primarily observed among indigenous and mixed-race populations. Moreover, SIL effects seem to be stronger in municipalities that are poorer and less educated.

I then estimate the reduced-form effect of SIL exposure on political outcomes. The results show that municipalities more exposed to SIL experienced greater support for right-wing presidential candidates and for candidates affiliated with evangelical churches in federal elections. These effects are statistically significant and robust to the inclusion

of state-by-year fixed effects. At the same time, SIL exposure has no significant impact on socioeconomic indicators such as literacy or employment, consistent with the fact that the organization was not allowed to establish schools or churches.

Building on these results, I instrument Pentecostal growth between 1991 and 2010 with SIL exposure growth during the same period. The estimates indicate that a 1 percentage point (p.p.) increase in the Pentecostal share raises the vote share of right-wing presidential candidates by 0.16 p.p. and that of evangelical candidates by 0.97 p.p. in federal elections. I then apply this specification to the vote share obtained by Jair Bolsonaro in the 2018 and 2022 presidential elections to assess whether stronger Pentecostal expansion contributed to his electoral success. Municipalities that experienced greater Pentecostal growth between 1991 and 2010 display significantly higher Bolsonaro vote shares in both elections; a one-standard-deviation increase in Pentecostal growth between 1991 and 2010 (5.2 p.p.) is associated with about 12.3 p.p. more support for Bolsonaro. These estimates should be interpreted as the political effects of Pentecostal growth induced by SIL exposure in municipalities with indigenous-language presence, rather than as the average effect of Pentecostalism in Brazil.

Despite there being no evidence that SIL targeted municipalities where Pentecostals were already growing, some potential threats to the identification strategy remain. For instance, a potential concern is that SIL might have targeted a variable predictive of future growth in evangelical affiliations, observable to them but unobserved by us. To further strengthen the identification strategy, I construct a measure of expected SIL exposure based on an exogenous translation cost shifter. Since Bible translations require significant investment, it is plausible that new translations are more likely to occur when similar languages already have a Bible translation. Accordingly, I construct an expected SIL exposure measure by substituting the actual timing of Bible translations with that of languages that are linguistically similar to those spoken in Brazil but are spoken outside Brazil. The results using this expected SIL exposure measure align with those based on actual SIL exposure, lending further support to the causal interpretation of the findings.

The results described above refer to municipalities where indigenous languages are spoken, which account for 26.4% of Brazil's population. Next, I examine whether SIL activity in indigenous speaking municipalities generates spillovers in other regions, for instance through the influence of commuters or migrants. By following a market access approach, for each municipality I calculate an indirect SIL exposure measure, as a weighted average of 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. Leveraging this variation, I study the implied elasticity of Pentecostalism on voting outcomes in these municipalities. Assuming that the effect on voting outcomes resulting from the variation in Pentecostal populations due to direct and indirect SIL exposure is comparable, elasticities across different samples can be examined. I find that while Pentecostal political influence is strong in municipalities with non-indigenous speakers, the effect is smaller than in municipalities with indigenous speakers, especially for evangelical candidates' vote share.

While the available data do not allow for a direct test of mechanisms, several empirical patterns point toward persuasion and organizational capacity as key drivers of Pentecostal political influence. First, in both presidential and federal elections, turnout remains statistically unchanged, indicating no increase in participation among previously abstaining citizens. Instead, the evidence suggests a reallocation of votes among existing voters. Second, the increase in Evangelical vote share appears to reflect shifts in voter preferences rather than a mechanical effect driven by an increase in the number of Evangelical candidates. Third, differences in church structure and size seem to shape how Pentecostalism translates into political influence.

These differences in church structure and size are particularly salient when comparing Brazil's main Pentecostal denominations. The Assembleia de Deus (AD) and the Universal Church of the Kingdom of God (UCKG) are Brazil's most influential Pentecostal denominations, together accounting for around 49% of the country's Pentecostal population according to the 2010 Census. The AD is known to be electorally aligned with the Partido Social Cristão (PSC), while the UCKG mobilizes support for candidates affiliated with its own party, the Republicanos (Cammett, Novaes, and Tuñón, 2022). Beyond these two major groups, Brazil hosts numerous smaller Pentecostal denominations with more limited organizational reach. Results suggest larger effects for evangelical candidates affiliated with the PSC and Republicanos, who are likely members of the AD or UCKG, suggesting that church structure and size play an important role in capturing votes. This is particularly relevant in the context of Brazil's campaign finance, which imposed spending limits (Avis et al., 2022).

This paper contributes to several strands of literature. First, it contributes to the political economy of religion by providing causal evidence on how Pentecostal expansion affects electoral outcomes, with a focus on the role of voter demand. Existing work studies different factors related to the rise of Pentecostalism in Brazil. Costa, Marcantonio, and Rocha (2023) and Buccione and Mello (2024) explore how economic downturns and church-affiliated television increased Pentecostal affiliations and support for Pentecostal-linked candidates. Corbi and Sanches (2021) examine tax subsidies for

Pentecostal churches and their political impact. More recently, Araújo (2025) exploits a large-scale rural electrification program to study the political consequences of evangelical expansion, while Rettl (2025) shows that trade shocks increase voters' reliance on evangelical churches as non-state service providers. This paper complements this literature by proposing a novel empirical strategy to isolate exogenous variation in Pentecostalism and showing that increases in Pentecostal affiliation lead to higher electoral support for right-wing and evangelical candidates. The results focus on demand for these particular candidates and are consistent with persuasion and organizational capacity as relevant features of Pentecostal political influence. More broadly, the empirical strategy could be applied in other regions with SIL activity, including Latin America, Africa, and Asia.

Second, this paper relates to the literature on culture and individual preferences, including work on how religion shapes moral values, prosocial preferences, interpersonal interactions, and attitudes toward scientific progress.[2] With respect to political behavior, Basten and Betz (2013) show that Protestantism in Switzerland shapes preferences over redistribution and the role of government, while Gerber, Gruber, and Hungerman (2016) provide evidence that church attendance increases voter turnout in the United States. Relatedly, Lanzara et al. (2024) study how Catholic bishops affected voter preferences in Italy, and Buccione and Knight (2024) study the rise of the religious right in the United States during the Moral Majority era. This paper contributes to this literature by examining how growth in Pentecostal affiliation affects electoral outcomes, increasing support for right-wing and religious candidates.

Third, this paper also contributes to the literature on missionary legacies. Nunn (2010), Waldinger (2017), and Valencia Caicedo (2019) explore the impact of missionary work on religious beliefs in colonial times. Cagé and Rueda (2016) look at Protestant missionaries' early introduction of the printing press in Africa.[3] This paper contributes to this literature by examining how a relatively small intervention by a 20th century missionary society, still active today, can spread religions with significant political influence. It provides the first empirical analysis of the political effects of SIL, an international organization that translated the Bible into more than 1,350 languages and operated in over 100 countries.

Finally, this paper also contributes to the literature on the rise of populism across the world, summarized by Guriev and Papaioannou (2022). The empirical literature has studied various factors contributing to the rise of populist movements, including

[2] Scheve and Stasavage (2006); McCleary and Barro (2006); Renneboog and Spaenjers (2012); Cantoni (2015); Campante and Yanagizawa-Drott (2015); Iyer (2016); Carvalho, Iyer, and Rubin (2019); Squicciarini (2020); Bryan, Choi, and Karlan (2021); Valencia Caicedo, Dohmen, and Pondorfer (2021); Montero and Yang (2022); Lowes, Marx, and Montero (2025)

[3] Also related, Brown (2023) and Okada da Silva et al. (2024) study the long-term effects of Bible translations and Protestant missionary activity in sub-Saharan Africa.

austerity, migration patterns, and economic shocks (Fetzer, 2019; Fetzer, Sen, and Souza, 2019; Alabrese et al., 2019; Autor et al., 2020; Dal Bó et al., 2023). I add to this literature by providing evidence that Pentecostal growth increased support for right-wing and evangelical candidates in Brazil between the late 1990s and 2014, as well as for Jair Bolsonaro in the 2018 and 2022 presidential elections.

The rest of the paper is structured as follows: Section 2 provides background on SIL, indigenous tribes in Brazil, and the Pentecostal rise; Section 3 outlines the data used; Section 4 details the empirical strategy and presents results on religion and voting outcomes; Section 5 examines spillover effects across Brazil; Section 6 presents robustness checks; Section 7 discusses potential channels; and Section 8 concludes. An Appendix gathers additional figures and tables referenced throughout the main text.

2 Background

This section provides background on several aspects relevant to this study. First, it explains how SIL carried out its activities and promoted its religious beliefs, highlighting key aspects of their procedures that support the setup of the paper. Second, it discusses the linguistic and cultural diversity of the indigenous tribes in Brazil. Finally, the section discusses the rise of Pentecostalism in Brazil and its political involvement.

2.1 Summer Institute of Linguistics

The SIL was founded in the US in the mid-1930s and is considered the largest 20th century evangelical missionary society in terms of members sent abroad.[4] Originally, SIL was a dual-organization: "Wycliffe Bible Translators (WBT)" and the "Summer Institute of Linguistics (SIL)." WBT focused on the religious aspect, maintaining the core principles of a traditional faith mission, which allowed the organization to raise funds and recruit missionaries in the US. In contrast, SIL emphasized the scientific and linguistic aspects, aiming to translate the Bible into various languages. To achieve this, SIL conducted fieldwork in foreign countries, studied numerous minority languages, and collaborated with language communities to translate the Bible into their native tongues.

There are several aspects of the procedures of SIL activities that are relevant for this study. First, most members of SIL belonged to the conservative wing of US evangelicalism, and therefore, intended to promote their values in the different regions they worked in (Hvalkof and Aaby, 1981).

Second, SIL had a limited presence in tribal areas, as it was not allowed to establish churches or schools in foreign countries. Furthermore, missionaries did not reside in

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

tribal areas. In each country where SIL operated, it established a main base equipped with language labs, libraries, workshops, air bases, radio stations, hospitals, and schools for missionaries' children.[5] SIL members could commute from the main base to the tribal area by taking advantage of aviation services provided by the Jungle Aviation and Radio Service (JAARS) organization. JAARS was founded by SIL's creator, with the mission to "provide logistical solutions that help make Bible translation possible."[6]

Third, SIL missions are carried out by a small team of trained missionaries who work closely with local informants. Before receiving their field assignments, SIL members had to complete three summer courses in linguistics and survival training (Stoll, 1982). Once in the field, typically working in pairs, their primary objective was to collect ethnographic and ethnolinguistic data to understand the culture and language of the tribe they have been assigned to. Their approach usually involves selecting informants who assist in return for payment. During fieldwork, SIL members seek to build a relationship of trust with the informant and other members of the community in order to facilitate their work.[7]

Fourth, the informants, who frequently become the first to convert, often start working as salaried teachers in their tribes, spreading SIL-prepared educational material in the native language (Stoll, 1982; Hvalkof and Aaby, 1981). 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 Bible 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.

Finally, 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. Once the whole language project is concluded, which often takes around 10 years, SIL missionaries 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, which are considered to be equally relevant. In other words, SIL does not indicate a priority for any particular language. Therefore, given the work it requires to translate

[5] As an example, Figure B1 in the Appendix presents a map showing the location of the indigenous tribes reached by SIL by 1995, along with the location of the SIL base in Brazil (Colby and Dennett, 1996).

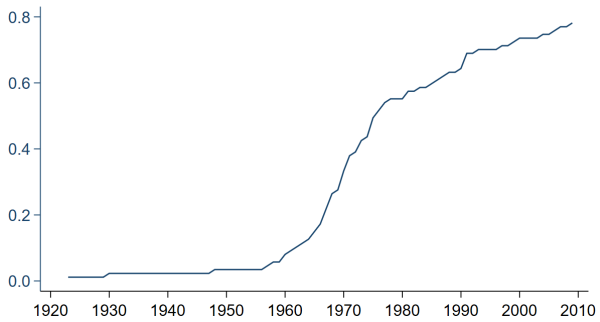
[6] See more on JAARS at `//www.jaars.org/`.

[7] Part of the translation work is usually done from the main base, where SIL members may bring their informants.

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.

SIL expanded extremely rapidly, reaching 308 linguistic groups by 1962 (Hvalkof and Aaby, 1981). 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, e.g. Mexico, Peru, Bolivia, Guatemala and Honduras.[8] Figure 1 illustrates the share of languages spoken in Brazil into which the Bible was translated from 1920 to 2010. Notably, the number of languages with a Bible translation has been steadily increasing since 1960, reaching 78% of all languages spoken in Brazil by 2010.[9]

Figure 1: Bible Translation Timing



Note: The graph illustrates the share of languages spoken in Brazil into which the Bible was translated from 1920 to 2010.

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 significant linguistic diversity, both in terms of the organization of sound systems and grammatical structure. Of these 180 languages, only 24 have more than 1,000 speakers, 108 languages have between 100 and 1,000 speakers, and 50 languages have fewer than 100 speakers (Gaspar, 2009). Brazil's 2010 Census identified that in indigenous lands 57.3% of the indigenous population spoke an indigenous language at home and 28.8% did not speak Portuguese.

[8]For more details on which countries SIL has worked see Hvalkof and Aaby (1981).
[9]This specifically refers to the number of New Testament translations.

The diversity that exists among indigenous tribes comes not only from their different languages and cultures. The relationship they have with the non-indigenous population is also different (Instituto Socioambiental, 2018). They can have direct contact with the non-indigenous population of the region (for instance, as farmers, illegal settlers, or fishermen) or they can have contact through institutions (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 (Instituto Socioambiental, 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 branch of evangelical Christianity that originated in the US in the early 20th century. 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 (Pew Research Center, 2006). This growth is primarily concentrated in Latin America, Asia, and Africa.

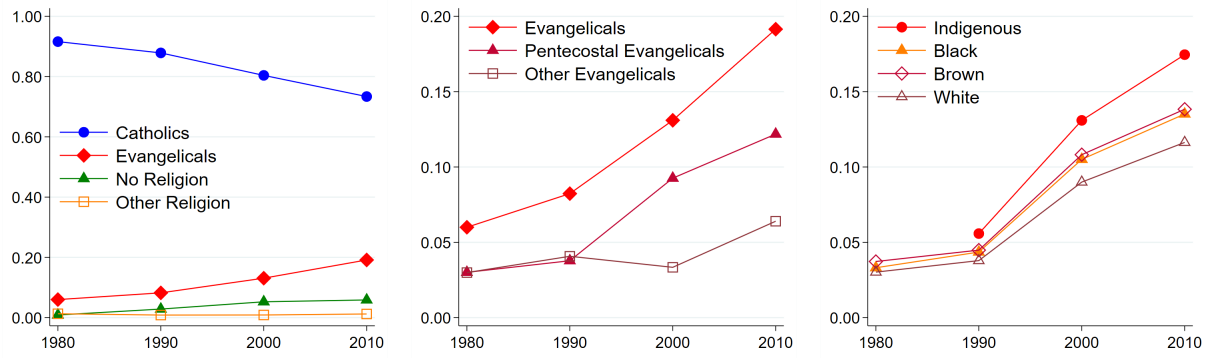
Pentecostals and Catholics differ on several relevant aspects (Pew Research Center, 2006; Costa, Marcantonio, and Rocha, 2023; Buccione and Mello, 2024). Pentecostals tend to support more traditional Christian practices, being particularly conservative with respect to matters such as abortion or LGBTQI rights. They emphasize the reliability of the Bible and the "gifts of the Holy Spirit", such as speaking in tongues, faith healing, and prophesying.[10] Also, Pentecostals are more likely to attend church, read the Bible daily, and report God being the most important aspect of life. Finally, Pentecostals tend to have specific political preferences, supporting political leaders with strong religious beliefs (Pew Research Center, 2006).

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. Figure 2 illustrates Brazil's religious composition change over the last decades. Pentecostals represented around 13% of Brazil's population in 2010, accounting for more than 60% of all evangelicals in Brazil.[11] Figure 2c shows that Pentecostal growth is a generalized phenomenon across all ethnic groups, being even more pronounced among the indigenous population in Brazil.

[10] Speaking in tongues refers to direct communication with God in a language believed to be understood only by God.

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

Figure 2: Religious Trends in Brazil



(a) Religious Composition (b) Evangelical Composition (c) Pentecostal Share within Ethnic Group

Note: Figures 2a and 2b show the evolution of the share of the population that identifies with each religious affiliation. "Other Religion" includes Buddhist, Hindu, Jewish, Muslim, and other religions. "Other Evangelicals" include historical evangelicals and unclassified evangelicals. Figure 2c presents the evolution of the share of Pentecostal population among each ethnic group. *Source: IPUMS.*

Although there had been early attempts to expand the Pentecostal movement in Brazil, it was not until the 1980s that it started to gain strength. The last and most successful Pentecostal wave in Brazil arrived in the 1980s, with the foundation and rapid expansion of independent churches, which are often referred to as Neopentecostals (Freston, 1994, 2004). While Brazilian Pentecostalism was formerly regarded as apolitical, with its leaders' motto being "the believer does not meddle in politics" (Schmidt and Engler, 2016), by the end of the 20th century, it revealed a clear political and ideological orientation. Pentecostal leaders began to focus on influencing Brazil's political agenda and public sphere, adopting the new motto, "brother votes for brother". Despite Brazilian law separating church and state, Pentecostal churches have become aggressively involved in politics.

In 1986, an evangelical Caucus was formed consisting largely of Pentecostals.[12] 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). Furthermore, political actors are increasingly aware of the influence these organizations have in mobilizing votes. This is exemplified by Jair Bolsonaro, who was baptized by a pastor of the Assembly of God two years before winning the 2018 presidential election and received public support from Pentecostal leaders. Another example is the former mayor of Rio de Janeiro, who was also a bishop in one of Brazil's major Pentecostal churches. Additionally, the 2016 impeachment of

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

President Dilma Rousseff 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 political strategy (Schmidt and Engler, 2016; Burity, 1997).

Pentecostals have gained political influence not only in Brazil, but also in other countries in Latin America. For instance, Pentecostals in 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

This section describes the data sources and procedures used to construct the municipality-level panel dataset, which combines information on SIL activity, religious composition, demographic characteristics, and election results.

3.1 Data Sources: SIL Activity

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. This data is obtained from the *Joshua Project*, an evangelical organization based in the US.[13] *Joshua Project* seeks to coordinate the work of missionary organizations to identify the ethnic groups of the world that have the fewest evangelical followers. For each language spoken in the world, the *Joshua Project* provides information on whether the Bible, or at least some portions, has been translated and the year in which the translation was made. Furthermore, it provides access to a copy of the translated Bible. This enables me 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 that all were produced by SIL.

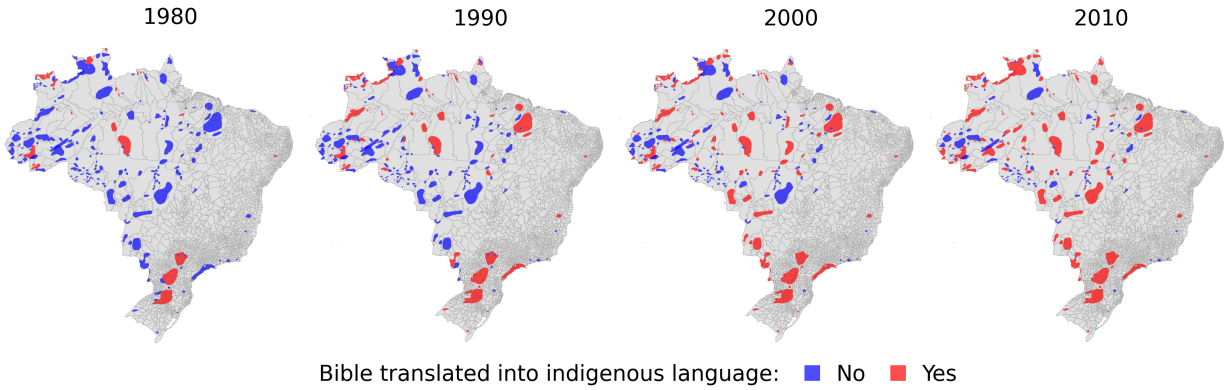
Joshua Project presents the year in which the first and last editions of the Bible were published, for both the Old Testament and the New Testament. For the purpose of this project, I consider the year in which the first edition of the New Testament was

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

published.[14]

Information on the geographic location of each spoken indigenous language in Brazil, and its population, is obtained from the 14th edition of *Ethnologue*, published in 2000 (Grimes and Grimes, 2000). *Ethnologue* is an active research project that 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 data for the 14th edition of *Ethnologue* was gathered varies across different languages, but it is generally close to 1980. Figure 3 presents maps of Brazil showing the geographic locations of different indigenous-speaking communities and whether the Bible was translated into their languages, for each decade since 1980.[15]

Figure 3: Indigenous Language Location & Bible Translation



Note: Each polygon represents the geographic region of a distinct language spoken in Brazil. Red polygons indicate languages with a Bible translation, while blue polygons represent those without one.

3.2 Data Sources: Voting Outcomes

The main voting outcomes considered in the study are: (i) the vote share obtained by presidential candidates classified by ideological bloc, and (ii) the vote share obtained by candidates associated with evangelical churches in 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 and blank votes. The classification of the ideology of political parties is based on Zucco and Power (2024) and Borges and Vidigal (2023). Table A1 in the Appendix presents the classification of political parties by ideological

[14]Figure B2 in the Appendix presents an image of the data provided by *Joshua Project* for a particular indigenous language. In the example, the first 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.

[15]Figure B3 in the Appendix illustrates the data on Bible translations for all countries located in Latin America, showing a significant geographical and time variation.

bloc.

Meanwhile, I rely on Lacerda (2018) to identify candidates associated with evangelical congregations, as official records do not report candidates' religious affiliation. This classification 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)'s classification is that selection can be biased toward the identification of the most popular candidates.

3.3 Data Sources: Religion and Socioeconomic Information

The *Brazilian Demographic Census*, obtained from *IPUMS*, provides individual-level information on religious affiliation and socioeconomic variables such as literacy, ethnicity, and income (Ruggles et al., 2025). This data is aggregated at the municipality level, using *IPUMS* consistent boundaries over time. Using micro-census data enables me to measure the share of the population identifying with each religious congregation by ethnic group across municipality-years. Finally, I obtain population estimates from *WorldPop*. This provides population counts for every 100-meter grid cell.[16]

3.4 Data Construction

I construct a municipality-level panel dataset using *IPUMS* consistent boundaries for 1980, 1991, 2000, and 2010. The main datasets, census micro-data and voting data, are aggregated at the municipality-year level.

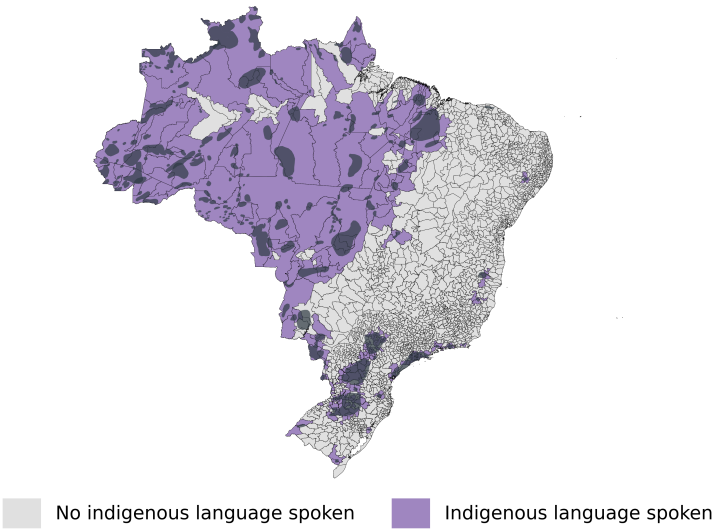
Since the census data do not include information on the languages spoken in households, a key empirical challenge is identifying the indigenous languages spoken in each municipality and estimating their respective populations. To address this, I follow a three-step process. First, I assess whether each *Ethnologue* geo-located polygon overlaps with a municipality, establishing the potential presence of an indigenous language within the municipality's boundaries. Second, I assess whether there is population within these overlapping areas using the 100-meter *WorldPop* population grid. Third, I use the municipality-level indigenous population share from *IPUMS*, together with the *WorldPop* grid, as auxiliary spatial information to allocate *Ethnologue*'s language-level speaker counts across municipalities.

[16] WorldPop provides the estimated total number of people per grid-cell in 2000. *"The projection is Geographic Coordinate System, WGS84. The units are the 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."*

A municipality is classified as having speakers of a particular indigenous language if it overlaps with an *Ethnologue* polygon and, within the overlapping area, the product of the *WorldPop* population count and the municipality-level indigenous population share is greater than zero. This is a static measure based on language-location data gathered by *Ethnologue* around 1980.

Carrying out this process, it follows that indigenous languages are spoken in 275 municipalities, shown in Figure 4. These municipalities account for 26.4% of Brazil's population and are my sample in the main analysis. Table 1 presents summary statistics comparing Brazilian municipalities where indigenous languages are spoken and not spoken in the 1980s. On average, excluding the states of Rio de Janeiro and São Paulo, municipalities where indigenous languages are spoken tend to have lower population density and lower levels of urbanization. However, education levels are quite similar. Finally, Figure 5 illustrates that the time series of demographic statistics evolves similarly in Brazilian municipalities where indigenous languages are spoken and those where they are not.

Figure 4: Municipalities Where Indigenous Languages are Spoken



Note: The figure illustrates the set of municipalities identified as having populations that speak indigenous languages. A municipality is considered to speak an indigenous language if it overlaps with an *Ethnologue* polygon, and within the overlapping area, the product of the population count and the share of the indigenous population is greater than zero.

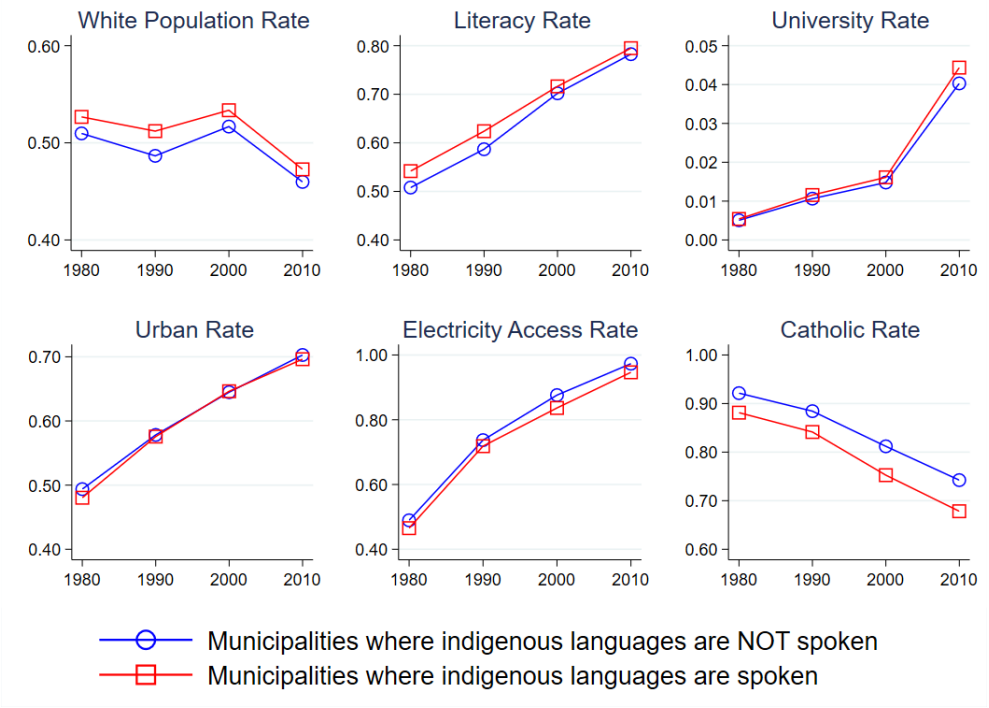
Having categorized municipalities based on the presence of indigenous languages, I determine the number of people who speak each indigenous language in each municipality. This is done by estimating the distribution of each indigenous language speakers within each *Ethnologue* polygon. The *Ethnologue* polygons provide speaker counts for each language at the polygon level. I create weights by combining the *WorldPop* 100-meter

Table 1: Summary Statistics Across Municipalities in 1980

Municipalities where indigenous languages are	All Brazil		Exc. São Paulo & Rio	
	Not Spoken	Spoken	Not Spoken	Spoken
	(1)	(2)	(3)	(4)
Nº of municipalities	1,765	275	1,470	208
Brazil's population	73.6%	26.4%	60.5%	8.9%
Population density	98.5	314	87.5	18
Pentecostal affiliations share	2.8%	4.5%	2.4%	4.2%
Literacy rate	50.8%	54.2%	47.4%	50.2%
Urban rate	49.4%	48.0%	45.3%	37.9%
Indigenous population share*	0.0%	1.8%	0.1%	2.2%
White population share	51.0%	52.7%	45.7%	48.0%
Share of households with a TV	36.7%	35.2%	30.0%	23.6%

Note: This table presents summary statistics for municipalities in Brazil in 1980, distinguishing between those with and without indigenous languages spoken, as illustrated in Figure 4. Columns 1 and 2 include all states of Brazil, while columns 3 and 4 exclude the states of Rio de Janeiro and São Paulo. *Statistics from 1991 based on IPUMS.

Figure 5: Summary Statistics Across Municipalities



population grid with the share of the indigenous population at the municipality level given by *IPUMS*. The data is then aggregated to the municipality level to match the unit of analysis. This allocation method offers the advantage of accounting for the sparse population density characteristic of many regions in Brazil. Figure A1 in the Appendix provides an example of the data used to estimate the distribution of the indigenous

population within each *Ethnologue* polygon.

By combining this data with the *Joshua Project*, I estimate the number of languages at the municipality-year level that have a Bible translation, as well as the number of indigenous speakers who have the Bible translated into their native language. Table A2 reports, 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. Additionally, it reports, for each period, the share of the indigenous population whose native language has a Bible translation, keeping population counts fixed at the baseline year. The only source of time variation is the introduction of new Bible translations, while the population and geographic distribution of languages remain fixed at their 1980s levels.

4 Empirical Strategy and Results

To measure exposure to SIL's activity, I use the timing of Bible translations into specific indigenous languages as a proxy. Although some indigenous communities may also understand Portuguese, a translation of the Bible into their native language indicates that SIL had an active presence among them. The identification strategy exploits the staggered translation of the Bible across languages and over time. I compare outcomes before and after each translation, across municipalities where the corresponding languages are spoken. Accordingly, the analysis is restricted to municipalities in Brazil where indigenous languages are present.

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 event-study specification:

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

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. $YearSinceTrans_{mtp}$ 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. $Indigenous_{1980,m}$ is the share of indigenous-language speakers (as constructed in Section 3.4) located in municipality m

in 1980.

Furthermore, Equation 1 includes the interaction between time fixed effects and municipality characteristics from 1980 ($X_{m,1980}$). Initial characteristics include mean income, the share of the urban population, population density, the share of the black population, the share of females, the share of adults aged 25 and above who completed primary schooling, and the share of the population employed in the manufacturing sector. Then, ψ_t refers to the time fixed effects that capture changes over time that affect all municipalities in a similar way and ψ_m refers to the municipality fixed effects that control for any time-invariant unobserved determinant. Finally, ϵ_{mt} is an error term whose estimated standard errors are clustered at the language level. Since some municipalities contain more than one indigenous language, I assign each municipality to the indigenous language with the largest estimated speaker population in 1980 and cluster standard errors at this dominant-language level.

Hence, β_p captures the effect of the number of years relative to the first translation for municipalities without indigenous populations. The parameters of interest are the α_p, which reflect the differential effect of the share of the population speaking indigenous languages in 1980, for each year relative to the year when the first Bible was translated in the municipality.[17]

As this specification captures dynamic effects around the first translation event, it is estimated only for municipalities where at most two indigenous languages are spoken, which represents about 95% of the sample. While this approach results in some loss of variation, it allows for the investigation of potential pre-trends and provides a clearer understanding of the dynamic effects.

Equation 1 is estimated using a two-way fixed effects specification, which allows the identification of the differential effect associated with the share of the population speaking indigenous languages for each year relative to the first Bible translation. While two-way fixed effects estimators may face limitations in staggered designs with heterogeneous treatment effects, most alternative approaches are designed for discrete treatment adoption or for settings with longer time series and are therefore not directly applicable to the continuous interaction term used here.

Results are presented in Figure 6. Each panel displays the estimated coefficients α_p for different dependent variables. In Figure 6-a, the dependent variable is the share of the

[17] As the dependent variable is observed every 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 B4 in the Appendix presents three histograms showing the years since the first translation, displayed in three formats: year by year, grouped into 5-year intervals, and grouped into 10-year intervals.

Pentecostal population, while in Figure 6-b, it corresponds to the share of the population identifying with other, more traditional evangelical affiliations. In both cases, the results show no evidence of pre-trends. When the dependent variable is the share of Pentecostal affiliations, the coefficients increase as more years pass since the Bible was translated into at least one of the languages spoken in the municipality. Notably, no effect is observed for affiliations with other types of evangelical congregations.

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 6-c the dependent variable is the vote share obtained by right-wing candidates, while in Figure 6-d the dependent variable is the vote share obtained by evangelical candidates. The results show a similar pattern as before, suggesting no evidence of pre-trends and an increase in the coefficients after the first Bible translation. However, the timing pattern indicates that following the first translation, changes in voting behavior evolve more gradually, in contrast to the faster increase in Pentecostal affiliation.

4.2 Main Specification

Next, I present the main specification. Two additional sources of variation are exploited: (i) some municipalities speak more than one indigenous language, and (ii) languages differ in the size of their speaker populations. To incorporate both dimensions, I construct the following measure:

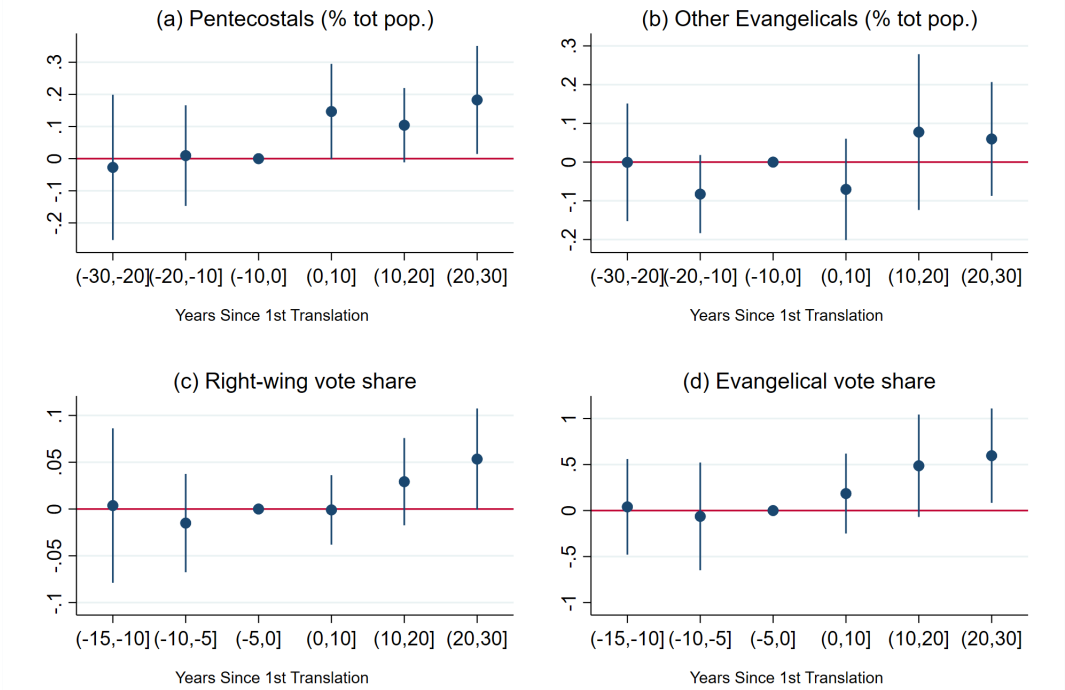
$$SILexposure_{mt} = \frac{\sum_l Indigenous_{1980,ml} \times PostTrans_{lt}}{TotalPopulation_{1980,m}} \tag{2}$$

where $Indigenous_{1980,ml}$ is the indigenous population speaking language l, located in municipality m in 1980 (as constructed in Section 3.4). $PostTrans_{lt}$ 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. Note 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 activity in municipality m at time t. Figure 7 illustrates the variable $SILexposure_{mt}$ for the different time periods and municipalities.

Then, the following equation is estimated

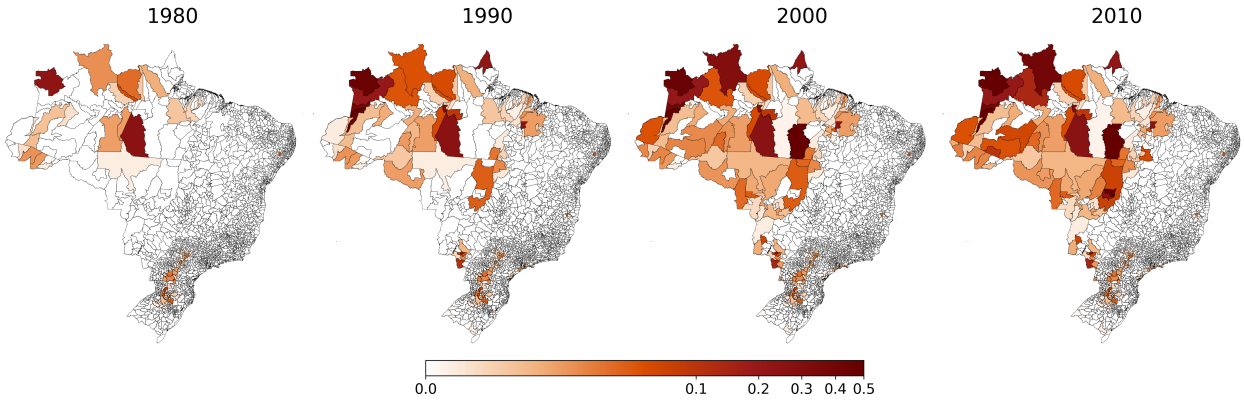
$$y_{mt} = \gamma_1 SILexposure_{mt} + \gamma_2(\psi_t \times X_{m,1980}) + \psi_m + \psi_t + \epsilon_{mt} \tag{3}$$

Figure 6: Pre-trend Analysis - α_p Estimation



Note: These graphs report the α_p coefficients that result from estimating Equation 1 for different dependent variables. 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. As the dependent variable is periodic over ten years, the number of years since the first Bible translation, p, are grouped into intervals. Confidence intervals are based on robust standard errors clustered at the language level.

Figure 7: SIL Exposure



Note: These maps illustrate SIL exposure defined by Equation 2 over time for each municipality.

where y_{mt} is the outcome of interest for municipality m at time t, such as the share of the Pentecostal population. The main explanatory variable, $SILexposure_{mt}$, captures the effect of each additional Bible translation, weighted by the size of the population

speaking the corresponding language in municipality m.

Equation 3 includes year fixed effects (ψ_t), municipality fixed effects (ψ_m), and interactions of year fixed effects with baseline municipal characteristics $X_{m,1980}$, as defined above. Finally, ϵ_{mt} is the error term; standard errors are clustered at the language level. The specification is estimated including only those municipalities where 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. Evidence to support the interpretation of γ_1 is provided by evaluating pre-trends in Section 4.1.

While there is no evidence that SIL targeted municipalities with pre-existing Pentecostal growth, the identification strategy may still face concerns if SIL prioritized areas with unobserved characteristics predictive of future evangelical expansion. To address this, I construct an expected SIL exposure measure based on an exogenous proxy for translation costs. Because Bible translations are more likely when similar languages already have a translation, I replace the actual timing of translations with that of linguistically related languages spoken outside Brazil. The resulting variation is driven by Bible translations into languages primarily spoken in North America, Asia, and Africa. Further details are provided in the robustness checks Section 6.

4.3 SIL's Effect on Religious Affiliations

Table 2 reports the main coefficients from estimating Equation 3. The outcome variable in each column represents the share of the population identifying with different religious affiliations. The results indicate that Pentecostal evangelicals are the only group whose affiliation increases with higher SIL exposure. Specifically, estimates suggest that an increase in SIL exposure from 0 to 1 would lead to an 11 p.p. increase in the share of the Pentecostal population. However, increasing SIL exposure from 0 to 1 represents an out-of-sample shift, as shown in Table A3 in the Appendix. When SIL exposure increases by one-standard-deviation (0.05), the share of Pentecostals rises by 0.55 p.p. This change corresponds to a 6.1% increase relative to the mean share of Pentecostals during 1980-2010.

The negative point estimates in columns 3 and 4 of Table 2 are consistent with SIL exposure generating a broader substitution across religious affiliations rather than conversion from a single group. Regarding evangelicals who are not Pentecostals, results indicate that SIL exposure did not increase their affiliations, even though these groups

also view the Bible as central to their religious practice. Compared to historical evangelical denominations, Pentecostal churches follow a more entrepreneurial model of religious expansion, characterized by lower barriers to entry, decentralized leadership, and flexible church-formation structures. These features make Pentecostal churches particularly well suited to absorb increases in religious salience generated by SIL exposure.

Table 2: SIL's Effect on Religious Affiliations - 1980 to 2010

	Pentecostals (1)	Evangelicals (Not Pent.) (2)	Roman Catholics (3)	Other religion (4)	No religion (5)
SIL exposure	0.109***	0.002	-0.103	-0.036	0.018
	(0.035)	(0.038)	(0.074)	(0.053)	(0.041)
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
N	1,100	1,100	1,100	1,100	1,100
R^2	0.885	0.884	0.943	0.764	0.865
Mean Dep. var	0.09	0.06	0.79	0.01	0.04

Unit of analysis: municipality-year level. 275 municipalities included. Time period: 1980-2010. Dependent variables correspond to the share of the total population. Other religions include Buddhism, Hindu, Jewish, Muslim, and Others. Robust std. errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

Table 3: SIL's Effect on Pentecostal Affiliations by Ethnic Group - 1991 to 2010

	Pentecostal affiliations				
	Indigenous (1)	Mixed-race (2)	Black/White (3)	All (4)	All (5)
SIL exposure	0.056*	0.096	0.013	0.165**	0.120***
	(0.033)	(0.068)	(0.049)	(0.080)	(0.029)
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
Year FE $\times$ State FE	no	no	no	no	yes
Observations	825	825	825	825	825
R^2	0.652	0.843	0.929	0.888	0.935
Mean Dep. var	0.00	0.05	0.05	0.10	0.10

Unit of analysis: municipality-year level. 275 municipalities included. Time period: 1991-2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. For columns 1 to 3, the dependent variables correspond to the population that identifies as Pentecostal within specific ethnic groups, divided by the total population of the municipality.

As an additional step towards understanding the effect of SIL's presence, I classify

the Pentecostal evangelical population by ethnic group. By adding the census micro-data provided by *IPUMS*, I classified the Pentecostal population into three groups: (i) "indigenous" population, (ii) "mixed-race" population, and (iii) "black" or "white" population. Table 3 presents the results by ethnic group for the period from 1991 to 2010 when the data is available. The findings suggest that the effect of SIL presence on Pentecostal affiliation is mostly driven by the "indigenous" and "mixed-race" populations.

Finally, Table A4 in the Appendix investigates heterogeneous effects of SIL exposure. Columns 1 and 2 split municipalities by population density, columns 3 and 4 by the share of adults who completed primary schooling, and columns 5 and 6 by mean income. The results show that SIL had a stronger influence in less populated, less educated, and poorer municipalities, suggesting that these contexts may offer greater scope for organizations such as SIL to shape religious dynamics.

4.4 SIL's Effect on Voting Outcomes

Elections 1998, 2006, and 2014. Equation 3 is estimated using political outcomes for 1998 to 2014, from either presidential or federal elections. All specifications include year fixed effects interacted with state fixed effects. Panel A of Table 4 reports the estimates for presidential elections. Columns 1 to 4 consider the vote share of candidates positioned across the ideological spectrum, right, center-right, center-left, and left, while column 5 examines voter turnout.

The results show that municipalities with greater exposure to SIL experienced an increase in support for right-wing presidential candidates. A one-standard-deviation increase in SIL exposure (0.05) is associated with approximately a 0.2 p.p. rise in the vote share of right-wing candidates. This shift does not appear to operate through electoral mobilization, as turnout in column 5 remains unaffected. Coefficients for centrist blocs are positive but not statistically significant, and the estimate for left-wing candidates is negative and also not significant. Overall, these findings suggest a reallocation of votes away from the left toward the right, consistent with persuasion effects rather than changes in participation.

Panel B turns to federal elections. Column 1 considers the vote share of candidates affiliated with Evangelical churches, as classified by Lacerda (2018). The estimates indicate that higher SIL exposure is also associated with stronger electoral performance among Evangelical candidates: a one-standard-deviation increase in SIL exposure (0.05) corresponds to a 1.1 p.p. increase in their vote share. Columns 2 and 3 disaggregate Evangelical candidates by their party's ideological orientation. The mean values of the dependent variables reveal that nearly all Evangelical electoral support is concentrated among right-wing parties, and the estimated SIL effect remains concentrated in that

segment.

A natural question is whether these results are mechanical, merely reflecting an increase in the number of Evangelical candidates following Pentecostal growth. Because federal deputies are elected at the state level and the specification includes state × year fixed effects, the number of Evangelical candidates does not vary within a state–year cell. Consistent with this structure, Column 4 mechanically shows no effect on the share of Evangelical candidates on the ballot, reinforcing that the voting results are not driven by a mechanical increase in candidate supply.

Table 4: SIL's Effect on Voting Outcomes

	(1)	(2)	(3)	(4)	(5)
	Panel A: Presidential Elections				
	Right vote share	Center-right vote share	Center-left vote share	Left vote share	Turnout
SIL exposure	0.037**	0.031	0.113	-0.181	0.072
	(0.017)	(0.099)	(0.083)	(0.142)	(0.153)
R^2	0.934	0.934	0.934	0.946	0.919
Mean Dep. var	0.02	0.47	0.09	0.43	0.77
	Panel B: Federal Elections				
	Evan vote share	Evan-right vote share	Evan-left vote share	Evan candidates	Turnout
SIL exposure	0.219*	0.217*	0.003	0.008	0.084
	(0.116)	(0.119)	(0.008)	(0.016)	(0.148)
R^2	0.726	0.731	0.588	0.892	0.919
Mean Dep. var	0.06	0.06	0.00	0.04	0.78
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
Year FE × StateFE	yes	yes	yes	yes	yes
Observations	825	825	825	825	825

Unit of analysis: municipality–year. 275 municipalities. Panel A reports effects for presidential elections; Panel B for federal elections. Panel A (dep. var.): Columns 1-4 vote share of the indicated ideological bloc (Right, Center-right, Center-left, Left) over total valid votes; Column 5 turnout. Panel B (dep. var.): Column 1 vote share for Evangelical candidates; Columns 2–3 are the vote share for Evangelical candidates aligned with right and left parties, respectively; Column 4 the share of Evangelical candidates among all federal candidates; Column 5 turnout. Ideological classification follows Zucco and Power (2024) and Borges and Vidigal (2023); Table A1 in the Appendix reports party classifications. All specifications include municipality fixed effects, year fixed effects, and interactions of year fixed effects with baseline (1980) municipal covariates. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The identifying variation generated by SIL activity originates in indigenous-language speakers, while voting outcomes are measured at the municipality level. To assess whether

the estimated voting effects can be rationalized by responses among indigenous-language speakers alone, I perform a simple back-of-the-envelope calculation. Using the average SIL exposure across municipalities in the analysis sample of 0.015 (Table A3), the estimated reduced-form coefficient on the evangelical vote share in federal elections of 0.22 (Table 4, Panel B), and an average municipal population of 151,000 across the municipalities in the analysis sample, the implied increase corresponds to approximately 500 additional evangelical votes in the average treated municipality. By comparison, indigenous-language speakers account for about 2.8% of the population on average across the municipalities in the analysis sample (Table A3), or roughly 4,200 individuals. Therefore, the mean-exposure calculation can be rationalized by responses among indigenous-language speakers alone, although voting responses are not necessarily confined to the directly exposed population, a possibility that is consistent with the evidence presented in Section 5 on SIL spillover effects in municipalities without indigenous-language speakers.

Bolsonaro vote share in 2018 and 2022 elections. The rise of Jair Bolsonaro has been partly attributed to strong support from the Pentecostal community, alongside factors such as crime and corruption. To investigate this link, I first assess whether municipalities more exposed to SIL, which I have already shown experienced greater Pentecostal growth, also provided stronger electoral support for Bolsonaro in the 2018 and 2022 elections. Since Bolsonaro did not run in earlier presidential elections and no comparable candidate existed in terms of rhetoric or popularity, a panel analysis is not feasible.[18] Therefore, I estimate the following specification:

$$y_m = \gamma_1 \Delta SILexposure_{m,2010-1990} + \gamma_2 X_m + \psi_s + \upsilon_m \tag{4}$$

where y_m is the outcome of interest for municipality m, such as the share of votes Bolsonaro received in the presidential election.

The main explanatory variable, $\Delta SILexposure_{m,2010-1990}$, captures the change in SIL exposure for municipality m between 1990 and 2010, defined as $SILexposure_{m,2010} - SILexposure_{m,1990}$. Here, $SILexposure_{m,2010}$ corresponds to the cross-sectional version of Equation 2, evaluated at $t = 2010$, and $SILexposure_{m,1990}$ corresponds to the same measure at $t = 1990$. Equation 4 also includes X_m, which follows the same baseline controls as in Equation 3, and additionally incorporates the 1991 ethnic composition (shares of black, white, mixed-race, and indigenous populations according to IPUMS data) and the share of households with a TV in 1991 as a proxy for media access. State fixed effects, ψ_s, are included, and υ_m is the error term; standard errors are clustered at

[18] This analysis is further constrained by the absence of census micro-data after 2010, which prevents observation of changes in religious affiliation beyond that year.

the language level.

Estimates are reported in Table 5. The dependent variable is Bolsonaro's 2018 vote share in columns 1 and 2, his 2022 vote share in columns 3 and 4, and the change in the Pentecostal share from 1991 to 2010 in column 5. Columns 2 and 4 include the 1998 right-wing presidential vote share as a control to account for pre-existing right-wing preferences at the municipal level.[19]

Results indicate a positive and statistically significant association between the increase in SIL exposure and Bolsonaro's vote share in both 2018 and 2022 (columns 1–4). The magnitudes are comparable across years and remain robust after controlling for pre-existing right-wing preferences. Column 5 shows that greater SIL exposure is also associated with larger growth in the Pentecostal share over 1991–2010, consistent with the proposed mechanism. Taken together, the evidence suggests that Pentecostal expansion between 1991 and 2010 linked to SIL exposure is associated with greater electoral support for Bolsonaro. Notably, Pentecostal affiliation was very low across most Brazilian municipalities in 1991, prior to the subsequent period of expansion (Costa, Marcantonio, and Rocha, 2023).

Table 5: SIL's Effect on Bolsonaro Support

	Bolsonaro Vote Share				
	2018		2022		$\Delta Pent_{2010-1991}$
	(1)	(2)	(3)	(4)	(5)
$\Delta SILexposure_{2010-1990}$	0.483***	0.474***	0.485***	0.475***	0.200***
	(0.152)	(0.145)	(0.170)	(0.166)	(0.057)
State FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Right vote 1998	No	Yes	No	Yes	Yes
Mean Dep. var	0.46	0.46	0.46	0.46	0.10
Observations	275	275	275	275	275
R^2	0.793	0.806	0.720	0.739	0.588

Unit of analysis is the municipality. The sample includes 275 municipalities. Robust standard errors clustered at the language level reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Columns (1)–(4): Dependent variable is the vote share obtained by Jair Bolsonaro in the first round of the 2018 and 2022 presidential elections. Column (5): Dependent variable is the change in the share of Pentecostals between 1991 and 2010.

4.5 Pentecostals' Effect on Voting Outcomes

To uncover the causal effect of Pentecostal growth on voting, I estimate a 2SLS model at the municipality level in which the change in the Pentecostal share between 1991 and 2010,

[19] See Table A1 in the Appendix for the ideological classification of political parties.

$\Delta Pent_{2010-1991}$, is instrumented with the change in SIL exposure, $\Delta SILexposure_{2010-1990}$. The first stage appears in column 5 of Table 5 and shows a positive and statistically significant coefficient (Kleibergen–Paap rk Wald $F = 12.14$). Because the dependent variable is the change in Pentecostal share, this specification is analogous to estimating a two-period panel with municipality fixed effects.

Table 6 reports the 2SLS estimates. Columns 1 to 7 use as the dependent variable the change in vote share for different candidates between 1998 and 2014, while columns 8 and 9 present Bolsonaro's vote share in 2018 and 2022, respectively. Because the dependent variable in columns 1 to 7 is the change in vote share, these specifications are equivalent to estimating a two-period panel with municipality fixed effects. Columns 1 to 4 show changes in presidential vote shares by ideological bloc. A 1 p.p. increase in the Pentecostal share leads to a 0.16 p.p. increase in the right-wing vote share. Consistent with the previous findings, the coefficients for the center-right, center-left, and left blocs are statistically insignificant, with the point estimate for the left being negative.

Column 5 in Table 6 reports the change in the vote share of Evangelical candidates in federal elections. Estimates indicate a positive and statistically significant effect of Pentecostal growth on the vote share of candidates associated with Evangelical congregations: a 1 p.p. increase in Pentecostals raises around 0.97 p.p. their vote share.

Finally, columns 8 and 9 in Table 6 report Bolsonaro's vote share in 2018 and 2022 respectively. Estimates indicate a positive and statistically significant effect of Pentecostal growth on Bolsonaro's electoral support. A 1 p.p. increase in the Pentecostal share is associated with an increase of about 2.4 p.p. in Bolsonaro's vote share in both the 2018 and 2022 elections (around 5.2% of the mean). The magnitude is consistent with Pentecostal influence extending beyond new affiliates in the Bolsonaro elections, through households, local networks, and broader communities. These estimates should also be interpreted as local IV effects of Pentecostal growth induced by SIL exposure.

Taken together, the 2SLS estimates show that SIL–driven Pentecostal growth translates into higher support for right–wing and, especially, Evangelical candidates, and into substantially higher support for Bolsonaro in both 2018 and 2022. While the analysis does not claim that Pentecostalism was the root cause of Brazil's broader political changes, it suggests that Pentecostalism served as an effective vehicle for amplifying conservative movements.

This IV approach relies on the exclusion restriction that SIL exposure affects political outcomes only through its impact on Pentecostal affiliations, conditional on baseline controls. Results in Table A5 support this assumption: SIL exposure shows no significant effects on literacy rates, completing primary school, agricultural employment, or manu-

facturing employment. Although missionary work has been shown to increase education in colonial contexts (Valencia Caicedo, 2019), the lack of effects here is consistent with the fact that the Indigenous population is predominantly bilingual, with 79% literate (2010 Brazilian Census). Therefore, even in predominantly bilingual communities, contact with SIL members primarily entailed exposure to proselytizing efforts. Moreover, event-study estimates show that increases in evangelical and right-wing voting are more gradual, in contrast to the sharper rise in Pentecostal affiliation. This timing pattern suggests that changes in voting behavior followed the expansion of Pentecostal affiliations, rather than resulting from a direct and immediate influence of SIL activities on political attitudes.

These estimates are obtained for municipalities where indigenous languages are spoken. Therefore, we cannot assume that the same results hold in other municipalities of Brazil, where populations may have different characteristics and respond differently to Pentecostal political influence. Section 5 examines whether spillovers of SIL exposure affect Pentecostal affiliations in municipalities where Indigenous languages are not spoken.

Table 6: Pentecostals' Effect on Voting Outcomes

	$\Delta VoteShare_{2014-1998}$							Bolsonaro	
	Right	Cent Right	Cent Left	Left	Evan	Evan Major	Evan Small	2018	2022
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2SLS estimation (IV: $\Delta SILexposure_{2010-1990}$)								
$\Delta Pent_{2010-1991}$	0.161**	0.923	0.275	-1.359	0.972*	0.736	0.268	2.374**	2.378**
	(0.067)	(0.641)	(0.436)	(0.847)	(0.568)	(0.475)	(0.570)	(0.954)	(0.996)
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Right vote 1998	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	275	275	275	275	275	275	275	275	275
Mean Dep. var	-0.03	-0.23	0.07	0.20	0.04	0.03	0.01	0.46	0.46
K-P rk Wald F	12.137	12.137	12.137	12.137	12.137	12.137	12.137	12.137	12.137

Unit of analysis is the municipality. The sample includes 275 municipalities. All estimates correspond to a 2SLS specification in which $\Delta Pent_{2010-1991}$ is instrumented with ΔSILexposure$_{2010-1990}$; the first-stage results are reported in Column 5 of Table 5. Columns 1–7 use as the dependent variable the change in vote share for different candidates between 1998 and 2014, a specification equivalent to estimating a two-period panel with municipality fixed effects. Columns 8 and 9 use Bolsonaro's vote share in 2018 and 2022, respectively. Robust standard errors clustered at the language level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, $^{***}p < 0.01$.

5 Spillover Effects of SIL

In this section, I analyze the spillover effects of SIL activities. Areas close to directly exposed municipalities may experience indirect effects through channels such as commut-

ing or migration. To assess this, I first construct a measure to capture potential spillover effects from SIL activity in nearby municipalities. I then incorporate this measure into the baseline analysis to verify that the main results are not driven by spatial spillovers. Finally, I examine how these spillovers affect Pentecostal affiliations in municipalities where no indigenous languages are spoken.

Following a market access approach, I construct the indirect SIL exposure measure as

$$IndirectSILexposure_{mt} = \sum_{o} \frac{d(m,o)^{-\delta}}{\sum_k d(m,k)^{-\delta}} \times SILexposure_{o,t} \tag{5}$$

where $SILexposure_{o,t}$ is the exposure of SIL in municipality o at time t as defined in Equation 2. $d(m,o)$ is the Euclidean distance between the population-weighted centroid of municipality m and municipality o.[20] Finally, δ refers to the elasticity of migration to roads, which is set at 1.2 based on Morten and Oliveira (2024). 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 SIL exposure in nearby municipalities.

Next, $IndirectSILexposure_{mt}$ is standardized with respect to its mean and standard deviation and included as a control variable in the main specification, Equation 3.[21] Additionally, the interaction of state fixed effects with year fixed effects are included. Results are presented in Table A6 in the Appendix. The coefficients are estimated separately for two samples: Columns 1 to 3 use municipalities where indigenous languages are spoken, while columns 4 to 6 restrict the sample to municipalities with no indigenous language presence.

Among municipalities with indigenous languages (columns 1 to 3 of Table A6), the effects of SIL exposure on the different outcomes remain very similar in magnitude and significance when adding the indirect effect. This alleviates potential concerns related to spatial correlation in the main analysis. The coefficient on $IndirectSILexposure_{mt}$ is small and not statistically significant across all three outcomes, suggesting limited spillover effects within this group.

Among municipalities without indigenous languages (columns 4 to 6 of Table A6), the effect of $IndirectSILexposure_{mt}$ on the different outcomes is positive and highly significant. Specifically, a one-standard-deviation increase in indirect SIL exposure leads to a 1.4 p.p. increase in the share of Pentecostal affiliation. Furthermore, indirect SIL

[20] Figure B5 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*.

[21] I capped the $IndirectSILexposure_{mt}$ values above the 99th percentile to reduce the effect of extreme outliers.

exposure also leads to higher vote shares for evangelical and right-wing candidates in these municipalities. These results suggest that SIL activity generated spillovers beyond directly exposed regions.

If we assume that the effect on voting outcomes resulting from the variation in Pentecostal populations due to direct and indirect SIL exposure is comparable, elasticities across different samples can be examined. For municipalities where indigenous languages are spoken, the estimates suggest that a 1 p.p. increase in Pentecostal affiliations, due to direct SIL exposure, raises the evangelical vote share by approximately 1.8 p.p. and the right-wing vote share by 0.31 p.p.[22] In municipalities without indigenous languages, where SIL exposure operates indirectly, a 1 p.p. increase in Pentecostal affiliations corresponds to a 1.1 p.p. rise in the evangelical vote share and a 0.14 p.p. increase in the right-wing vote share.[23] Although the effects remain substantial across both settings, they are smaller in municipalities without indigenous languages.

6 Robustness Checks

Expected SIL Exposure: An Alternative Measure. Despite there being no evidence that SIL targeted municipalities where Pentecostals were already growing, a potential concern is that SIL might have targeted a variable predictive of future growth in evangelical affiliations, observable to them but unobserved by us. To address this concern, I construct a measure of expected SIL exposure based on an exogenous translation cost shifter.

Translating the Bible into a specific language is likely easier, and thus more probable, if similar languages already have translations. I capture this idea with

$$CloseTranslation_{lt} = \frac{1}{J}\sum_{j} \mathbb{1}\{t > YearTran_j\} \times (1 - Distance_{lj}) \quad \text{for } j \neq l \tag{6}$$

where language l refers to any existing indigenous language in Brazil, while j refers to any foreign language. $Distance_{lj}$ measures linguistic distance following Desmet, Weber, and Ortuño-Ortín (2009).[24] $YearTran_j$ is the year the Bible was translated into language j. I then estimate

$$PostTrans_{lt} = \varphi_1 CloseTranslation_{lt} + \varphi_2(\psi_t \times X_l) + \psi_l + \psi_t + \epsilon_{lt} \tag{7}$$

[22] Calculated as: $\hat{\beta}_{Wald} = \frac{0.219}{0.120} = 1.8$ and $\hat{\beta}_{Wald} = \frac{0.037}{0.120} = 0.31$.
[23] Calculated as: $\hat{\beta}_{Wald} = \frac{0.016}{0.014} = 1.1$ and $\hat{\beta}_{Wald} = \frac{0.002}{0.014} = 0.14$.
[24] See Section C in the Appendix for details on how languages are interrelated and how the distance between them is calculated.

where $PostTrans_{lt}$ takes the value 1 if the Bible is translated into language l at time t. For comparability, the variable $CloseTranslation_{lt}$ is rescaled between 0 and 1. Moreover, X_l includes language characteristics: the population speaking language l and the geographic distance between speakers of language l and the northwestern corner of Brazil. ψ_l represents language fixed effects, and ψ_t represents time fixed effects.

Results in Table A7 in the Appendix suggest that 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. Using this, I compute the measure of expected SIL exposure as

$$ExpectedSILexposure_{mt} = \frac{\sum_l Indigenous_{1980,ml} \times CloseTranslation_{lt}}{TotalPopulation_{1980,m}} \tag{8}$$

where $CloseTranslation_{lt}$ is interacted by the indigenous population speaking language l, located in municipality m in 1980. Hence, the time variation in $ExpectedSILexposure_{mt}$ is driven by the timing of Bible translations into languages that are linguistically similar to those spoken in Brazil but that are spoken primarily in North America, Asia, and Africa.

Table A8 in the Appendix displays the results of regressing the measure of expected SIL exposure on the main outcomes of interest. The estimates confirm that Pentecostal affiliations, particularly among indigenous communities, increases in municipalities more exposed to SIL.

Alternative Specifications. First, I assess the robustness of the results to alternative specifications. Columns 1 to 3 of Table A6 in the Appendix show that the direct effect of SIL is not biased by the inclusion of the indirect effect. The estimated coefficients for the direct effect of SIL exposure on the various outcomes remain consistent in both magnitude and statistical significance, even when controlling for the indirect effect. These results help alleviate concerns about potential spatial correlation.

Table A9 in the Appendix reports the results of the main specifications estimated with different sets of control variables. Column 1 presents the baseline estimation. Column 2 adds the share of the evangelical population in 1980, interacted with year fixed effects. Column 3 further includes the share of the indigenous population in 1990, also interacted with year fixed effects. Column 4 introduces fixed effects distinguishing municipalities where only one indigenous language is spoken from those where multiple languages are spoken. Finally, column 5 adds interactions between year fixed effects and the share of households with a radio in 1980.

Across specifications, the coefficients on SIL exposure remain positive, statistically significant, and similar in magnitude. These results suggest that the main findings are not driven by time-varying shocks correlated with these baseline characteristics.

Placebo Test. To address potential concerns that results may be driven by geographic patterns rather than the causal impact of SIL translation efforts, I conduct a placebo test using a hypothetical measure of SIL exposure. Instead of relying on the actual timing of Bible translation, this placebo measure is based on the distance to the northwestern corner, under the assumption that languages closer to this region would have been translated first.

Additionally, a second placebo test is performed using the size of the indigenous population as a determinant of translation timing. A potential concern is that SIL may have prioritized languages spoken by larger groups before addressing smaller language groups, as language group size could potentially be correlated with other socio-economic characteristics of its members.

The results of both placebo tests are presented in Table A10 in the Appendix. These findings mitigate potential identification concerns, as the placebo measure has no significant effect on the political outcomes of interest or on the share of the Pentecostal population.

Excluding Different Brazilian Regions. Given Brazil's large size and substantial regional heterogeneity, a potential concern is that the results might be driven by a specific region. In order to rule out this potential threat, the main analysis is re-estimated excluding each of Brazil's big regions: Midwest, Southeast, South, Northeast and North.

Table A11 in the Appendix presents the results of estimating Equation 3 after excluding each of these regions from the sample. In Panel A, the dependent variable is the share of Pentecostal affiliations; in Panel B, the vote share obtained by right-wing candidates; and in Panel C, the vote share obtained by evangelical candidates. The estimated effect of SIL exposure on Pentecostal affiliations remains positive, statistically significant, and of similar magnitude across columns, indicating that the main results are not driven by any single region. The estimated effects on right-wing vote share and evangelical vote share likewise remain positive and broadly comparable in magnitude across specifications, although their statistical precision varies. This heterogeneity may be associated with regional differences in church composition, a mechanism discussed in the subsequent section.

7 Interpretation and Channels

So far, it has been shown that Pentecostal expansion driven by SIL activity increased support for right-wing and evangelical candidates. Although the data do not allow for direct tests of the underlying mechanisms, patterns across turnout, candidate composition, and denominational differences consistently point to persuasion, amplified by church organization, as the most plausible explanation.

First, the political effects of Pentecostal expansion do not operate through higher electoral participation. In both presidential and federal elections, turnout remains statistically unchanged following SIL exposure (Table 4, column 5). Thus, the rise in right-wing and evangelical support cannot be attributed to mobilization of previously abstaining voters. This pattern aligns with Brazil's institutional setting, where compulsory voting and already high turnout levels leave limited room for additional mobilization.

Second, with turnout essentially fixed, the increase in votes for right-wing and evangelical candidates implies a reallocation of support among existing voters. Pastors often emphasize issues related to moral order, family, and social stability. These themes align with conservative platforms and have the potential to shift congregants' preferences. The combination of stable participation and changing vote shares is consistent with persuasion rather than mobilization.

Third, the estimated rise in evangelical vote share is not explained by changes in candidate supply. Federal deputies are elected at the state level, and the empirical specification includes state-by-year fixed effects that absorb any within–state–year variation in the availability of evangelical candidates. Thus, the political effects cannot be attributed to more evangelical candidates appearing on the ballot. Instead, the results imply increased voter demand for evangelical candidates, reinforcing the persuasion interpretation.

Finally, differences in church structure and organizational capacity likely condition the extent of Pentecostal political influence. Brazil's two largest Pentecostal denominations, the *Assembleia de Deus* (AD) and the *Universal Church of the Kingdom of God* (UCKG), together account for around 49% of the country's Pentecostal population (2010 Census). The AD tends to align electorally with the *Partido Social Cristão* (PSC), while the UCKG mobilizes support for candidates from its own party, the *Republicanos*. Beyond these two major groups, Brazil hosts numerous smaller Pentecostal denominations with limited institutional capacity and weaker organizational networks.

Results in columns 6 and 7 of Table 6 indicate that Pentecostal political effects are larger for evangelical candidates affiliated with the PSC and *Republicanos*, who likely belong to the major Pentecostal denominations. These findings suggest that candidates endorsed by major Pentecostal churches are significantly more successful in securing votes,

while those affiliated with smaller, independent congregations do not experience the same advantage. This pattern suggests that affiliation with a Pentecostal denomination alone does not guarantee electoral support; rather, it appears that the organizational strength of the major churches is what enables the translation of religious influence into political support.

Taken together, the absence of turnout changes, the fixed evangelical candidate supply, and the stronger electoral effects among candidates backed by larger denominations, all point to persuasion, amplified by church organization, as the most plausible mechanism behind the political impact of Pentecostal expansion. Pentecostal affiliates attend regular services in which pastors discuss moral and social issues, evaluate political figures, and occasionally invite candidates to participate in religious events. These settings create systematic opportunities for churches to influence political preferences, helping to explain the observed shift toward right-wing and evangelical candidates.

8 Conclusion

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, where 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 in Latin America, Asia, and Africa.

According to a survey of Latinobarómetro (2018), the Church in Latin America, across all congregations, is considered the most reliable institution. Hence, the question arises naturally whether the recent Pentecostal upsurge and its growing political involvement have had meaningful consequences for the region's 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 in recent decades. These findings indicate that Pentecostal churches have played an important role in amplifying far-right movements in Brazil's recent history and, more broadly, underscore the capacity of religious institutions to shape political outcomes.

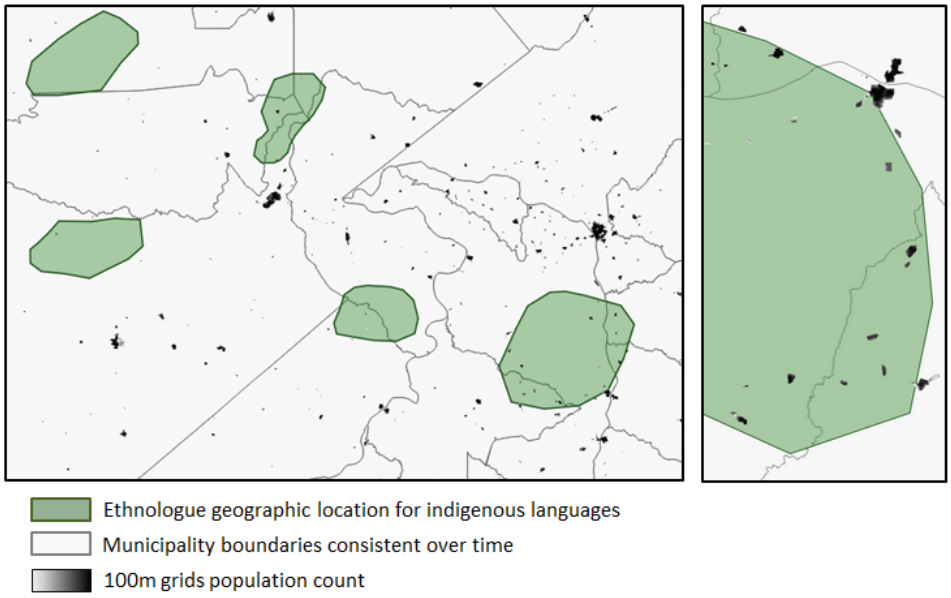
There remain a number of open questions. For instance, the setup constructed allows for future research related to the classical debate of Catholicism vs. Protestantism, where different outcomes related to Development Economics could be studied. Furthermore, it builds a basis to address research questions related to the political entrenchment of Pentecostalism. In this respect, 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 Tables and Figures

Figure A1: **Determining Number of Speakers in each Municipality**



Note: This figure illustrates the components used to construct the municipality-level data on the number of speakers of each indigenous language. Ethnologue provides geo-referenced polygons representing the territories where each language is spoken. These polygons are intersected with official municipality boundaries to identify municipality–language overlaps. To quantify the population within each overlap, the 100-meter WorldPop population grid is used, summing all cells that fall inside the intersected areas and weighting these counts by the municipality's share of indigenous population according to IPUMS.

Table A1: **Ideological Classification of Political Parties.**

Block	1998	2006	2014
Left	PT, PSTU, PCdoB, PDT	PT, PSOL, PCdoB, PDT	PT, PSOL, PSTU, PCB, PCO, PCdoB, PDT
Center–Left	PPS, PV, PTN	PSB, PPS, PV	PSB, PV
Center–Right	PSDB	PSDB	PSDB
Right	PRONA, PSDC, PMN, PSC, PSN, PT do B, PFL, PPB, PP, PTB, PL	PSL, PSDC, PRP, DEM, PFL, PP, PTB, PR, PRB, PSC, PHS	PSC, PSDC, PRTB, DEM, PP, PTB, PR, PRB, SD, PHS, PEN, PTC

Note: This table reports the categorization of political parties along the left–right ideological spectrum used in the main analysis, based on Zucco and Power (2024) and Borges and Vidigal (2023).

Table A2: **Municipalities Where Indigenous Languages Are Spoken**

	1980	1990	2000	2010
Number of municipalities with:				
No Bible translation	185	72	41	31
One Bible translated	86	176	189	194
More than one Bible translated	4	27	45	50
Ind. speakers with the Bible translated (% indigenous speakers; avg. municipalities)	28.3	67.8	76.7	84.6

Note: This table 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.

Table A3: **SIL Exposure Descriptive**

	Municipality level			
Variable	*Mean*	*Std. dev.*	*Min*	*Max*
*Number of languages spoken**	2	2.98	1	37
*Share of indigenous-language speakers**	0.028	0.08	0	0.61
Share of indigenous-IPUMS	0.023	0.07	0	0.77
SIL Exposure	0.015	0.05	0	0.51

Note: This table reports municipality-level summary statistics for the sample of 275 municipalities where at least one indigenous language is spoken. *Estimates constructed using the procedure described in Section 3.4.

Table A4: **Heterogeneous Effects of SIL Exposure**

	Dep Var: Pentecostal Affiliations (% of Total Population)					
	Pop. density		Education		Income	
Sample	Above 50th Pct.	Below 50th Pct.	Above 50th Pct.	Below 50th Pct.	Above 50th Pct.	Below 50th Pct.
	(1)	(2)	(3)	(4)	(5)	(6)
SIL Exposure	0.365	0.121**	-0.033	0.199***	0.116**	0.178***
	(0.645)	(0.044)	(0.093)	(0.023)	(0.044)	(0.033)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE $\times X_{m,1980}$	Yes	Yes	Yes	Yes	Yes	Yes
Year FE $\times$ State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	420	414	420	414	420	414
R^2	0.958	0.925	0.945	0.933	0.956	0.923
Mean Dep. var	0.09	0.09	0.09	0.08	0.10	0.08

Unit of analysis: municipality-year level. Time period: 1991-2010. Robust standard errors clustered at the language level in parentheses. Pop. density refers to the municipal population density in 1980; Education refers to the share of adults aged 25 and above who completed primary schooling in 1980; and Income refers to the average municipal income in 1980. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

Table A5: **Other SIL Exposure Effects**

	Literacy Rate	Primary Education	Agricultural Employment	Manufacturing Employment
	(1)	(2)	(3)	(4)
SIL Exposure	0.014	-0.026	-0.048	0.005
	(0.026)	(0.022)	(0.060)	(0.017)
Municipality FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Year FE $\times X_{m,1980}$	Yes	Yes	Yes	Yes
Year FE $\times$ State FE	Yes	Yes	Yes	Yes
Observations	825	825	825	825
R^2	0.994	0.982	0.968	0.949
Mean Dep. var	0.33	0.61	0.14	0.04

Unit of analysis: municipality-year level. 275 municipalities included. Time period: 1991-2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

Table A6: **Spillover Effects**

Sample:	Indigenous Speakers			Non-Indigenous Speakers		
Dep var:	Pent affiliation	Right vote share	Evan vote share	Pent affiliation	Right vote share	Evan vote share
	(1)	(2)	(3)	(4)	(5)	(6)
SIL Exposure	0.108*	0.032**	0.214*			
	(0.058)	(0.015)	(0.123)			
Indirect SIL Exposure	0.008	0.003	0.004	0.014***	0.002***	0.016***
	(0.007)	(0.002)	(0.017)	(0.001)	(0.000)	(0.000)
Municipality FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Year FE $\times X_{m,1980}$	yes	yes	yes	yes	yes	yes
Year FE $\times$ State FE	yes	yes	yes	yes	yes	yes
Observations	825	825	825	5,295	5,295	5,295
R^2	0.936	0.935	0.726	0.914	0.937	0.645
Mean Dep. var	0.10	0.02	0.06	0.08	0.02	0.05

Unit of analysis: municipality-year level. Time period: 1991-2010. Columns 1, 2 and 3 include 275 municipalities where indigenous languages are spoken; columns 4, 5 and 6 include 1,765 municipalities where no indigenous languages are spoken. Robust standard errors clustered at the language and municipality level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: **Timing of the Bible Translation**

	Translated		
	(1)	(2)	(3)
Close Translations	0.445	0.558**	0.521*
	(0.283)	(0.284)	(0.279)
Language FE	yes	yes	yes
Year FE	yes	yes	yes
Year FE $\times$Language Speakers		yes	yes
Year FE $\times$Distance North-Western			yes
Observations	544	544	544
R^2	0.631	0.644	0.642
Mean Dep. Var	0.33	0.33	0.33
Time period	1980-2010	1980-2010	1980-2010

Unit of analysis: language-year level. Robust standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The analysis includes 136 indigenous languages spoken in Brazil. The dependent variable, Translated, is a dummy variable indicating whether the Bible has been translated into the specific language.

Table A8: **Expected SIL Exposure Effects**

	Pentecostals affiliations				Vote share	
	Indigenous	Mixed-race	Black/White	All	Right	Evan
	(1)	(2)	(3)	(4)	(5)	(6)
Expected SIL Exposure	0.295***	0.279*	-0.098	0.474***	0.125**	1.244*
	(0.056)	(0.146)	(0.060)	(0.176)	(0.052)	(0.687)
Municipality FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Year FE $\times X_{m,1980}$	yes	yes	yes	yes	yes	yes
Observations	825	825	825	825	825	825
R^2	0.676	0.843	0.930	0.888	0.881	0.520
Mean Dep. Var	0.00	0.05	0.06	0.11	0.01	0.06

Unit of analysis: municipality-year level. 275 municipalities included. Time period: 1991-2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, $^{***}p < 0.01$. For columns 1 to 4, the dependent variables correspond to the population that identifies as Pentecostal within specific ethnic groups, divided by the total population of the municipality. The time variation in the Expected SIL Exposure measure is driven by the timing of Bible translations into languages that are linguistically similar to those spoken in Brazil.

Table A9: **Robustness Check - Additional Specifications**

	(1)	(2)	(3)	(4)	(5)
Panel A	Pentecostal affiliations (% total population)				
SIL exposure	0.126**	0.120**	0.133***	0.131***	0.130***
	(0.0506)	(0.0513)	(0.0494)	(0.0457)	(0.0438)
adj. R^2	0.892	0.892	0.893	0.893	0.893
Panel B	Right vote share				
SIL exposure	0.037**	0.032*	0.033*	0.032*	0.032*
	(0.016)	(0.016)	(0.017)	(0.018)	(0.018)
adj. R^2	0.892	0.894	0.894	0.896	0.895
Panel C	Evangelical vote share				
SIL exposure	0.206*	0.227**	0.221*	0.216*	0.210*
	(0.105)	(0.114)	(0.115)	(0.114)	(0.124)
adj. R^2	0.552	0.560	0.559	0.558	0.565
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
Year FE $\times$*State FE*	yes	yes	yes	yes	yes
Year FE $\times$*Evangelical share 1980*		yes	yes	yes	yes
Year FE $\times$*Indigenous share 1990*			yes	yes	yes
Year FE $\times$*language-diversity FE*				yes	yes
Year FE $\times$*Radio 1980*					yes
Observations	825	825	825	825	825

Unit of analysis: municipality-year level. 275 municipalities included. Time period: 1991-2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$. $X_{m,1980}$ includes the baseline controls from the main analysis. Evangelical share 1980 refers to the share of the evangelical population in 1980. Indigenous share 1990 refers to the share of the indigenous population in 1990. *Ind.Lang.DiversityFE* are fixed effects differentiating municipalities where only one indigenous language is spoken from those where more than one is spoken.

Table A10: **Robustness Check: Placebo Test**

	Right vote share (1)	Evangelical vote share (2)	Pentecostal affiliations (3)
Panel A: Placebo Distance	-0.002	0.050	-0.024
	(0.017)	(0.086)	(0.062)
R^2	0.916	0.731	0.938
Panel B: Placebo Language size	0.017	-0.072	0.025
	(0.018)	(0.254)	(0.112)
R^2	0.934	0.725	0.935
Municipality FE	yes	yes	yes
Year FE	yes	yes	yes
Year FE $\times$ $X_{m,1980}$	yes	yes	yes
Year FE $\times$ State FE	yes	yes	yes
Observations	825	825	825
Mean Dep. var	0.02	0.06	0.10

Unit of analysis: Municipality-year level. 275 municipalities. Time period: 1991-2010. Notes: Robust standard errors clustered at the language level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

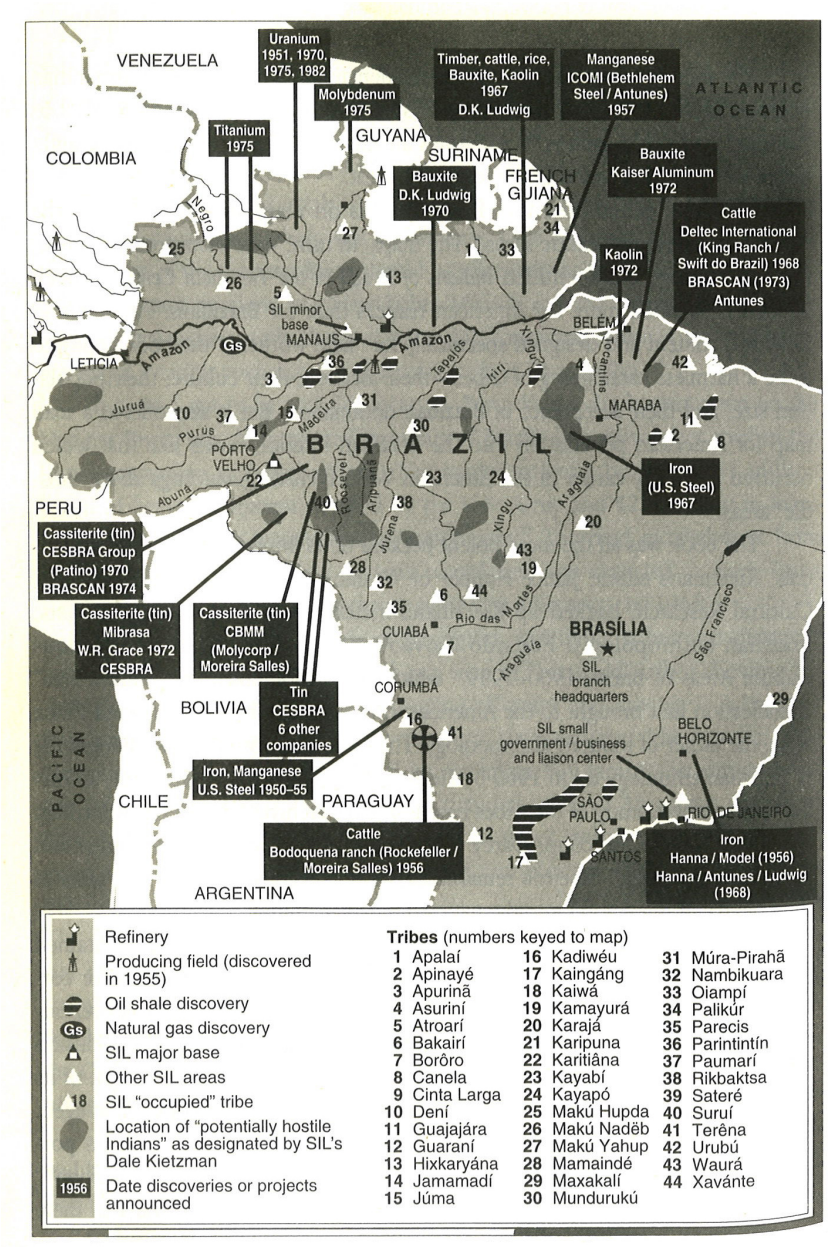
Table A11: **Robustness Check - Excluding Different Brazilian Regions**

Region Excluded	Midwest (1)	South (2)	Southeast (3)	Northeast (4)	North (5)
Panel A	Dep. var.: Pentecostal affiliations (% total population)				
SIL exposure	0.109**	0.120**	0.117**	0.119**	0.191**
	(0.047)	(0.056)	(0.058)	(0.057)	(0.074)
R^2	0.946	0.934	0.927	0.936	0.936
Mean Dep. var	0.10	0.10	0.09	0.11	0.10
Panel B	Dep. var.: Right vote share				
SIL exposure	0.063***	0.036**	0.035**	0.029*	0.032
	(0.014)	(0.017)	(0.017)	(0.016)	(0.028)
R^2	0.944	0.933	0.935	0.930	0.933
Mean Dep. var	0.02	0.02	0.02	0.02	0.02
Panel C	Dep. var.: Evangelical vote share				
SIL exposure	0.182	0.215*	0.219*	0.152	0.222
	(0.124)	(0.119)	(0.120)	(0.145)	(0.215)
R^2	0.644	0.732	0.734	0.791	0.718
Mean Dep. var	0.05	0.07	0.06	0.07	0.07
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
Year FE $\times$ StateFE	yes	yes	yes	yes	yes
Observations	654	759	606	582	699

Unit of analysis: municipality-year level. Each column excludes the municipalities of a specific region of Brazil. Time period: 1991-2010. Robust standard errors clustered at the language level in parentheses. * $p < 0.10$, ** $p < 0.05$, ***$p < 0.01$.

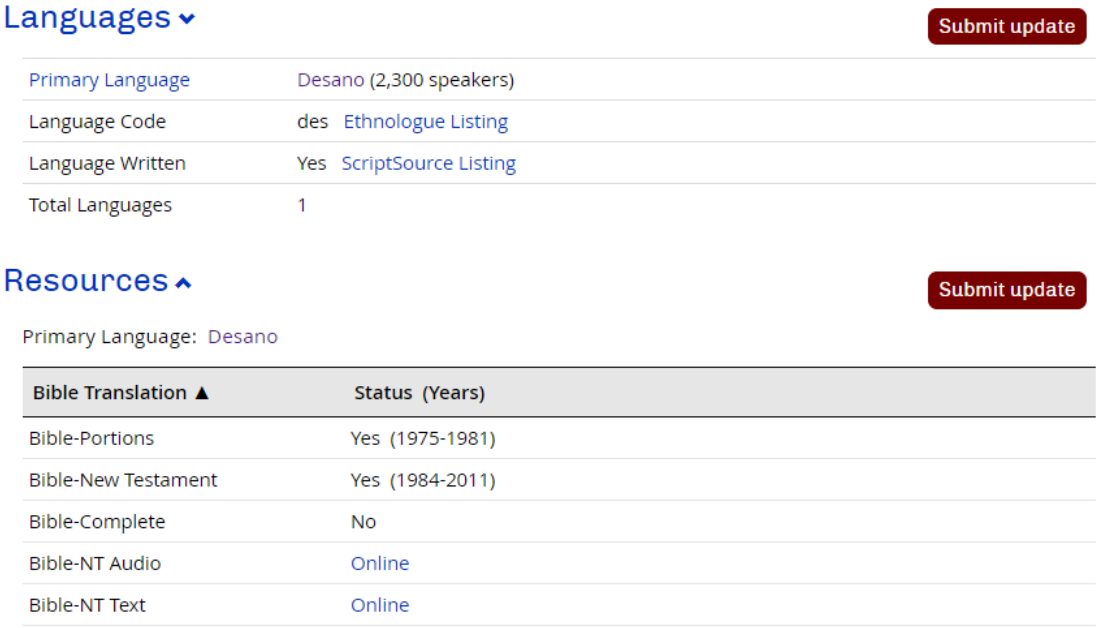
B Supplementary Figures on SIL Activity and Bible Translations

Figure B1
SIL "Occupied" Tribes and Major Base



Note: The figure presents a map indicating the location of the indigenous tribes reached by SIL by 1995, along with the location of the SIL base in Brazil. Source: Colby and Dennett (1996).

Figure B2
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

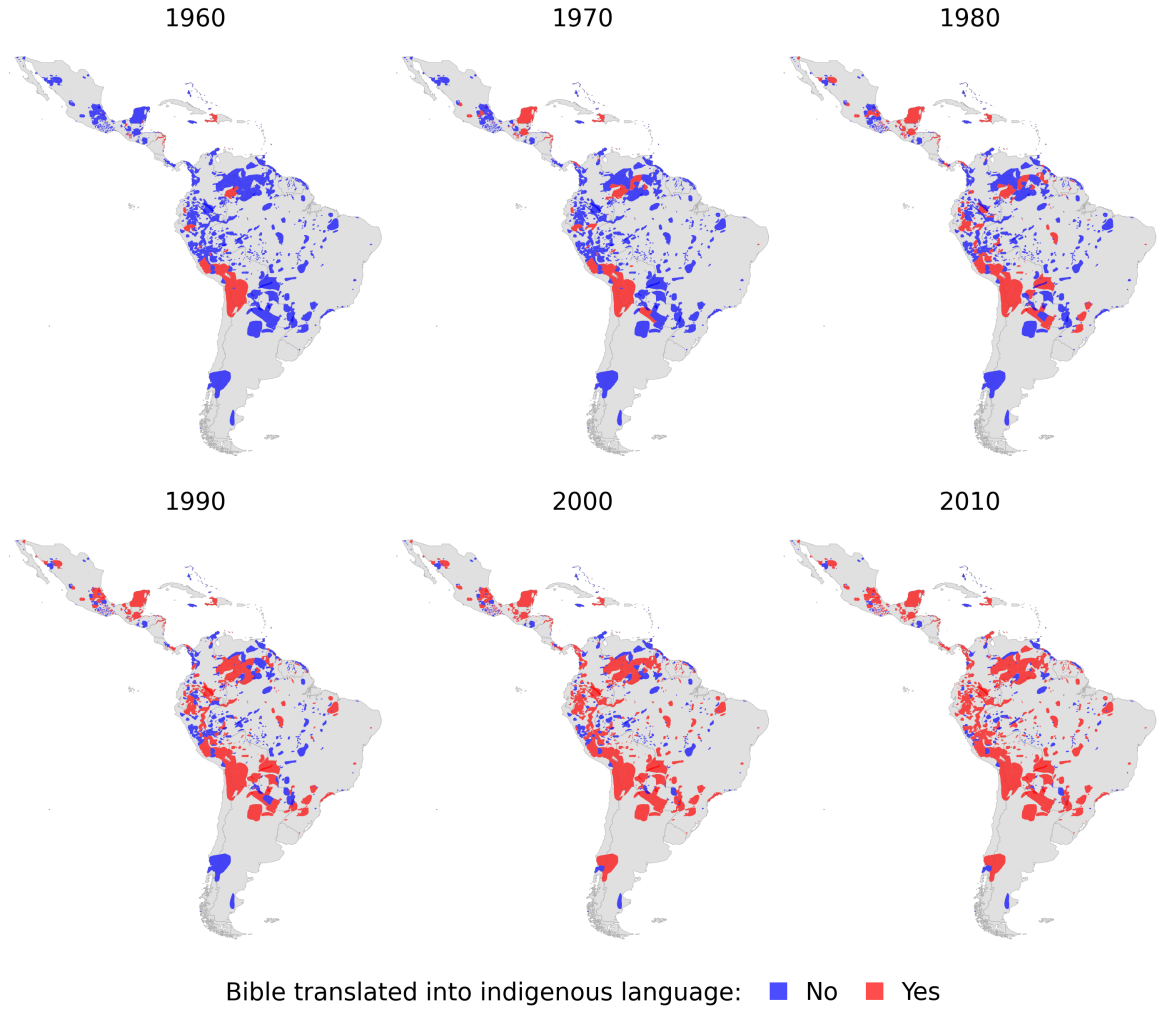
Primary Language: Desano

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

Note: The figure presents an image of the data provided by Joshua Project for a particular indigenous language. Information on the year in which the first and last editions of the Bible were published, for both the Old Testament and the New Testament, is provided. In this example, the first edition of the New Testament was published in 1984. Note that for some languages, while a complete translation of the New Testament has not been published, portions of the Bible have been translated and published. Source: https://joshuaproject.net/.

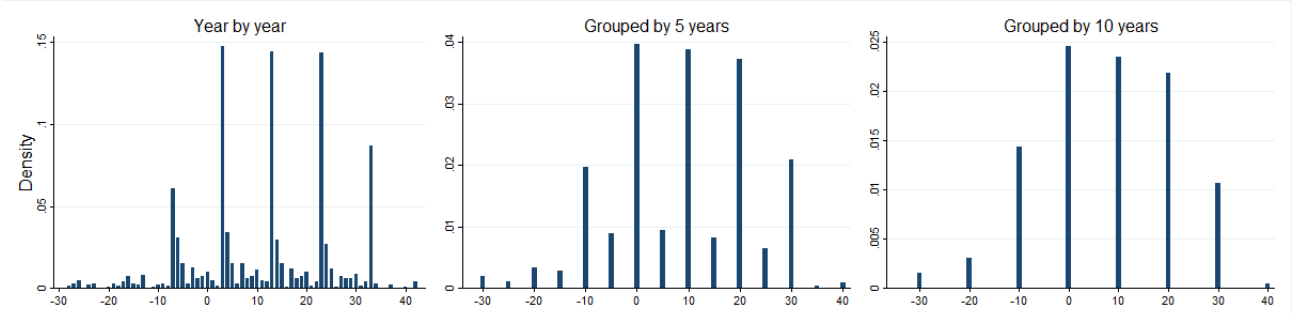
Figure B3

Indigenous Language Location & Bible Translation in Latin America



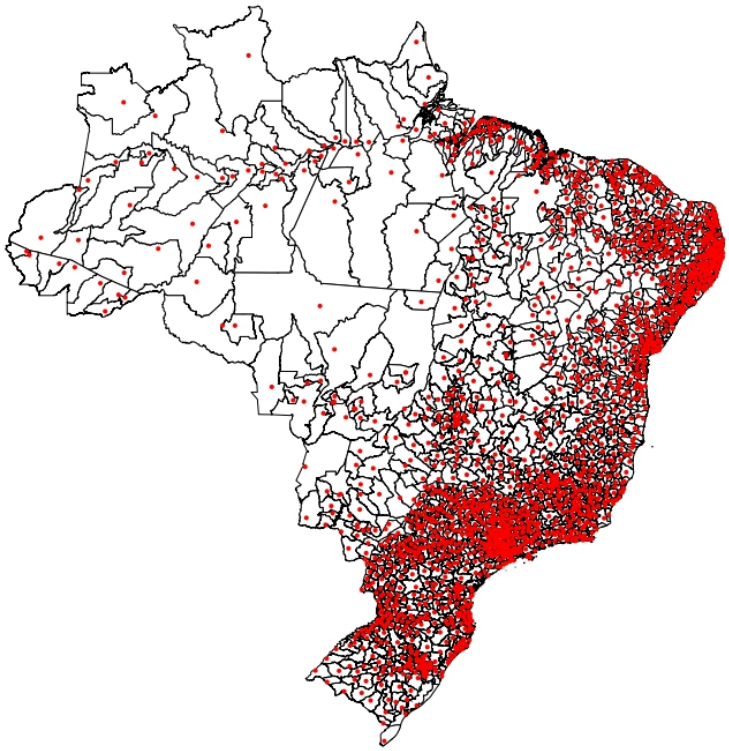
Note: This figure presents a set of maps showing the geographic location of indigenous languages in Latin America based on Ethnologue data. Red polygons denote languages with a New Testament translation, while blue polygons indicate those without one. Source: Own elaboration using data from Joshua Project & Ethnologue.

Figure B4
Histogram - Years Since 1st Bible Translation in Municipalities



The figure presents a set of histograms showing the years since the first translation, displayed in three formats: (1) year by year, (2) grouped into 5-year intervals, and (3) grouped into 10-year intervals. Source: Own elaboration using data from Joshua Project & Ethnologue.

Figure B5
Population-Weighted Centroids

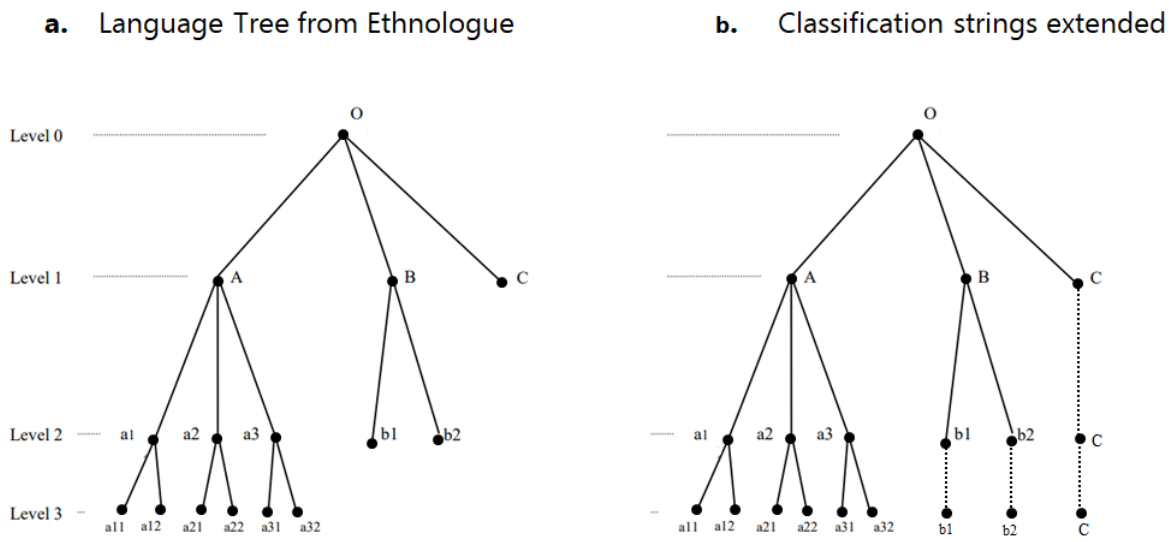


Note: The figure presents a map of the population-weighted centroids in each municipality of Brazil. This has been calculated using the population count at a 100 meter grid provided by WorldPop. These centroids are then used to compute the Euclidean distance between the population-weighted centroids of municipality m and municipality o, as referenced in Equation 5 of the paper.

C 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 C1-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 C1-b provides an example of this procedure. In Figure C1, 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 C1
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 with the following Equation:

$$Distance_{ij} = 1 - \left(\frac{L}{M}\right)^{\delta} \tag{9}$$

$Distance_{ij}$ 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 C1, M is equal to 4.[25] 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.

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.

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

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