### Online Appendix

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

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# A Language Distance

A language family is a group of languages which descend from a common ancestral language. Language families can be divided into smaller phylogenetic units, conventionally referred to as branches since the history of a language family is often represented as a tree diagram. Figure A-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 A-b provides an example of this procedure. In Figure A, 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.

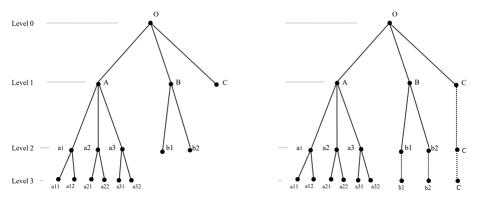
According to Desmet, Weber, and Ortuño-Ortín (2009), the distance between language i and language j can be calculated with the following Equation:

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

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Figure A: Languages Genealogical classification Path

- a. Language Tree from Ethnologue
- b. Classification strings extended



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

Distance<sub>ij</sub> 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 A, M is equal to  $4.^1$  Also,  $\delta$  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.

<sup>&</sup>lt;sup>1</sup>For the case of the indigenous languages spoken in Brazil, M is equal to 5.

# B Tables and Figures

VENEZUELA Manganese ICOMI (Bethlehem Steel / Antunes) 1957 GUYANA COLOMBIA SURINAN Bauxite Kaiser Aluminum 1972 (King Ranch / Swift do Brazil) 1968 BRASCAN (1973) PERU Cassiterite (tin) CESBRA Group (Patino) 1970 BRASCAN 1974 Cassiterite (tin BRASÍLIA W.R. Grace 1972 CORUMBÁ BOLIVIA CESBRA BELO HORIZONTE CHILE PARAGUAY na ranch (Rockefeller / reira Salles) 1956 Hanna / Antunes / Ludwig (1968) ARGENTINA Tribes (numbers keyed to map) keyed to map)
16 Kadiwéu
17 Kaingáng
18 Kaiwá
19 Kamayurá
20 Karajá
21 Karipuna
22 Karitiána
23 Kayabí
24 Kayapó
25 Makú Hupda
26 Makú Nadëb
27 Makú Yahup
28 Mamaindé
29 Maxakalí Apalaí Apinayé Apurinã Asuriní Atroarí Bakairí Bororo Múra-Pirahã Nambikuara Oiampí Palikúr Producing field (discovered in 1955) 32 33 34 35 36 37 38 Oil shale discovery Parecis Parintintín Paumarí Gs Natural gas discovery SIL major base Canela Cinta Larga Dení Rikbaktsa Sateré Other SIL areas 39 40 SIL "occupied" tribe Suruí Terêna Urubú Waurá Location of "potentially hostile Indians" as designated by SIL's Guajajára Guaraní Hixkaryána 26 27 28 29 30 41 Terêna 42 Urubú 43 Waurá 44 Xavánte Dale Kietzman Date discoveries or projects announced Jamamadí Maxakalí Mundurukú

Figure I 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 II SIL Activity





Source: Aldridge (2018) and Wycliffe

Figure III
Example of Joshua Project Data

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

#### Resources \*

Languages v

Submit update

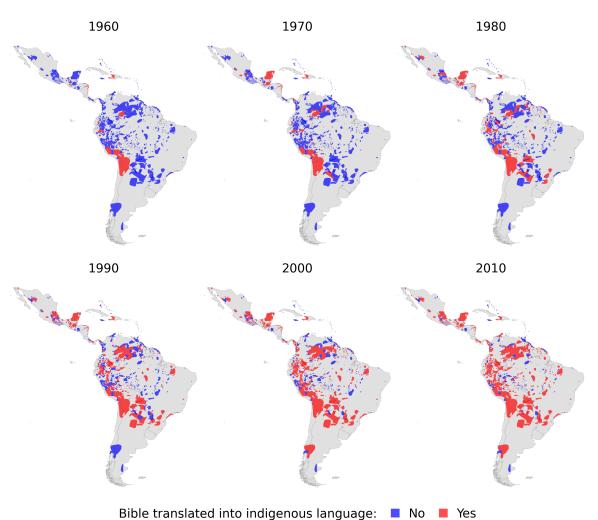
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Primary Language: Desano

Bible Translation <b>A</b>	Status (Years)
Bible-Portions	Yes (1975-1981)
Bible-New Testament	Yes (1984-2011)
Bible-Complete	No
Bible-NT Audio	Online
Bible-NT Text	Online

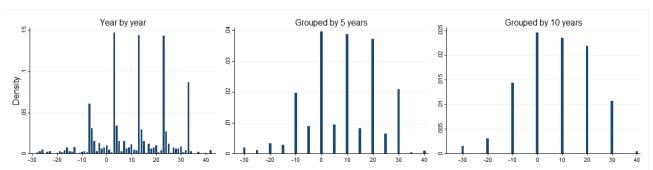
Note: The figure presents an image of the data provided by Joshua Project for a particular indigenous language. Information on the year in which the first and last editions of the Bible were published, for both the Old Testament and the New Testament, is provided. In this example, the first edition of 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/.

 $\label{eq:Figure IV}$  Indigenous Language Location & Bible Translation in Latin America



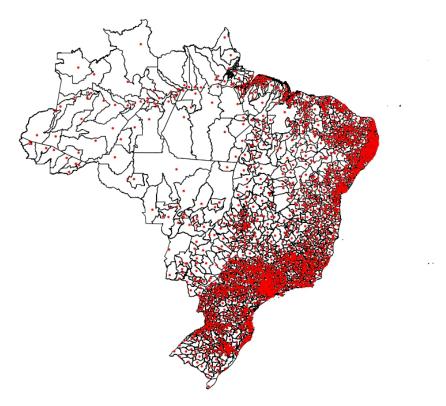
Note: This figure presents a set of maps showing the geographic location of indigenous languages in Latin America based on Ethnologue data. Red polygons denote languages with a New Testament translation, while blue polygons indicate those without one. Source: Own elaboration using data from Joshua Project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

 $\label{eq:Figure V} Figure \ V \\ \textbf{Histogram - Years Since 1st Bible Translation in Municipalities}$ 



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.

 $\label{eq:Figure VI} Figure~VI \\ \textbf{Population-Weighted Centroids}$ 



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 6 of the paper.

## References

- Aldridge, Boone. For the Gospel's Sake: The Rise of the Wycliffe Bible Translators and the Summer Institute of Linguistics. Wm. B. Eerdmans Publishing Co. (2018).
- Colby, Gerard and Charlotte Dennett. They Will Be Done: The Conquest of the Amazon: Nelson Rockefeller and Evangelism in the Age of Oil. Harper Collins (1996).
- Desmet, Klaus, Ignacio Ortuño-Ortín, and Romain Wacziarg, "The Political Economy of Linguistic Cleavages". *Journal of Development Economics* 97 (2) (2012), 322–338.
- Desmet, Klaus, Shlomo Weber, and Ignacio Ortuño-Ortín, "Linguistic Diversity and Redistribution". *Journal of the European Economic Association* 7 (6) (2009), 1291–1318.
- Giuliano, Paola and Nathan Nunn, "Ancestral Characteristics of Modern Populations". Economic History of Developing Regions 33 (1) (2018), 1–17.