Replication Code for "Supporting Teacher Autonomy to Improve Education Outcomes: Experimental Evidence from Brazil"

This repository contains the codes that replicate the figures and tables presented in the World Bank Policy Research Working Paper "Supporting Teacher Autonomy to Improve Education Outcomes: Experimental Evidence from Brazil" (2020) by Rafael Dantas, Andre Loureiro, Caio Piza, Matteo Ruzzante, and Astrid Zwager. [PDF] [BibTeX]

It is also featured in the World Bank's Reproducible Research Repository.

Read First

The whole analysis in the paper can be rerun by using the master script `PIP-Master.do`. It is only necessary to add your computer's username and path to the downloaded replication folder in line 131-133 of such do-file in *PART 1*. You can select which sections to run by editing the locals in the preamble of the do-file. Make sure to run the *packages* section – *PART 0* to install all necessary packages before running the other sections.

The master script will take up to one week on a reasonable cluster. Without considering the do-files using randomization inference procedures (see section *Code Process* below), it would take around 6 minutes.

The individual do-files with their respective inputs and outputs are explained below. The do-files employ finalized datasets, which are constructed from various data sources, listed and described below. The project data have not been posted yet for proprietary reasons.

Computational reproducibility was verified by DIME Analytics. Details of the reproducibility checklist can be found in the online appendix of the paper.

Abstract

What is the impact of greater teacher autonomy on student learning? This paper provides experimental evidence from a program in Brazil. The program supported teachers, through a combination of technical assistance and a small grant, to autonomously develop and implement an innovative project aimed at engaging their students. The findings show that the program improved student learning by 0.15 standard deviation and grade passing by 13 percent in sixth grade, a critical year of transition from primary to lower-secondary education. The paper explores two mechanisms: teacher turnover and student socio-emotional skills. Teacher turnover is reduced by 20.7 percent, and the impacts on student outcomes are concentrated in the schools with the largest reductions. The findings also indicate positive impacts on conscientiousness and extroversion among the students. The results suggest that increasing the

autonomy of public servants can improve service delivery, even in a low-capacity context.

Final Dataset Description

Datasets used for analysis are aggregated at different levels, namely at the student, teacher and school level, and described below. Master datasets contain records of all students, teachers and schools, in the experimental sample. Other administrative datasets refer to the universe of schools or students in Rio Grande do Norte or Brazil. *(NOTE: Only files 7, 10, 11 and 12 are shared inthis repository for proprietary reasons.)*

1. `original_sample.dta` contains the list of students and schools in the experimental sample. Source: project.
2. `master_studentlevel.dta` contains all the information at the student level. Sources: project, State Secretariat of Education (SEE) of Rio Grande do Norte (RN), Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP) school census, Sistema Integrado de Gestão da Educação (SIGEduc) portal.
3. `master_schoollevel.dta` contains all the information at the school level and the averages of numeric variables at the student level. Sources: project, SEE of RN, INEP school census, SIGEduc portal.
4. `master_teacherlevel.dta` contains all the information at the teacher level. Turnover dummies are in wide format at the teacher level. Sources: 2016 and 2017 INEP teacher censuses.
5. `scores_rescaled_ProvaBrasil.dta` contains test scores data rescaled by Sistema de Avaliação da Educação Básica (SAEB) or Prova Brasil. Source: SEE of RN.
6. `rates_panel.dta` is a panel of progression rates of schools in the experimental sample, containing also grades which were not targeted by the project, from 2015 to 2017. Source: SIGEduc.
7. `RN_students_panel.dta` is a panel of all students from RN created with census data from 2011 to 2017. Sources: 2011 to 2017 INEP school censuses. Raw data can be downloaded from http://portal.inep.gov.br/microdados.
8. `RN_salaries_2016.dta` contains data on 2016 salaries for RN. Source: Relação Anual de Informações Sociais (RAIS) from Ministry of Labour and Employment.
9. `Brazil_school_indicators.dta` contains school indicators, such as progression rates, age-grade distorsion and teacher permanence index, for all schools in Brazil from 2015 to 2017. Source: INEP 2015-2017 school indicators. Raw data can be downloaded from http://portal.inep.gov.br/indicadores-educacionais.
10. `Brazil_rates.dta` contains progress rates by grade and state in Brazil. Source: INEP 2015 state indicators.
11. `Brazil_ProvaBrasil.dta` contains average SAEB scores for Brazil and

RN by grade in 2013 and 2017. Source: INEP.

12. `Brazil_IDEB.dta` contains average state-school IDEBs by state in Brazil. Source: INEP. Raw data can be downloaded from

Code Process

The name of the do-files corresponds to the `.tex` or `.png` files to be created in the output folder. All tables and figures were included – without further editing – in the TeX document containing the current version of the paper and its online appendix.

Contact

If you have any comment, suggestion or request for clarifications, you can contact Matteo Ruzzante at matteo.ruzzante@u.northwestern.edu or directly open an issue or pull request in this GitHub repository.