

# HOW UNIVERSITY-GOVERNMENT COOPERATION ON DATA USE CAN WORK TO DEVELOP EVIDENCE BASED EDUCATION POLICY: THE CASE OF STANFORD AND BRAZIL

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# BACKGROUND

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- **The Lemann Center in the Graduate School of Education at Stanford was formed to help improve Brazilian education.**
- **We pursue this mission by training students & scholars to become educational innovators & policy researchers; by researching interventions that improve student learning; by developing new learning technology; and by working with state governments to develop effective improvement strategies.**
- **One of the main reasons that we have been able to generate highly relevant educational policy research is that we have considerable access to good educational data at both the national level (mostly publicly accessible) and even better data from certain Brazilian states with whom we have established good relationships.**

# WHAT TYPE OF NATIONAL EDUCATIONAL DATA ARE AVAILABLE IN BRAZIL

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- The Brazilian national government has a quite long history of collecting educational data (since the early 1990s). Brazilian states have also begun collecting data more recently, since 2007.
- Individual microdata from the national test and survey of students in 5<sup>th</sup>, 9<sup>th</sup>, and 12<sup>th</sup> grades—this test was a school sample in 1995-2005 but covers all public school students since 2007 plus a sample of private school students—and a survey of all teachers and principals in those grades (publicly available, but only at school level).
- The PISA test and sample survey in 2000-2015 (15 year-olds), and the UNESCO LLECE (1997), SERCE (2007) and TERCE (2014) tests and surveys for 3<sup>rd</sup> and 6<sup>th</sup> graders (publicly available at individual level).
- Individual results of the national university entrance exam score (ENEM) since 2009, and the results of tests given to large samples of final year university students by program of study (not publicly available).
- A universal survey of all private and public employees with detailed data on wages, occupation, level of education, age, etc. which can be linked to national university exit exam and entrance exam data (not publicly available).

# WHAT TYPE OF STATE DATA ARE AVAILABLE?

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- **Many Brazilian states and larger municipalities also have been applying their own tests and surveys to all students in certain grades—for example, 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, and 12<sup>th</sup> grades. Some include teacher surveys, and many include information about schools.**
- **The quality of this information varies greatly, but in some cases, it is reasonably good. States are more likely to provide these data at the individual level, so it is possible to follow individual students longitudinally as they move through the school system, even if they change schools, and to link them with teachers in some cases.**
- **Some states and municipalities have extensive data on teacher wages, hiring practices, and where teachers choose to teach.**
- **Since many reforms are state level reforms, the student data can be used to evaluate the impact of these reforms on student performance.**

# WHY SHOULD GOVERNMENT ENTITIES WORK WITH UNIVERSITIES TO DO POLICY RESEARCH?

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- Although the answer to this question may seem obvious to university researchers, it is not obvious to government agencies.
- For example, the main government educational statistical agency, INEP, which administers all the tests, is very reluctant to release data at the individual level, even though it is possible to anonymize those data and create a student identifier that could be linked to employment and other data. INEP would rather provide less policy evidence than risk a scandal from releasing the data.
- Yet, done properly, good educational policy research can provide guidance to policy makers that would reduce costly reform errors.
- For example, in Brazil, the government passed legislation five years ago that would implement a literacy program in every state. But the evidence showed (after the law was passed) that the main effects of the model literacy program in Ceara state on which the law was based, were mainly the result of an intensive teacher training program and monetary incentives to schools, not the literacy package itself.

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- **Other examples of Brazilian reforms without proper evidence are (1) the effort by the current government to implement a national curriculum, and (2) the reform secondary school education, including lengthening the school day, putting in a vocational track, and reducing the number of core courses. Neither of these is based on any research evidence of possible effects. There is a real danger that big money will be spent on reforms that do not work.**
- **Piloting these reforms and using impact evaluation to estimate how effective these and other efforts are in improving a rather poor system of education would go far in choosing effective over non-effective changes in the system.**
- **In many cases, the data are already available to test what works and what does not work to improve student performance and attainment in Brazil. But this requires the national government and states to allow greater access to available data and to work with good policy researchers so that a better set of policy reforms can be put into place.**

# HOW WE WORKED WITH INEP AND THREE STATE GOVERNMENTS TO IMPROVE EDUCATION POLICY

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- Beginning in 2014, the Lemann Center at Stanford began to develop close relationships with the states of Ceara, Pernambuco, and Sao Paulo, as well as INEP, the central government education statistics agency, and the Ministry of Labor, which collects the national employment and wage data (RAIS).
- We convinced all these agencies that a partnership with Stanford could produce very high quality educational research that could help them make more informed decisions about how to improve their education systems.
- We would deliver research results and briefings for their staff if they would allow us to have access to data. We would also clean the data, merge it with other data, and, in the case of the states, give advice on how to collect better and more useable data for future analysis.
- All these relationships required formal agreements about confidentiality. The agreements were non-commercial—in other words, Stanford would provide all the research without compensation.

# EXAMPLES OF THE RESEARCH CONDUCTED USING THESE DATA:

## I. ADDITIONAL YEAR OF ACADEMIC CURRICULUM REFORM

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- **The Brazilian government implemented a law in 2007 to change the last year of pre-school into the first grade of elementary school, thereby lower the school entrance age from 7 to 6 years old and increasing the number of years of primary school from 4 to 5 years. Some municipalities had implemented this reform before 2007, and many not until 2010.**
- **Using available but difficult to find data, we were able to identify which schools implemented the reform in each year, and thus were able to perform a causal analysis that estimated a relatively large gain in achievement for students “treated” to the extra year of academic curriculum by the end of elementary school. We now intend to estimate whether the effect of the extra year was sustained by treated students until the 9<sup>th</sup> grade.**

# EXAMPLES OF THE RESEARCH CONDUCTED USING THESE DATA: II. FULL DAY HIGH SCHOOL

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- **The Pernambuco state government is one of several that implemented full day high schools in the past 10 years—increasing daily student time in school from 4 to 6 hours per day, and increasing mathematics and language lessons from 3 to 5 hours per week. Additional schools joined the reform each year—not all at once. Even today, many high schools in the state are not full day.**
- **The Brazilian government wants to implement this reform nationwide as part of its high school reform**
- **We were able to get individual student data from the Pernambuco government (through an agreement) for the period 2008-2015 that allowed us to identify first year high school students in every year and to link a high percentage of them to their 9<sup>th</sup> grade (pre-high school) test scores and a smaller %, to their 12<sup>th</sup> grade test scores. We could also identify the year in which each school began “treating” their 10<sup>th</sup> grade students to full-day school.**
- **This identification strategy allowed us to estimate the relative gains in test scores of students attending full day versus regular high schools. The effect of full day school is about 0.2 SDs for the three years. This is large, but the reform is very expensive. We intend to repeat the analysis for another state, Ceara.**

## EXAMPLES OF THE RESEARCH CONDUCTED USING THESE DATA: III. TEACHER INCENTIVES TO WORK IN DISTANT LOW INCOME URBAN SCHOOLS

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- **The Sao Paulo municipality (largest in Brazil) has a monetary incentive program to get better teachers to teach in distant low income schools.**
- **We were able to obtain data on new teachers' scores on their competitive qualifying test and the choices they made in selecting schools. Higher scoring teachers get first choice.**
- **We compared the test scores of teachers teaching in schools one side of the border of the zone that qualified for higher pay and the other side of the border (did not qualify for higher pay). The test scores were no different, suggesting that the incentive scheme did not work.**
- **One explanation is that the incentive was not great enough, but it could be that teachers have very high preference to work as near their homes as possible because of family obligations, etc.**

## EXAMPLES OF THE RESEARCH CONDUCTED USING THESE DATA: IV.VARYING SES-ADJUSTED VALUE ADDED ACHIEVEMENT AMONG REGIONS AND MUNICIPALITIES WITHIN STATES

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- **Brazil's education system is unusual because middle schools are administered either by states or municipalities. State schools are run by regional state administrations. There is considerable variation in student outcomes among regions and municipalities.**
- **Some of these differences are due to variation of socio-economic conditions in the regions and municipalities, but some is due to the quality of their educational administrations.**
- **Using the individual student state test data and family information we obtained in our cooperative agreements with two states—Sao Paulo and Pernambuco—we were able to estimate the value-added in student achievement between 5<sup>th</sup> and 9<sup>th</sup> grade (middle school) by state region and municipality and correct this value-added for socio-economic characteristics of students and the characteristics of teachers in the schools attended by each student.**
- **We did these estimates for three cohorts of students in each state and ranked state regions and municipalities into those that had consistently high value added over all three cohorts and consistently low value added.**
- **We will now conduct qualitative interview studies to analyze why some administrative units do consistently well, and others consistent badly on this measure a administrative effectiveness.**

# WORKING WITH THE STATES AND THE NATIONAL GOVERNMENT

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- **Two of our students spent July and August in Pernambuco and Ceara working with the state governments to show them the results of our study and to discuss their policy implications.**
- **We are gradually convincing the states—where most reforms originate and are implemented—that evidence based policy reforms are possible.**
- **They are particularly interested now in our research on regional and municipal variation, and their cooperation and participation is crucial to our understanding of why some regional and municipal administrations within states are more effective in delivering education than others.**
- **The overall effect is that state administrations are beginning to trust us that our access to the data will be useful to them in becoming better at educational policy.**



# DEVELOPING AN EDUCATIONAL POLICY PRESENCE IN BRAZIL

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- **In addition to our work with the states, we are developing an educational policy center that will produce short, readable “briefs” of our educational policy research and the educational policy research of others, inside and outside Brazil who are producing high quality studies on what works in education in Brazil.**
- **The Center will disseminate these “briefs” to policy makers in the national and state governments.**
- **There are also many valuable data that we have not been able to access, and we are working to get those as well and to make all these data generally available to researchers in Brazil.**
- **The more widely available are the data, the more likely good research will appear and possibly be used in policy-making.**