

AGE's 125: Design of the Experiment

The randomization was conducted in several steps together with CONAFE in the selection and randomization of the primary schools that were to compose the evaluation sample. Schools in the treatment group received the extra grants for three consecutive school years. Schools in the control group remain as counterfactual schools and therefore did not receive the extra benefits over the evaluation period. Both groups of schools were already incorporated into the AGEs and all received the base amount.

First, we selected states with large indigenous rural populations, and that were well represented in the AGEs program. Budget restrictions allow the awarding of only a certain number of extra grants for the experiment each year, limiting our sample to 250 AGEs schools, of which we can only allocate extra resources to half. A statistical power calculation indicates that a sample of this size is sufficient to detect moderate student learning impacts at 95% confidence with reasonable levels of statistical power.

Since 2000, almost 50,000 rural primary schools have benefited from AGEs. During school year 2006-07, there were 34,252 AGEs in 31 states. Our selected states, which have large indigenous populations as measured by their proportion in rural areas, are: Chiapas, Guerrero, Puebla and Yucatan. These four states account for 14 percent of the Mexican population overall, 22 percent of the rural population, and 37 percent of the national indigenous population. We excluded Oaxaca, even though it has the largest indigenous population in a single state, because of problems between the teachers' union and the government, which led to the closure of schools during most of the 2006-07 school year, and AGEs funds were not assigned. Similar problems exist to this day, and there were no guarantee that the experiment could be carried out in the state (see, for example, the daily *Excelsior* newspaper, 16 July 2007, "*Regresa violencia a Oaxaca*"). Furthermore, Oaxaca schools did not participate in ENLACE in 2006 and 2007, meaning that we do not have a baseline for the state. Our four selected states account for 17 percent of all primary public schools in Mexico, and almost 20 percent of all AGEs schools. In 2006-07, AGEs schools

were distributed by state as follows: Chiapas (2,675), Guerrero (2,399), Puebla (1,265) and Yucatán (323).

We randomly selected 250 schools as participants of the experiment. This was carried out using the 2007-08 database of AGEs schools provided by CONAFE, as well the national school census by SEP, which contains numerous characteristics at the primary school level for the beginning and end of each school year (see Table 1).

Table 1: Primary Schools in Selected States

State	Total	of which indigenous:	AGEs Schools	of which indigenous:	Potential AGEs*	of which indigenous:*
Chiapas	6,480	2,759	2,620	1,497	2,522	1,432
Guerrero	4,030	850	2,437	721	2,086	573
Puebla	4,256	604	1,173	350	995	200
Yucatan	1,266	171	344	163	327	162
<i>Total</i>	<i>16,032</i>	<i>4,384</i>	<i>6,574</i>	<i>2,731</i>	<i>5,930</i>	<i>2,367</i>

*Excluding boarding schools and those not participating in ENLACE tests in 2006

From the universe of AGEs schools in the four states we excluded boarding schools, schools that did not participate in ENLACE 2006, and schools that joined the mostly urban school-based management program (PEC). This left us with 5,930 potential schools to be selected for the experiment, of which 2,367 were indigenous. From these we randomly selected 250 schools. Table 2 presents the distribution of the randomized schools.

Table 2: Random Distribution of Schools

State	General	Indigenous	Total
Chiapas	45	66	111
Guerrero	58	22	80
Puebla	28	15	43
Yucatan	6	10	16
<i>Total</i>	<i>137</i>	<i>113</i>	<i>250</i>

The randomization produced a distribution of indigenous and general schools that is close to the actual distribution of indigenous and general schools in the four states, as shown in Table 3. In other words, the randomly selected schools are representative of the distribution of indigenous and general schools in the four states. The 250 schools were within in the AGEs program for at least the three year duration of the experiment.

Table 3: Distribution of General and Indigenous Schools (percent)

State	Actual distribution		Sample distribution	
	General	Indigenous	General	Indigenous
Chiapas	43	44	44	58
Guerrero	35	33	33	19
Puebla	16	17	17	14
Yucatan	6	6	6	9
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

From these 250 schools, we randomly assigned 125 to treatment and 125 to control. Using then about a set of characteristics for the 2006 an previous two years in order to guarantee that such characteristics are constant over years, we calculated t-test to compare random selected treatment and control groups after 50 random runs until produced the more similar distribution for both groups according to the t-test difference. Variables included were: the number of students and groups per each grade; repeaters, ratio of approved per grade; number of teachers and principal with group and number of groups per grade; dropout rates, ratio of repeaters, scholarships Oportunidades, supplies per grade; teachers incentives

and their ratios and the existence of other programs such as *Carrera Magisterial*, training, and also for the intensity of such programs. In general, of about 188 characteristics (per grade and for 3 years) 91% of them are similar according to the t-test.

Table 4 presents the final distribution of treatment and control schools according to whether they are indigenous or general schools.

Table 4: Treatment and Control Schools

State	Indigenous		General		Total	
	Treatment	Control	Treatment	Control	Treatment	Control
Chiapas	38	28	22	23	60	51
Guerrero	12	10	23	35	35	45
Puebla	9	6	16	12	25	18
Yucatan	4	6	1	5	5	11
<i>Total</i>	<i>63</i>	<i>50</i>	<i>62</i>	<i>75</i>	<i>125</i>	<i>125</i>