

Sweating bullets: Heat, high-stakes evaluations, and the role of incentives

Supplementary Materials

July 7, 2025

Appendix A Optimization Problem

We assume functional forms such that

$$f(e, t) = \frac{e^\alpha}{t^\beta}, \quad 0 < \alpha < 1, \quad \beta > 0;$$

$$g(e, t) = e^\gamma t^\zeta, \quad \gamma > 1, \quad 0 < \zeta < 1;$$

$$U(c, g(e, t)) = c - g(e, t) = wzf(e, t) - g(e, t).$$

Hence, the individual's problem is reduced to

$$\max_e wz \frac{e^\alpha}{t^\beta} - e^\gamma t^\zeta,$$

where the first-order condition (FOC) implies that

$$\alpha wz \frac{e^{\alpha-1}}{t^\beta} - \gamma e^{\gamma-1} t^\zeta = 0,$$

while the second-order condition for maximization

$$\alpha(\alpha - 1) wz \frac{e^{\alpha-2}}{t^\beta} - \gamma(\gamma - 1) e^{\gamma-2} t^\zeta < 0$$

is satisfied when $0 < \alpha \leq 1$ and $\gamma > 1$, and thus $\gamma > \alpha$; hence, we must assume that the marginal cost of effort increases faster than its marginal benefit.

From the FOC we can recover the optimal level of effort, e^* , which follows

$$e^* = \left(\frac{\alpha wz}{\gamma t^{\beta+\zeta}} \right)^{\frac{1}{\gamma-\alpha}}.$$

Therefore, the production of human capital under an optimal effort level is

$$\begin{aligned} h^*(t, w, z) &= z \frac{(e^*)^\alpha}{t^\beta} \\ &= t^{-\beta - \frac{\alpha(\beta+\zeta)}{\gamma-\alpha}} w^{\frac{\alpha}{\gamma-\alpha}} z^{\frac{\gamma}{\gamma-\alpha}} \left(\frac{\alpha}{\gamma} \right)^{\frac{\alpha}{\gamma-\alpha}}. \end{aligned}$$

Finally, linearizing this expression with a second-order Taylor expansion, we have that

$$\begin{aligned}
h^*(t, w, z) = & h^*(t', w', z') + \left(\frac{t - t'}{t'} \right) h^*(t', w', z') \left[-\beta - \frac{\alpha(\beta + \zeta)}{\gamma - \alpha} \right] \\
& + \left(\frac{w - w'}{w'} \right) h^*(t', w', z') \left[\frac{\alpha}{\gamma - \alpha} \right] + \left(\frac{z - z'}{z'} \right) h^*(t', w', z') \left[\frac{\gamma}{\gamma - \alpha} \right] \\
& + \frac{1}{2} \left(\frac{t - t'}{t'} \right) \left(\frac{w - w'}{w'} \right) h^*(t', w', z') \left[-\beta - \frac{\alpha(\beta + \zeta)}{\gamma - \alpha} \right] \left[\frac{\alpha}{\gamma - \alpha} \right] \\
& + \frac{1}{2} \left(\frac{t - t'}{t'} \right) \left(\frac{z - z'}{z'} \right) h^*(t', w', z') \left[-\beta - \frac{\alpha(\beta + \zeta)}{\gamma - \alpha} \right] \left[\frac{\gamma}{\gamma - \alpha} \right] + R_2(t, z, w),
\end{aligned}$$

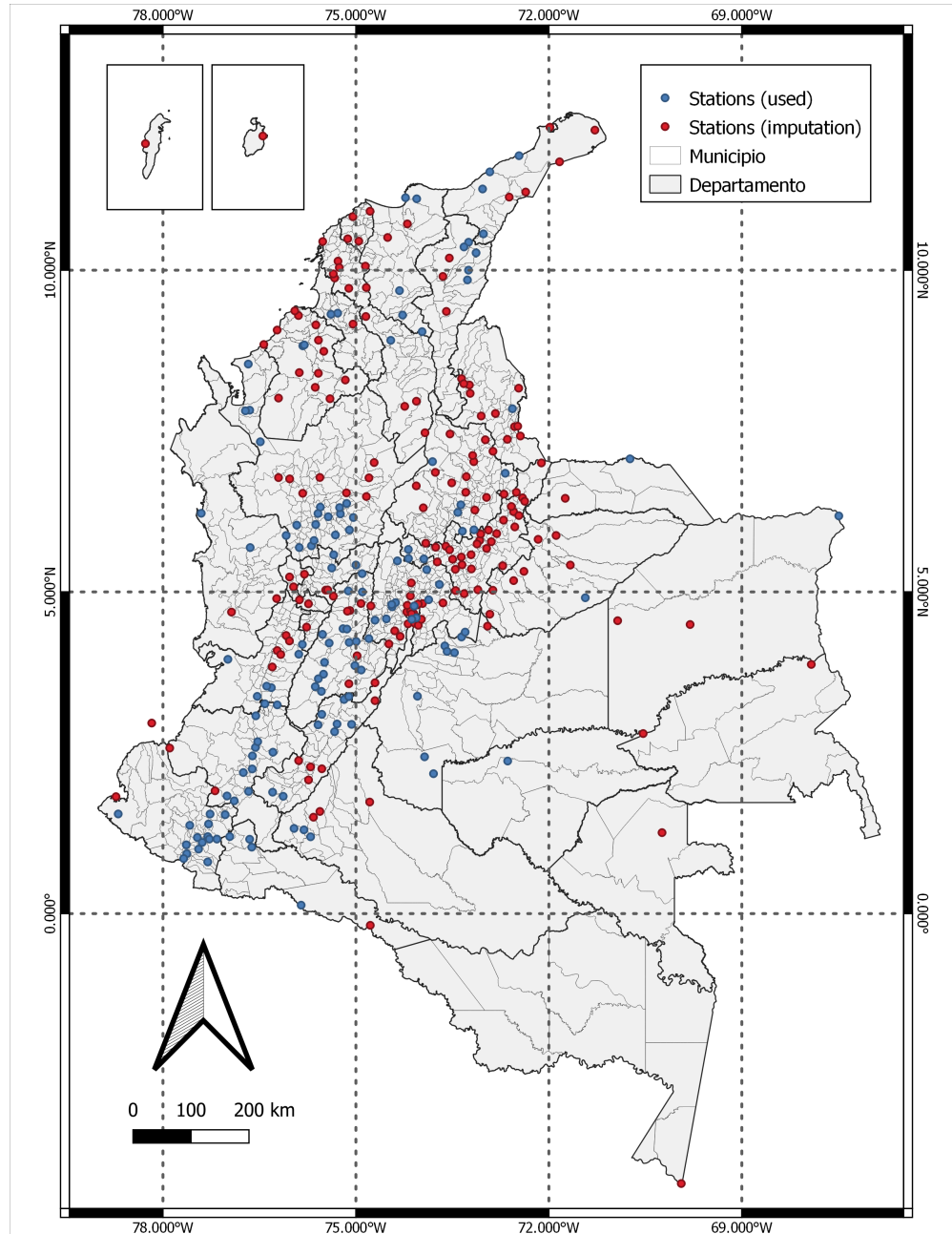
where $R_2(t, z, w)$ includes the cross-effect between wages and cognitive abilities and other own- and cross-effects of second and higher orders that are approximate to zero. Then, the percent deviation of human capital with respect to the mean follows:

$$\begin{aligned}
\hat{h} = & \left[-\beta - \frac{\alpha(\beta + \zeta)}{\gamma - \alpha} \right] \hat{t} + \left[\frac{\alpha}{\gamma - \alpha} \right] \hat{w} + \left[\frac{\gamma}{\gamma - \alpha} \right] \hat{z} + \frac{1}{2} \left[-\beta - \frac{\alpha(\beta + \zeta)}{\gamma - \alpha} \right] \left[\frac{\alpha}{\gamma - \alpha} \right] \hat{t}\hat{w} \\
& + \frac{1}{2} \left[-\beta - \frac{\alpha(\beta + \zeta)}{\gamma - \alpha} \right] \left[\frac{\gamma}{\gamma - \alpha} \right] \hat{t}\hat{z} + R,
\end{aligned}$$

where $\hat{x} = (x - x')/x'$, for $x \in \{h, w, t, z\}$.

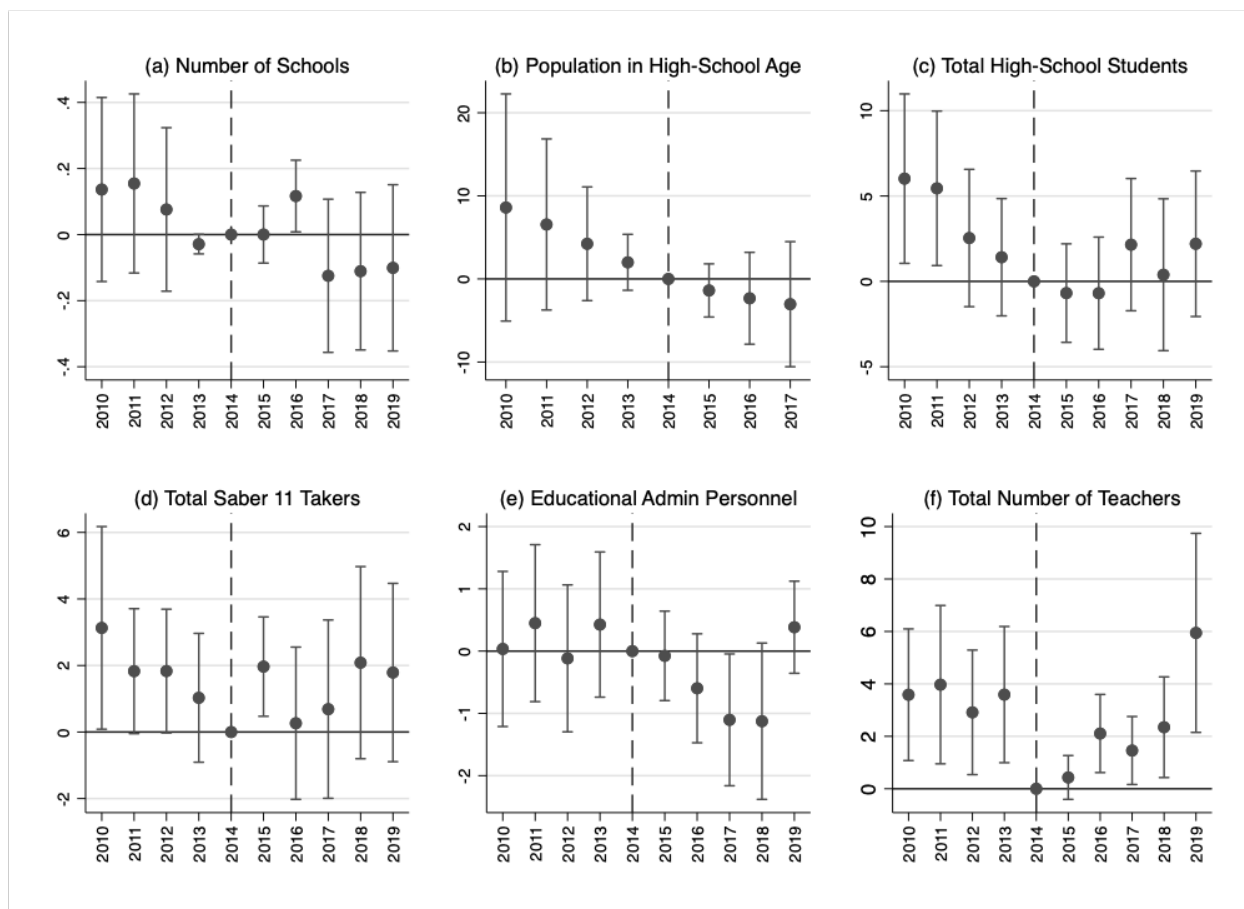
Appendix B Additional figures and tables

Figure B1: Spatial distribution of the weather stations used in the analysis



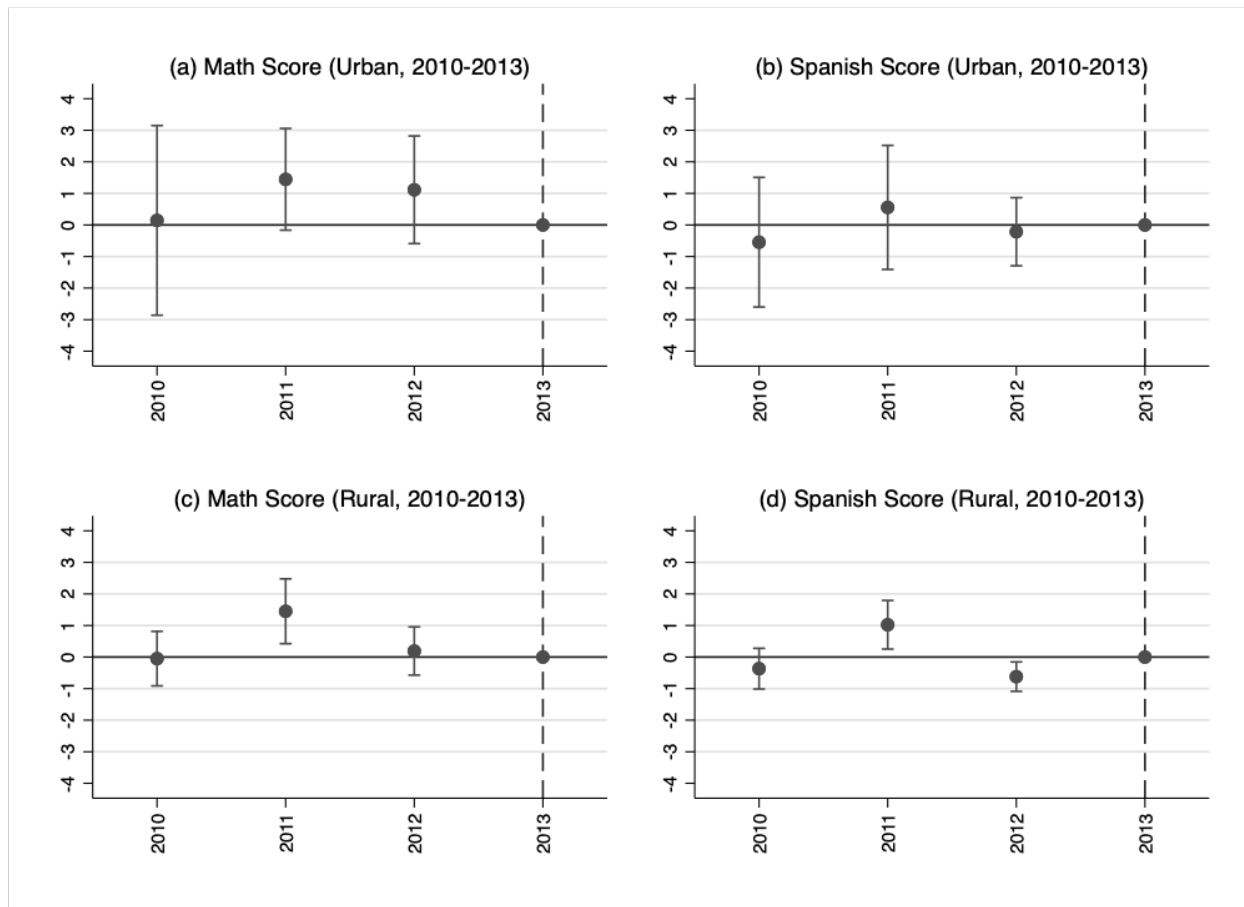
Notes — Figure displays the weather stations used in our analysis (blue) and those included in the imputation procedure. Raw weather data is publicly available from the Colombian Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM).

Figure B2: Pre-trend testing of exposure to *Ser Pilo Paga* on Municipality-level variables, 2010-2019.



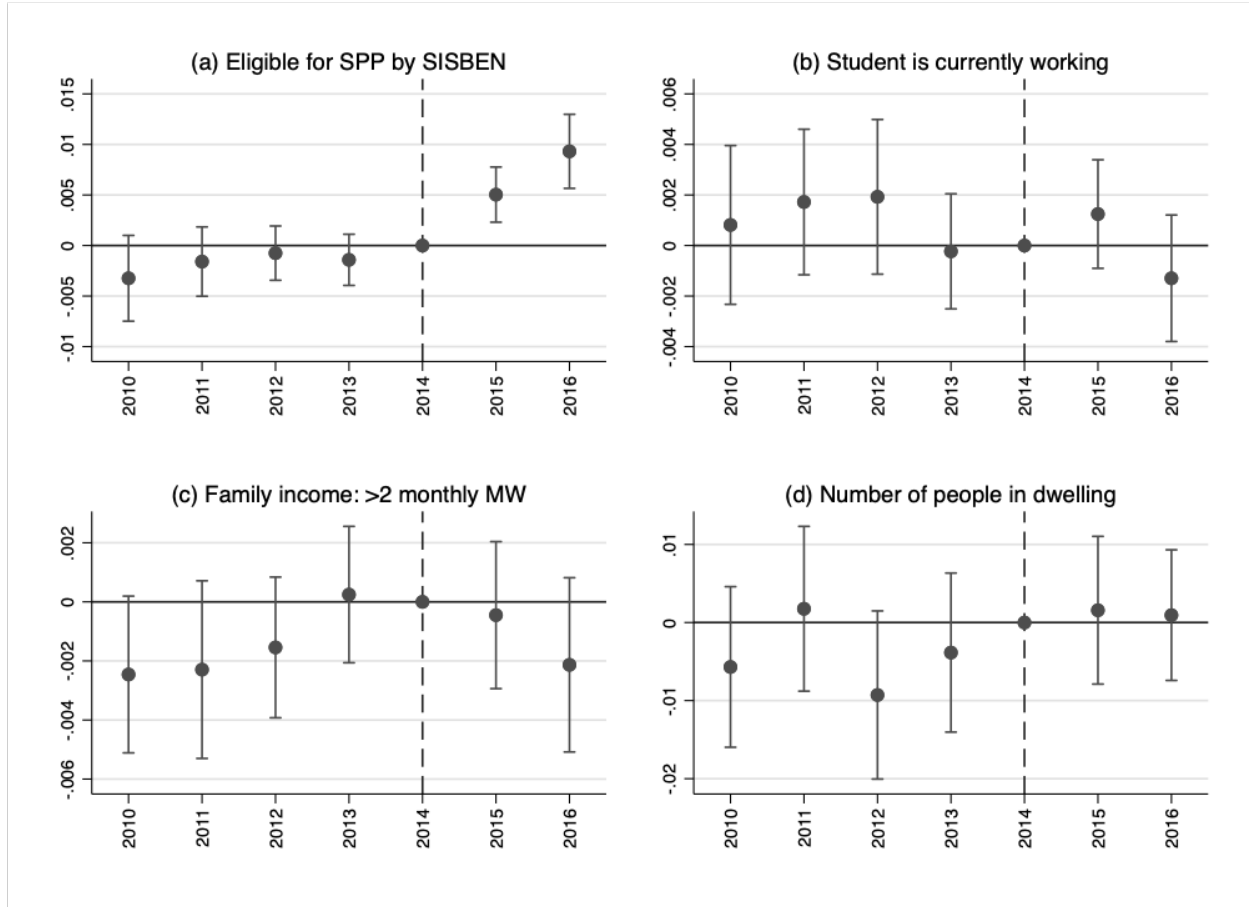
Notes — Municipality-level information is publicly available from the Center for Studies on Economic Development (CEDE) of Universidad de los Andes, Colombia. Graphs report the coefficient estimates (and 95% CI) from the regression of the outcome of interest (e.g., the number of schools in the Municipality) on interactions between the exposure to *Ser Pilo Paga* (SPP) and year dummies. Results are based on linear regression with State-Year and Municipality-level fixed effects. Excluded interaction for the year 2014 (coefficient set at zero) takes into account the baseline of Saber 11 data, for which no Municipality was exposed to SPP.

Figure B3: Pre-trend testing of exposure to *Ser Pilo Paga* on Math and Spanish scores, 2010-2013.



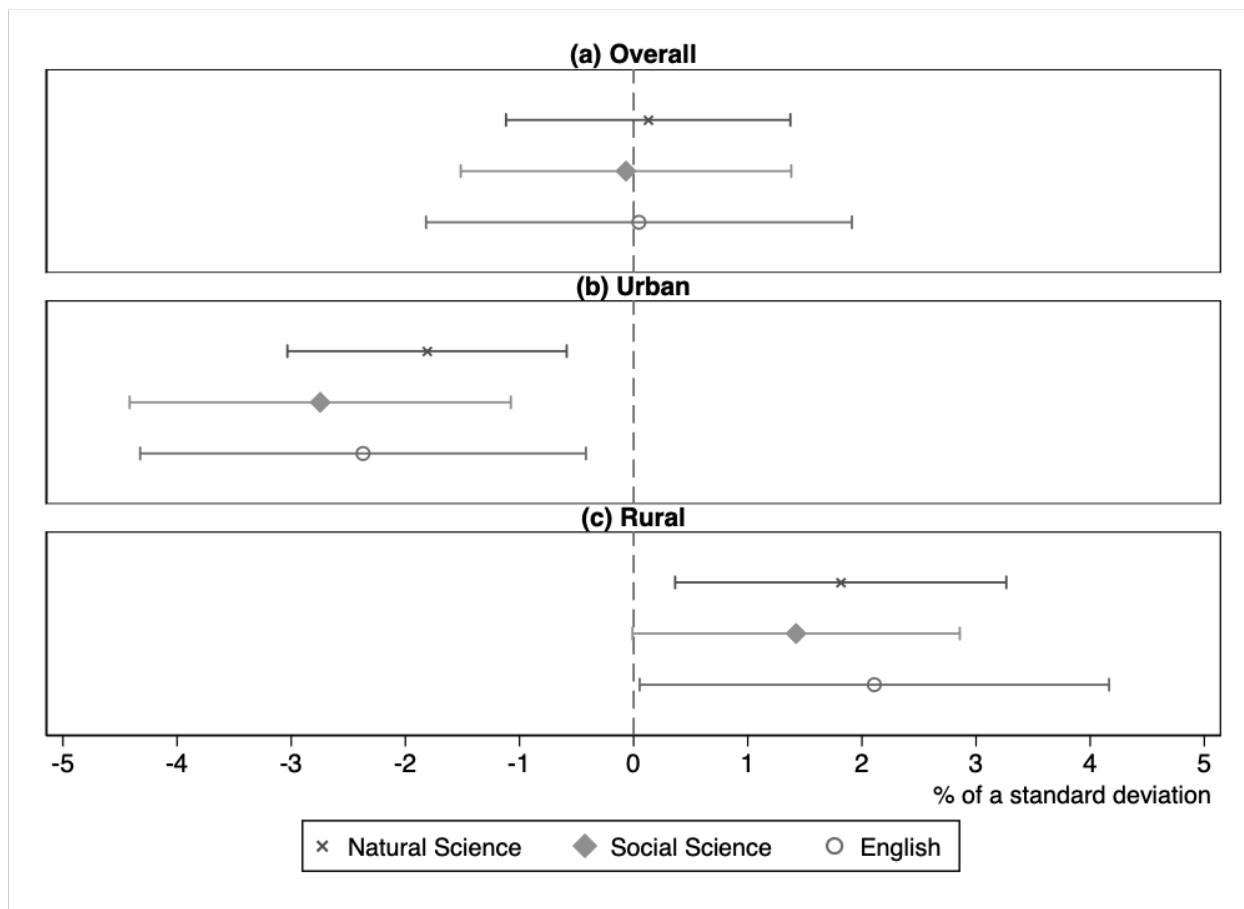
Notes — Student-level scores are publicly available from Instituto Colombiano para la Evaluación de la Educación (ICFES). Graphs report the coefficient estimates (and 95% CI) from the regression of the outcome of interest, namely $100y$ with y the standardized Math or Spanish score, on interactions between the exposure to *Ser Pilo Paga* (SPP) and year dummies. Results are based on linear regression with State-Year and Municipality-level fixed effects. Interaction for the year 2013 is excluded as a base-category comparison. The analysis allowed for trend heterogeneity by adding interactions between period (year) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Figure B4: Pre-trend testing of exposure to *Ser Pilo Paga* on Student-level variables, 2010-2016.



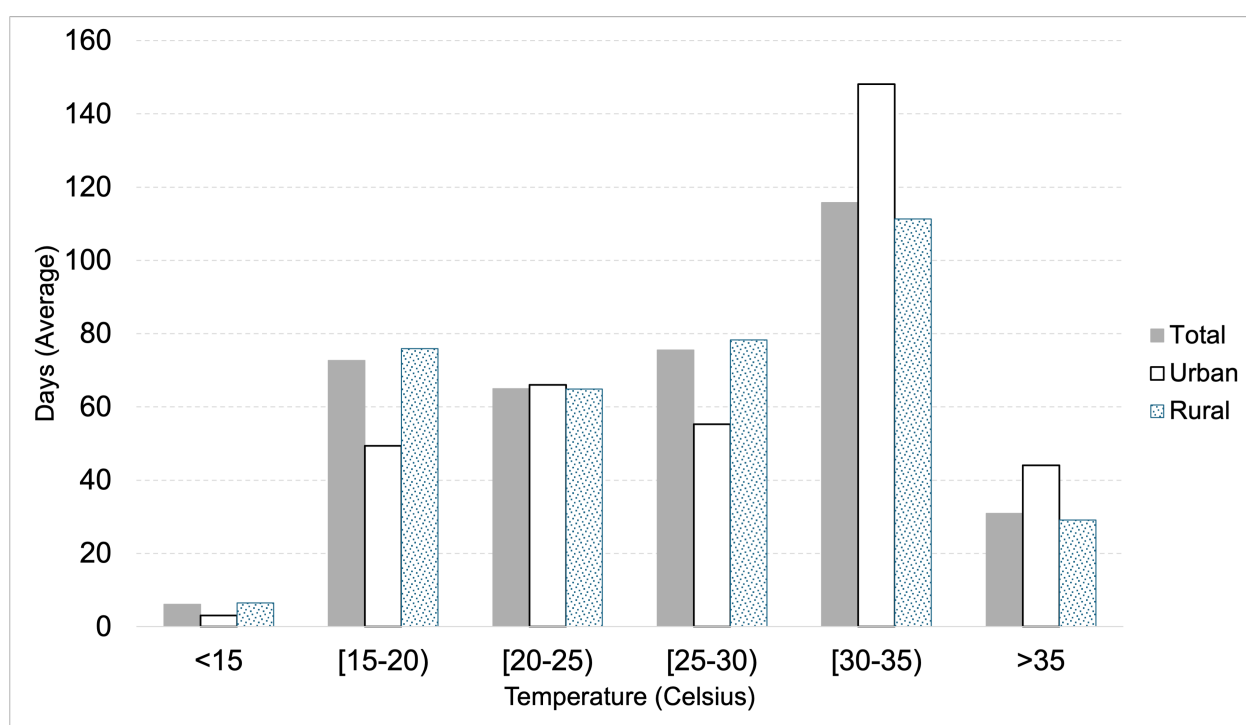
Notes — Student-level information is publicly available from Instituto Colombiano para la Evaluación de la Educación (ICFES). Selected covariates are only available for the years 2010-2016. Graphs report the coefficient estimates (and 95% CI) from the regression of the outcome of interest on interactions between the exposure to *Ser Pilo Paga* (SPP) and year dummies. Eligibility to SPP by SISBEN indicates whether the student reported being in the lower categories (1 and 2) of the SISBEN scores, making a student eligible for the program on a need basis. Family income is a binary variable of whether the student reports a monthly family income above 2 monthly minimum wages (MW). Results are based on linear regression with State-Year and Municipality-level fixed effects. Excluded interaction for the year 2014 (coefficient set at zero) takes into account the baseline of Saber 11 data, for which no Municipality was exposed to SPP.

Figure B5: Effect of the past-year average maximum temperature on Saber 11 scores for additional subjects, 2014-II–2019-I.



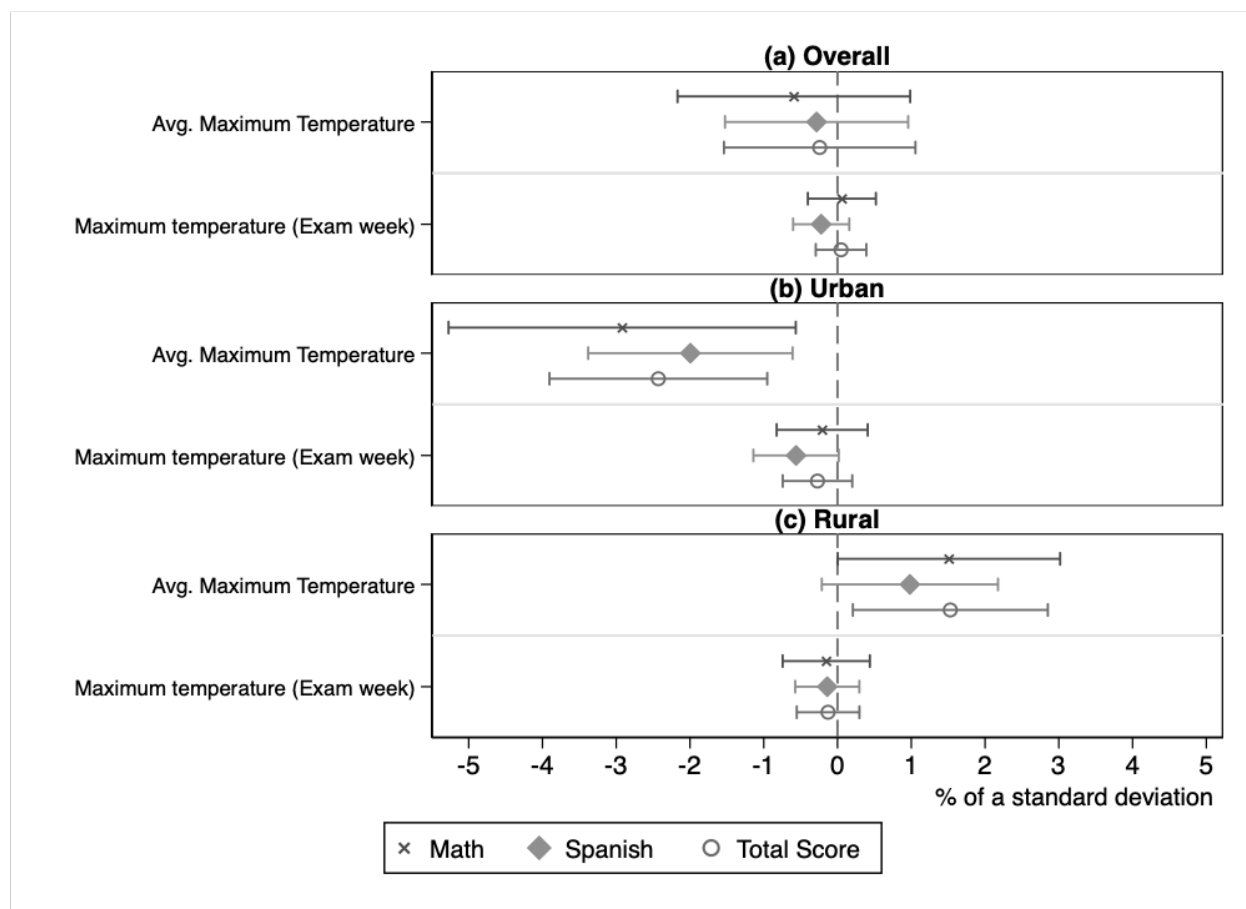
Notes — Reporting Fixed-Effects estimation of the effect (and 95% confidence interval) from a 1°C increase in the average daily maximum temperature at the Municipality level during the calendar before the Saber 11 test on the scores achieved by students between 2014-II and 2019-I. The response variable is $100y$, where y is the standardized score of the specific subject, namely Natural Science, Social Science, or English as a Second Language. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Regressions include controls of precipitation at the Municipality level for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Figure B6: Average days of exposure to bins of maximum temperature in the year before Saber 11 during the period of analysis across Municipalities, 2014-II–2019-I.



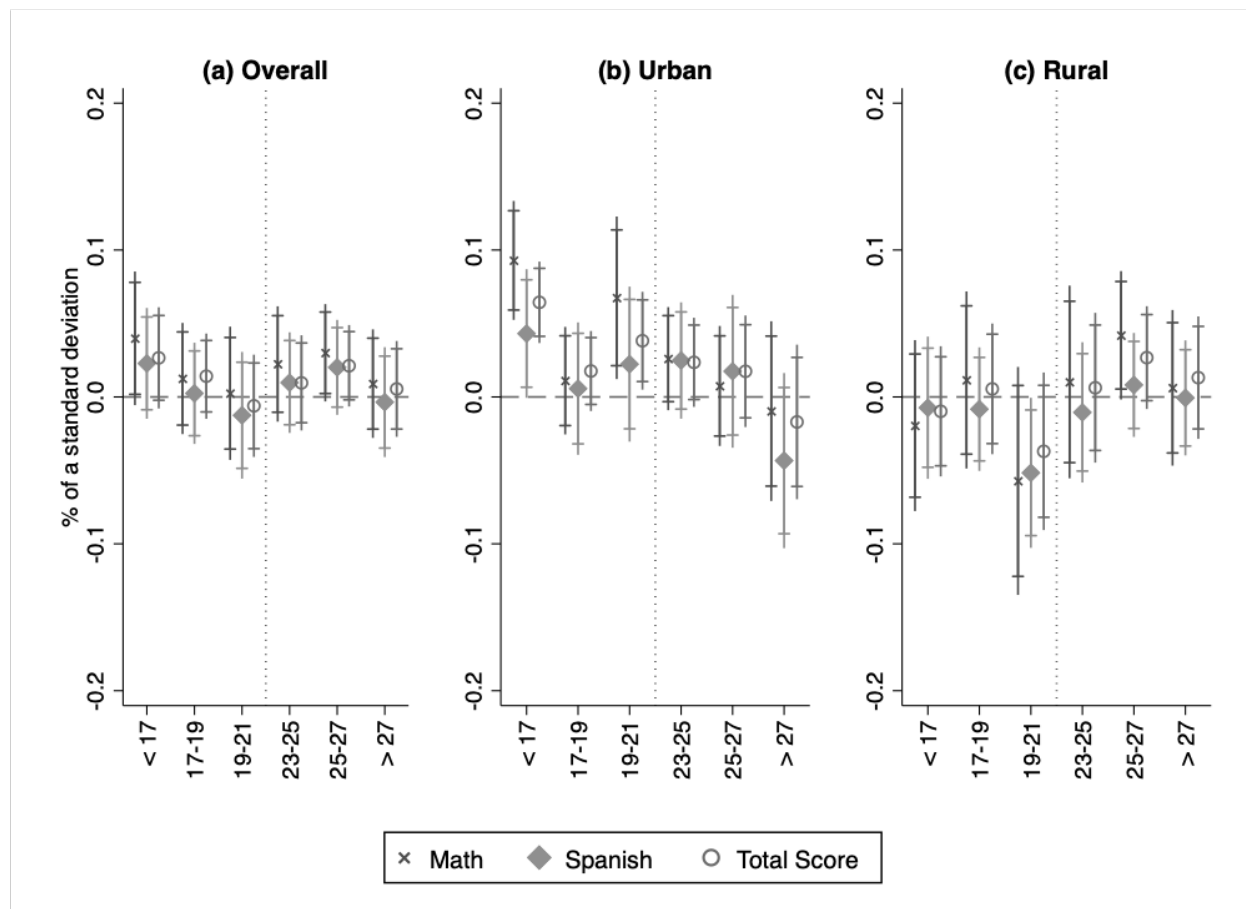
Notes — The figure reports the average number of days a Municipality, during the year before the Saber 11 test, has been exposed to days with maximum temperatures within a given bin between 2014-II and 2019-I.

Figure B7: Effect of the past-year average maximum and exam week maximum temperatures on Saber 11 scores, 2014-II–2019-I.



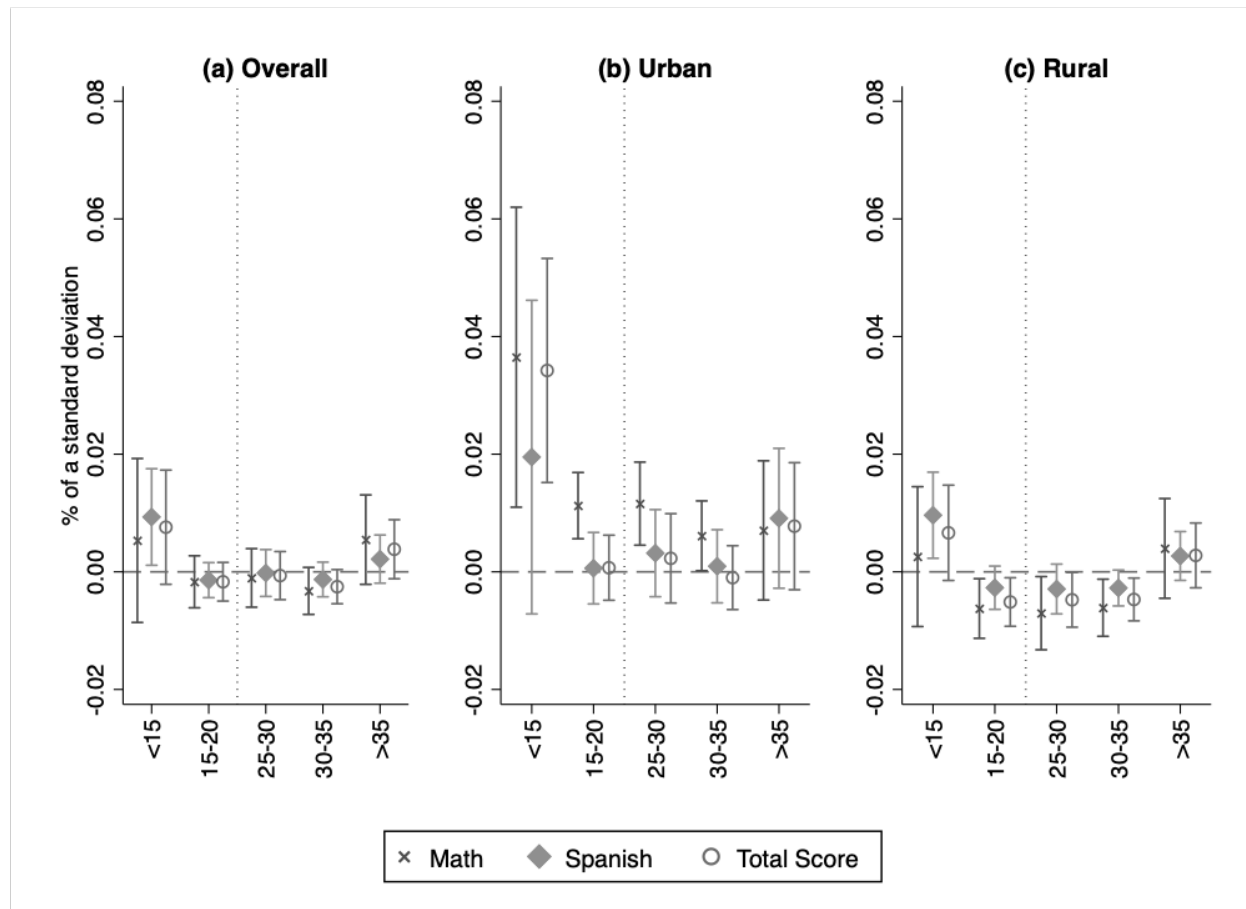
Notes — Reporting Fixed-Effects estimation of the effect (and confidence interval) from 1°C increases in the exam-week maximum temperature and the average daily maximum temperature at the Municipality level during the calendar before the Saber 11 test on the scores achieved by students between 2014-II and 2019-I. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Regressions include controls of precipitation at the Municipality level for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Figure B8: Effect of the past-year number of days exposure to maximum temperatures with alternate bins on Saber 11 scores, 2014-II–2019-I.



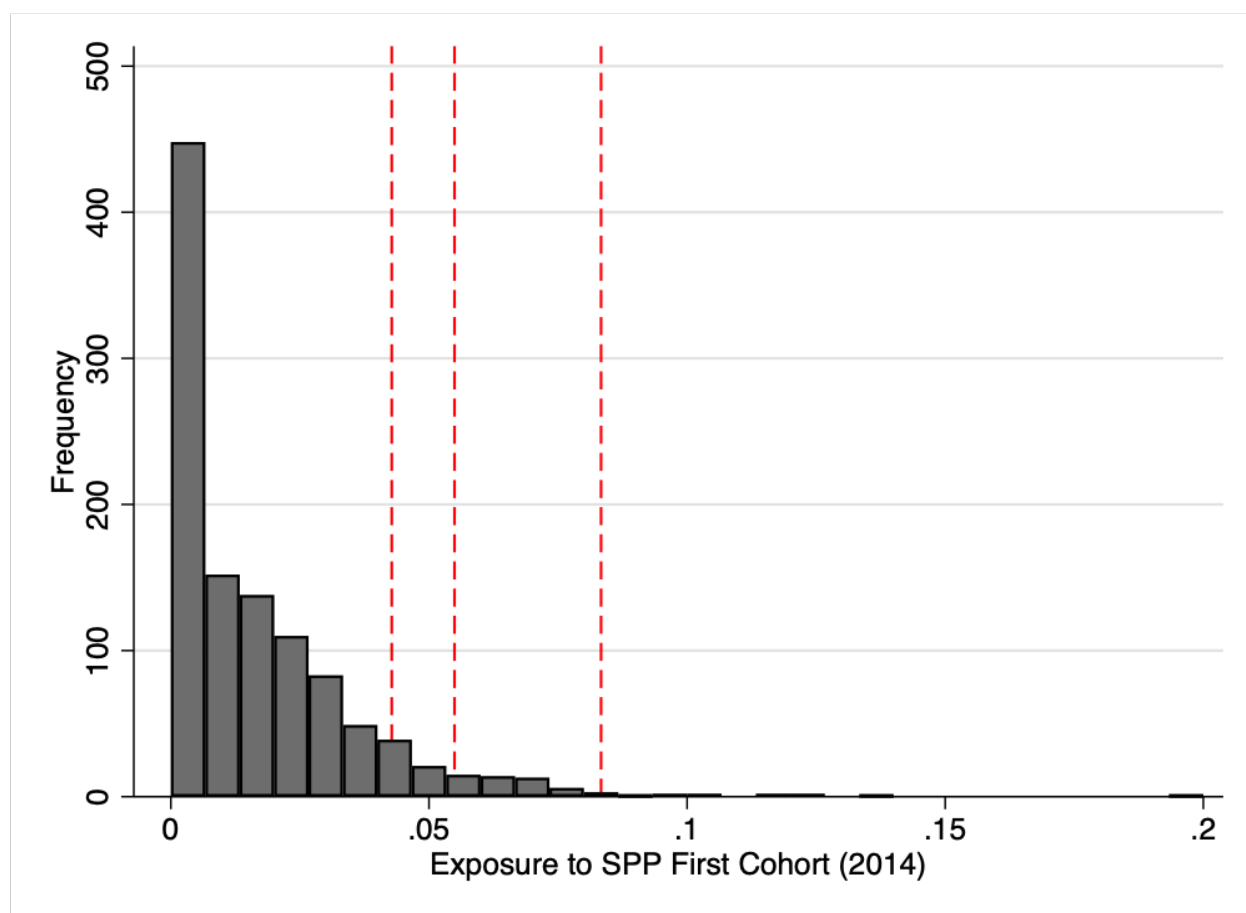
Notes — Reporting Fixed-Effects estimation of the effect (and confidence intervals, 90% and 95%) from 1 additional day exposition to maximum temperatures in the range relative to days with maximum temperatures between 21° and 23°C at the Municipality level during the calendar before the Saber 11 test on the scores achieved by students between 2014-II and 2019-I. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Regressions include controls of precipitation at the Municipality level for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Figure B9: Interaction effects of the past-year number of days exposure to maximum temperatures and exposure to *Ser Pilo Paga* on Saber 11 scores, 2014-II–2019-I.



Notes — Reporting Fixed-Effects estimation of the average interaction effect (and confidence intervals, 90% and 95%) from 1 additional day exposition to maximum temperatures in the range and exposure to *Ser Pilo Paga*, relative to days with maximum temperatures between 21° and 23°C at the Municipality level during the calendar before the Saber 11 test on the scores achieved by students between 2014-II and 2019-I. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Regressions include precipitation controls at the Municipality level for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. Estimations allow for trend heterogeneity by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Figure B10: Distribution of the exposure to *Ser Pilo Paga* first round at the Municipality level, 2014.



Notes — Information about SPP scholarship assignment was provided by the Colombian Ministry of Education (MEN). The graph displays the distribution of the exposure measure, as well as the 90th, 95th, and 99th percentiles in red.

Table B1: Correlation of student-level attributes and past-year weather variables: average maximum temperature and average precipitation, 2014-II–2019-I.

VARIABLES	(1) Age	(2) Female	(3) Primary ^(a)	(4) Secondary ^(a)	(5) Tertiary ^(a)	(6) Minority ^(b)
Avg. maximum temperature	0.006 (0.007)	-0.000 (0.002)	0.001 (0.003)	-0.000 (0.003)	-0.001 (0.002)	0.001 (0.004)
Mean precipitation	0.002 (0.002)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
OBSERVATIONS	2,202,869	2,202,869	2,202,869	2,202,869	2,202,869	2,202,869
R^2	0.119	0.077	0.090	0.064	0.263	0.557
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day), also for the calendar year before the exam date. (a) Variables capturing the educational attainment of the test-taker's mother, measured as whether the educational level was completed. (b) Minority is the exam-taker self-identification as part of an ethnic minority.

Table B2: Effect of the past-year average maximum temperature on Saber 11 scores, 2014-II–2019-I.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Math	Math	Math	Spanish	Spanish	Spanish	Total	Total	Total
Avg. maximum temperature	-0.575 (0.791)	-2.896** (1.158)	1.379* (0.766)	-0.403 (0.632)	-2.288*** (0.698)	0.864 (0.609)	-0.213 (0.656)	-2.516*** (0.720)	1.435** (0.665)
Mean precipitation	-0.161 (0.270)	-0.852** (0.385)	0.0797 (0.191)	-0.0971 (0.190)	-0.519 (0.345)	0.0627 (0.179)	-0.135 (0.189)	-0.631** (0.287)	-0.0201 (0.154)
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
R^2	0.391	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B3: Effect of the past-year average maximum temperature (alternate clustering) on Saber 11 scores, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature	-0.575 (0.787)	-2.896** (1.122)	1.379* (0.706)	-0.403 (0.690)	-2.288*** (0.600)	0.864 (0.559)	-0.213 (0.677)	-2.516*** (0.665)	1.435** (0.644)
Mean precipitation	-0.161 (0.250)	-0.852** (0.358)	0.0797 (0.212)	-0.0971 (0.175)	-0.519 (0.348)	0.0627 (0.203)	-0.135 (0.177)	-0.631** (0.274)	-0.0201 (0.176)
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
R^2	0.391	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (groups of weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. As a first stage, we cluster weather stations based on their spatial proximity (k-means clustering), then calculate standard errors at the stations-cluster level. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B4: Quality of weather-station data and the effect of the past-year average maximum temperature on Saber 11 scores, 2014-II–2019-I.

<i>Panel A: Dropping Municipalities matched to weather stations farther than 25 km</i>									
VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.103 (0.973)	-2.517* (1.489)	1.477 (0.928)	-0.434 (0.752)	-2.434*** (0.759)	0.977 (0.767)	-0.0112 (0.787)	-2.404*** (0.892)	1.439* (0.816)
Mean precipitation	-0.182 (0.375)	-0.915* (0.487)	-0.0141 (0.315)	-0.149 (0.280)	-0.900** (0.386)	0.229 (0.239)	-0.112 (0.275)	-0.828** (0.366)	-0.0234 (0.231)
OBSERVATIONS	1,619,952	1,169,658	450,293	1,619,952	1,169,658	450,293	1,619,952	1,169,658	450,293
R^2	0.385	0.376	0.342	0.325	0.300	0.291	0.434	0.420	0.378
<i>Panel B: Dropping weather stations with more than 25% of observations imputed</i>									
VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.178 (0.796)	-2.623** (0.999)	1.739** (0.819)	-0.0983 (0.710)	-2.368** (0.887)	1.049 (0.667)	0.0246 (0.685)	-2.553*** (0.682)	1.655** (0.716)
Mean precipitation	-0.183 (0.287)	-0.909** (0.428)	-0.0106 (0.199)	-0.0361 (0.191)	-0.411 (0.357)	0.0794 (0.189)	-0.0886 (0.193)	-0.542* (0.284)	-0.0287 (0.167)
OBSERVATIONS	1,963,025	1,353,948	609,075	1,963,025	1,353,948	609,075	1,963,025	1,353,948	609,075
R^2	0.395	0.387	0.342	0.338	0.316	0.288	0.446	0.434	0.377
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Age-squared control is demeaned, so the coefficient estimate of age is the partial correlation at the sample mean. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. Panel A drops municipalities matched to weather stations farther than 25 km. Panel B restricts the group of weather stations to those where imputations were used in less than 25% of the days.

Table B5: Effect of the past-year average maximum and exam date maximum temperatures on Saber 11 scores, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. Maximum Temperature	-0.571 (0.798)	-2.709** (1.143)	1.370* (0.770)	-0.306 (0.612)	-2.115*** (0.692)	0.925 (0.591)	-0.267 (0.662)	-2.585*** (0.740)	1.467** (0.666)
Maximum temperature (exam days)	0.00743 (0.172)	-0.362 (0.238)	0.0705 (0.199)	-0.154 (0.143)	-0.240 (0.184)	-0.101 (0.161)	0.0724 (0.141)	-0.00796 (0.190)	-0.0685 (0.155)
Mean precipitation	-0.163 (0.270)	-0.899** (0.390)	0.0793 (0.193)	-0.130 (0.186)	-0.565 (0.338)	0.0337 (0.178)	-0.137 (0.185)	-0.635** (0.285)	-0.0357 (0.154)
Precipitation (exam day)	0.00498 (0.0238)	0.0290 (0.0252)	0.00181 (0.0293)	-0.0327 (0.0205)	-0.0298 (0.0193)	-0.0464* (0.0254)	-0.00948 (0.0185)	0.0114 (0.0197)	-0.0228 (0.0217)
OBSERVATIONS	2,158,356	1,492,021	666,334	2,158,356	1,492,021	666,334	2,158,356	1,492,021	666,334
R^2	0.392	0.385	0.337	0.335	0.313	0.284	0.443	0.431	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date within each round. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B6: Effect of the exam-day maximum temperature on Saber 11 scores, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Maximum temperature (exam day)	-0.0165 (0.174)	-0.511** (0.239)	0.128 (0.203)	-0.165 (0.151)	-0.364 (0.221)	-0.0609 (0.168)	0.0643 (0.145)	-0.163 (0.214)	-0.000979 (0.158)
Precipitation (exam day)	0.00607 (0.0238)	0.0246 (0.0244)	-0.000876 (0.0293)	-0.0318 (0.0205)	-0.0338 (0.0227)	-0.0481* (0.0255)	-0.00860 (0.0185)	0.00637 (0.0193)	-0.0250 (0.0216)
OBSERVATIONS	2,158,356	1,492,021	666,334	2,158,356	1,492,021	666,334	2,158,356	1,492,021	666,334
R^2	0.392	0.385	0.337	0.335	0.313	0.284	0.443	0.431	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Maximum temperature is the highest recorded temperature (in °C) during the exam day within each round. Precipitation is the total precipitation (mm) during the exam day within each round. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B7: Effect of the past-year number of days exposure to maximum temperatures on Saber 11 scores, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
DD < 15	0.0519* (0.0301)	0.120*** (0.0241)	-0.0212 (0.0388)	0.0389* (0.0218)	0.0601** (0.0226)	0.0155 (0.0369)	0.0384* (0.0205)	0.0794*** (0.0178)	-0.00117 (0.0342)
DD 15 – 20	0.0157 (0.0160)	0.0447** (0.0219)	-0.0137 (0.0244)	0.00270 (0.0147)	0.0205 (0.0214)	-0.0105 (0.0156)	0.0145 (0.0127)	0.0420*** (0.0154)	-0.0117 (0.0173)
DD 25 – 30	0.00705 (0.0156)	-0.0251 (0.0166)	0.0289* (0.0161)	0.00283 (0.0113)	-0.0302** (0.0133)	0.0166 (0.0122)	0.00896 (0.0127)	-0.0193 (0.0142)	0.0244* (0.0133)
DD 30 – 35	0.00461 (0.0215)	-0.0548** (0.0264)	0.0542** (0.0243)	-0.00992 (0.0180)	-0.0659*** (0.0172)	0.0412** (0.0193)	0.00926 (0.0186)	-0.0477** (0.0201)	0.0558*** (0.0208)
DD ≥ 35	-0.0190 (0.0283)	-0.117** (0.0458)	0.0557* (0.0312)	-0.0140 (0.0236)	-0.0947*** (0.0311)	0.0370 (0.0247)	-0.00382 (0.0242)	-0.0987*** (0.0337)	0.0564** (0.0271)
Mean precipitation	-0.157 (0.267)	-0.866** (0.384)	0.0804 (0.183)	-0.0851 (0.190)	-0.525 (0.343)	0.0520 (0.180)	-0.132 (0.185)	-0.636** (0.279)	-0.0362 (0.151)
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
R^2	0.392	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. DD counts the number of days during the calendar year before the exam date for which the maximum temperature (in °C) was within the range. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B8: Descriptive statistics of the data from ELCA

	Mean	Median	S.D.	Mean	Median	S.D.
YOUTHS	<i>Rural (N=3,241)</i>			<i>Urban (N=3,162)</i>		
<i>Time-use variables (1 = One hour or more in a week)</i>						
Watch TV	0.56	1.00	0.50	0.63	1.00	0.48
Use computer	0.13	0.00	0.33	0.36	0.00	0.48
Spend time with parents	0.62	1.00	0.49	0.63	1.00	0.48
Play with siblings or friends	0.59	1.00	0.49	0.58	1.00	0.49
Help with household chores	0.43	0.00	0.49	0.37	0.00	0.48
Do exercise	0.36	0.00	0.48	0.45	0.00	0.50
Read for fun	0.23	0.00	0.42	0.20	0.00	0.40
Do homework	0.63	1.00	0.48	0.67	1.00	0.47
Play videogames	0.06	0.00	0.24	0.17	0.00	0.38
Participate in social groups	0.07	0.00	0.25	0.12	0.00	0.33
<i>Independent variables</i>						
Age	11.99	12.00	1.65	12.06	12.00	1.67
Female (Yes=1)	0.49	0.00	0.50	0.50	0.00	0.50
ADULTS	<i>Household heads (N=12,155)</i>			<i>Spouses (N=9,158)</i>		
<i>Time-use variables (% of reported time)</i>						
Work on household farms	23.17	12.12	26.10	8.09	0.00	15.14
Work on other households' farms	22.02	0.00	27.37	4.46	0.00	13.82
Commuting or looking for jobs	2.66	0.00	5.56	0.70	0.00	3.04
Domestic chores	12.28	0.00	19.43	47.91	50.00	21.69
Leisure and personal care	39.65	36.36	17.39	38.61	36.42	17.45
Other activities	0.23	0.00	2.43	0.23	0.00	2.16
<i>Independent variables</i>						
Age	48.79	48.00	12.59	44.12	43.00	12.88
Female (1=Yes)	0.19	0.00	0.40	0.94	1.00	0.23

Notes — Individual-level information was accessed remotely using the computational infrastructure of the Data Center of the Universidad de los Andes. Age is calculated as the exact number of years from the date of birth to the survey date. Female is a binary variable based on self-identification from the respondents. The time-use variables for the sample of youths are dummies equal to one if the respondent spent one hour or more in a typical day in the reference period in each of the activities mentioned in the row. For the adults, they correspond to the percentage of time spent in the same reference period in each of the activities.

Table B9: Effect of the past-year average maximum temperature on time use for youths (10 to 16 years of age), ELCA (2013 and 2016).

<i>Panel A: Rural</i>								
VARIABLES	(1) TV	(2) Computer	(3) Parents	(4) Play	(5) Chores	(6) Exercise	(7) Read	(8) Homework
Avg. maximum temperature	-0.171** (0.073)	0.100*** (0.026)	0.012 (0.039)	-0.015 (0.052)	0.090* (0.050)	0.173*** (0.032)	0.050* (0.028)	0.094** (0.043)
Mean precipitations	-0.012 (0.028)	0.021** (0.010)	0.014 (0.019)	0.002 (0.029)	0.003 (0.029)	0.059*** (0.015)	-0.002 (0.017)	0.015 (0.025)
OBSERVATIONS	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197
R^2	0.048	0.063	0.063	0.069	0.068	0.086	0.036	0.048
<i>Panel B: Urban</i>								
VARIABLES	(1) TV	(2) Computer	(3) Parents	(4) Play	(5) Chores	(6) Exercise	(7) Read	(8) Homework
Avg. maximum temperature	0.033 (0.044)	-0.049 (0.053)	0.012 (0.061)	0.013 (0.037)	0.013 (0.051)	0.074 (0.054)	-0.036 (0.039)	-0.004 (0.054)
Mean precipitations	-0.011 (0.025)	0.020 (0.022)	0.025 (0.031)	0.032 (0.023)	-0.011 (0.026)	0.050* (0.030)	-0.018 (0.021)	-0.013 (0.028)
OBSERVATIONS	3,068	3,068	3,068	3,068	3,068	3,068	3,068	3,068
R^2	0.066	0.100	0.059	0.074	0.083	0.114	0.063	0.070
MONTH-BY-YEAR FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MUNICIPALITY FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes — Cluster (Municipality level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The dependent variables are dummies equal to one if the respondent spent one hour or more in each of the activities mentioned in the column header. Avg. maximum temperature captures the average of the daily maximum temperature (in °C) during the last year relative to the week of the survey. Mean precipitation is the average daily precipitation (mm/day) also for the same reference period. Attribute controls added to the regression include age dummies and a dummy variable for whether the individual is female.

Table B10: Effect of the past-year average maximum temperature on time use for household heads and spouses, ELCA (2010, 2013, and 2016).

<i>Panel A: Household Heads</i>					
VARIABLES	(1) Own-farm	(2) Off-farm	(3) Commuting	(4) Chores	(5) Leisure
Avg. maximum temperature	-4.579* (2.337)	2.376 (3.027)	-0.331 (0.546)	0.334 (1.001)	2.054 (1.430)
Mean precipitations	0.653 (0.574)	-0.376 (0.867)	-0.041 (0.108)	-0.246 (0.360)	-0.038 (0.397)
OBSERVATIONS	12,084	12,084	12,084	12,084	12,084
R^2	0.128	0.195	0.065	0.575	0.133

<i>Panel B: Spouses</i>					
VARIABLES	(1) Own-farm	(2) Off-farm	(3) Commuting	(4) Chores	(5) Leisure
Avg. maximum temperature	0.436 (1.494)	-1.277 (1.210)	0.017 (0.138)	-0.277 (1.285)	1.064 (1.766)
Mean precipitations	-0.177 (0.450)	0.185 (0.211)	-0.021 (0.054)	-0.411 (0.498)	0.371 (0.678)
OBSERVATIONS	9,091	9,091	9,091	9,091	9,091
R-squared	0.171	0.135	0.067	0.262	0.118
MONTH-BY-YEAR FE	Yes	Yes	Yes	Yes	Yes
MUNICIPALITY FE	Yes	Yes	Yes	Yes	Yes

Notes — Cluster (Municipality level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The dependent variables are the percentages of time spent on each activity mentioned in the column header. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the last year relative to the survey week. Mean precipitation is the average daily precipitation (mm/day) for the same reference period. Attribute controls added to the regression include age and a dummy variable for whether the individual is female.

Table B11: Effect of the past-year average maximum temperature (per quarter) on Saber 11 scores, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
<i>Panel A: Only including AMT from Q1 of previous year</i>									
Avg. maximum temperature Q_1	0.362 (0.446)	-0.709 (0.851)	1.461*** (0.474)	0.110 (0.428)	-1.351** (0.547)	1.062** (0.422)	0.487 (0.415)	-1.044* (0.608)	1.472*** (0.417)
R^2	0.391	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
<i>Panel B: Only including AMT from Q2 of previous year</i>									
Avg. maximum temperature Q_2	0.0398 (0.674)	-1.571 (1.047)	1.460** (0.646)	0.288 (0.480)	-1.188 (0.712)	1.071** (0.459)	0.352 (0.539)	-1.178 (0.764)	1.400*** (0.519)
R^2	0.391	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
<i>Panel C: Only including AMT from Q3 of previous year</i>									
Avg. maximum temperature Q_3	-1.146*** (0.410)	-1.612** (0.647)	-0.195 (0.512)	-0.635* (0.325)	-1.108** (0.417)	-0.244 (0.373)	-0.787** (0.318)	-1.261*** (0.426)	-0.110 (0.410)
R^2	0.392	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
<i>Panel D: Only including AMT from Q4 of previous year</i>									
Avg. maximum temperature Q_4	-0.381 (0.608)	-3.019*** (0.767)	0.335 (0.735)	-0.662 (0.502)	-1.560** (0.664)	-0.0161 (0.576)	-0.471 (0.539)	-2.431*** (0.619)	0.437 (0.584)
R^2	0.391	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
REF. QUARTER PRECIPITATION	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. AMT Q(K) captures the average daily maximum temperature (in °C) during the K-th quarter of the calendar year before the Saber 11 exam. Each panel reports coefficients from a regression that includes only the AMT for the K-th quarter of reference as the temperature measure. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B12: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.446 (0.731)	-2.306** (0.936)	1.454* (0.778)	-0.345 (0.625)	-2.142*** (0.729)	0.917 (0.622)	-0.145 (0.628)	-2.293*** (0.585)	1.486** (0.683)
Exposure to SPP × Post	3.484*** (1.103)	6.056*** (1.786)	2.438** (1.140)	0.0940 (0.645)	0.573 (1.170)	0.114 (0.714)	1.761** (0.788)	3.152** (1.250)	1.013 (0.869)
AMT × Exposure to SPP × Post	-0.00485 (0.0416)	-0.0958* (0.0523)	-0.0163 (0.0415)	-0.0195 (0.0242)	0.0134 (0.0397)	-0.0305 (0.0245)	-0.00708 (0.0284)	-0.0297 (0.0398)	-0.0176 (0.0294)
Mean precipitation	0.122 (0.258)	-0.297 (0.413)	0.122 (0.206)	-0.139 (0.197)	-0.552 (0.404)	0.0925 (0.168)	0.0146 (0.180)	-0.266 (0.287)	-0.00126 (0.156)
Mean precipitation × Exposure to SPP × Post	-0.156** (0.0734)	-0.230 (0.148)	-0.0374 (0.0724)	0.0276 (0.0424)	0.0751 (0.0981)	-0.0267 (0.0525)	-0.0876 (0.0532)	-0.152 (0.105)	-0.0159 (0.0557)
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
R^2	0.392	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS	No	No	No	No	No	No	No	No	No
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average of the daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B13: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, Other subjects, 2014-II–2019-I.

VARIABLES	(1) Nat-Sci	(2) Nat-Sci	(3) Nat-Sci	(4) Soc-Sci	(5) Soc-Sci	(6) Soc-Sci	(7) English SL	(8) English SL	(9) English SL
Avg. maximum temperature (AMT)	-0.163 (0.603)	-2.092*** (0.567)	1.708** (0.738)	0.0142 (0.644)	-2.297*** (0.630)	1.566** (0.753)	0.158 (0.905)	-2.159** (0.960)	2.276** (1.079)
Exposure to SPP × Post	-0.327 (0.746)	-0.244 (1.538)	-0.526 (0.944)	2.874*** (1.017)	6.857*** (1.723)	1.147 (0.955)	1.977** (0.989)	2.534* (1.270)	2.227** (1.110)
AMT × Exposure to SPP × Post	0.0292 (0.0271)	0.0462 (0.0519)	0.0215 (0.0327)	-0.0499 (0.0349)	-0.116** (0.0530)	-0.0323 (0.0315)	-0.00242 (0.0397)	0.00583 (0.0519)	-0.0467 (0.0404)
Mean precipitation	0.0677 (0.172)	-0.390 (0.281)	0.0607 (0.196)	-0.0488 (0.200)	0.156 (0.368)	-0.204 (0.175)	-0.141 (0.255)	-0.0891 (0.592)	-0.196 (0.312)
Mean precipitation × Exposure to SPP × Post	-0.0449 (0.0622)	-0.0805 (0.143)	-0.0381 (0.0655)	-0.104 (0.0655)	-0.368*** (0.120)	0.000701 (0.0632)	0.0256 (0.0613)	-0.276 (0.167)	0.118** (0.0593)
OBSERVATIONS	2,175,278	1,506,211	669,066	2,175,278	1,506,211	669,066	2,175,275	1,506,210	669,064
R^2	0.379	0.373	0.322	0.321	0.312	0.260	0.461	0.458	0.308
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject, namely Natural Sciences, Social Sciences, or English as a Second Language. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Table B14: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga* under specific mother's educational attainment levels, 2014-II–2019-I.

<i>Panel A: Overall</i>						
VARIABLES	Math		Spanish		Total Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. Maximum Temperature	0.556 (0.729)	-1.429 (0.874)	0.117 (0.633)	-1.080 (0.740)	0.711 (0.602)	-1.135 (0.727)
Exposure to SPP $\times$ Post	3.330*** (0.923)	2.729** (1.182)	0.284 (0.569)	-0.239 (1.016)	1.833** (0.711)	0.879 (0.904)
AMT $\times$ Exposure to SPP $\times$ Post	-0.0387 (0.0327)	-0.00731 (0.0406)	-0.0148 (0.0193)	0.00951 (0.0378)	-0.0334 (0.0239)	0.0105 (0.0323)
MOTHER'S EDUCATION	Low	High	Low	High	Low	High
OBSERVATIONS	965,202	1,209,602	965,202	1,209,602	965,202	1,209,602
R^2	0.281	0.388	0.236	0.313	0.309	0.432
<i>Panel B: Urban</i>						
VARIABLES	Math		Spanish		Total Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. Maximum Temperature	-1.570** (0.756)	-2.610* (1.337)	-1.170 (1.057)	-2.463*** (0.938)	-0.917 (0.724)	-2.855*** (0.878)
Exposure to SPP $\times$ Post	7.834*** (2.008)	4.233** (2.000)	2.689* (1.457)	-1.549 (1.602)	5.713*** (1.474)	0.969 (1.671)
AMT $\times$ Exposure to SPP $\times$ Post	-0.158*** (0.0545)	-0.0602 (0.0604)	-0.0408 (0.0427)	0.0749 (0.0550)	-0.108** (0.0427)	0.0251 (0.0520)
MOTHER'S EDUCATION	Low	High	Low	High	Low	High
OBSERVATIONS	550,045	955,949	550,045	955,949	550,045	955,949
R^2	0.256	0.386	0.205	0.301	0.278	0.427
<i>Panel C: Rural</i>						
VARIABLES	Math		Spanish		Total Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. Maximum Temperature	2.081** (0.797)	0.554 (1.085)	1.208* (0.724)	0.612 (0.948)	1.857*** (0.692)	0.988 (0.930)
Exposure to SPP $\times$ Post	2.278** (1.100)	1.823 (1.650)	-0.254 (0.666)	0.108 (1.173)	0.856 (0.751)	0.417 (1.227)
AMT $\times$ Exposure to SPP $\times$ Post	-0.0303 (0.0421)	0.00326 (0.0553)	-0.0192 (0.0244)	-0.0265 (0.0409)	-0.0259 (0.0271)	0.00338 (0.0423)
MOTHER'S EDUCATION	Low	High	Low	High	Low	High
OBSERVATIONS	415,155	253,649	415,155	253,649	415,155	253,649
R^2	0.290	0.343	0.234	0.281	0.314	0.373
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes
ADDITIONAL CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is 100y, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Table B15: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga* under specific House strata levels, 2014-II–2019-I.

<i>Panel A: Overall</i>						
VARIABLES	Math		Spanish		Total Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. Maximum Temperature (AMT)	-0.143 (0.697)	-1.909 (1.302)	-0.167 (0.562)	-3.067*** (0.730)	0.0961 (0.602)	-2.371*** (0.870)
Exposure to SPP × Post	3.261*** (1.045)	0.762 (1.362)	0.433 (0.617)	-0.974 (1.242)	1.669** (0.808)	-0.415 (1.019)
AMT × Exposure to SPP × Post	-0.0201 (0.0367)	0.00275 (0.0444)	-0.0187 (0.0231)	0.0721* (0.0385)	-0.0175 (0.0280)	0.0424 (0.0329)
HOUSE STRATA	Low	High	Low	High	Low	High
OBSERVATIONS	1,584,939	589,398	1,584,939	589,398	1,584,939	589,398
R^2	0.308	0.444	0.265	0.344	0.341	0.489
<i>Panel B: Urban</i>						
VARIABLES	Math		Spanish		Total Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. Maximum Temperature (AMT)	-2.421*** (0.612)	-1.253 (1.860)	-1.911*** (0.698)	-2.195** (0.877)	-2.159*** (0.504)	-1.841* (1.072)
Exposure to SPP × Post	8.400*** (1.407)	-0.106 (2.211)	2.035* (1.019)	-3.035** (1.277)	5.206*** (1.050)	-1.649 (1.540)
AMT × Exposure to SPP × Post	-0.165*** (0.0388)	0.0278 (0.0658)	-0.0297 (0.0407)	0.152*** (0.0353)	-0.0940** (0.0356)	0.106* (0.0539)
HOUSE STRATA	Low	High	Low	High	Low	High
OBSERVATIONS	974,079	531,801	974,079	531,801	974,079	531,801
R^2	0.289	0.421	0.238	0.317	0.318	0.461
<i>Panel C: Rural</i>						
VARIABLES	Math		Spanish		Total Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Avg. Maximum Temperature (AMT)	1.445* (0.785)	-1.382 (1.527)	1.042* (0.628)	-2.486* (1.421)	1.537** (0.689)	-1.181 (1.305)
Exposure to SPP × Post	1.929* (1.054)	2.091 (3.111)	-0.0957 (0.677)	0.743 (2.416)	0.573 (0.790)	1.723 (2.327)
AMT × Exposure to SPP × Post	-0.00303 (0.0384)	-0.0773 (0.113)	-0.0235 (0.0237)	-0.0466 (0.0898)	-0.00576 (0.0272)	-0.0887 (0.0798)
HOUSE STRATA	Low	High	Low	High	Low	High
OBSERVATIONS	610,858	57,591	610,858	57,591	610,858	57,591
R^2	0.314	0.521	0.265	0.435	0.342	0.571
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes
ADDITIONAL CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is 100 y , where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel). The Low-stratum level combines strata 1 and 2, while strata 3-through-6 are set as the High-stratum level.

Table B16: Heterogeneous effect of past-year average maximum temperature on Saber 11 scores by education of the mother (reporting education-level dummies), 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.308 (0.782)	-2.563** (1.143)	1.592** (0.766)	-0.145 (0.622)	-1.946*** (0.701)	1.050* (0.611)	0.0722 (0.647)	-2.138*** (0.714)	1.640** (0.665)
AMT × Mother: Complete primary	-0.154*** (0.0542)	-0.166*** (0.0596)	-0.100* (0.0563)	-0.143*** (0.0455)	-0.183*** (0.0477)	-0.0701 (0.0520)	-0.166*** (0.0518)	-0.200*** (0.0570)	-0.0971** (0.0478)
AMT × Mother: Complete secondary	-0.392*** (0.0604)	-0.350*** (0.0594)	-0.498*** (0.0978)	-0.384*** (0.0529)	-0.361*** (0.0551)	-0.460*** (0.0885)	-0.412*** (0.0540)	-0.395*** (0.0611)	-0.471*** (0.0878)
AMT × Mother: Complete tertiary	-0.526*** (0.143)	-0.495*** (0.130)	-0.718*** (0.139)	-0.512*** (0.102)	-0.499*** (0.0737)	-0.671*** (0.124)	-0.575*** (0.117)	-0.560*** (0.109)	-0.730*** (0.125)
Mother: Complete primary	9.794*** (1.654)	10.66*** (1.716)	7.375*** (1.659)	8.503*** (1.398)	9.757*** (1.428)	5.936*** (1.535)	8.787*** (1.624)	10.09*** (1.748)	6.257*** (1.418)
Mother: Complete secondary	24.33*** (1.653)	22.66*** (1.606)	28.40*** (2.707)	23.81*** (1.460)	22.61*** (1.480)	26.87*** (2.543)	23.89*** (1.476)	23.03*** (1.665)	26.35*** (2.480)
Mother: Complete tertiary	45.14*** (4.241)	42.96*** (3.498)	54.04*** (3.732)	43.89*** (3.017)	42.17*** (1.861)	51.72*** (3.342)	46.22*** (3.450)	44.69*** (2.903)	53.51*** (3.367)
Mean precipitation	-0.161 (0.269)	-0.855** (0.385)	0.0800 (0.191)	-0.0977 (0.190)	-0.521 (0.345)	0.0628 (0.179)	-0.135 (0.188)	-0.634** (0.286)	-0.0200 (0.154)
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
R ²	0.392	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average of the daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B17: Heterogeneous effect of past-year average maximum temperature on Saber 11 scores by house strata (reporting strata-level dummies), 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.183 (0.766)	-2.311** (1.146)	1.591** (0.760)	-0.0721 (0.613)	-1.813** (0.691)	1.045* (0.592)	0.149 (0.632)	-1.964*** (0.711)	1.617** (0.651)
AMT × House Strata: Level 2	-0.564*** (0.0571)	-0.554*** (0.0650)	-0.533*** (0.0826)	-0.461*** (0.0571)	-0.441*** (0.0651)	-0.439*** (0.0761)	-0.504*** (0.0598)	-0.512*** (0.0695)	-0.448*** (0.0735)
AMT × House Strata: Level 3	-0.878*** (0.119)	-0.786*** (0.145)	-0.986*** (0.182)	-0.794*** (0.110)	-0.669*** (0.136)	-1.046*** (0.171)	-0.843*** (0.117)	-0.755*** (0.145)	-0.995*** (0.169)
AMT × House Strata: Level 4	-1.392*** (0.200)	-1.165*** (0.203)	-1.559*** (0.347)	-1.165*** (0.163)	-0.913*** (0.157)	-1.454*** (0.399)	-1.339*** (0.180)	-1.124*** (0.178)	-1.442*** (0.351)
AMT × House Strata: Level 5	-1.374*** (0.249)	-1.185*** (0.275)	-0.619** (0.312)	-1.211*** (0.184)	-0.941*** (0.181)	-1.036*** (0.295)	-1.347*** (0.224)	-1.134*** (0.240)	-0.796*** (0.292)
AMT × House Strata: Level 6	-1.619*** (0.279)	-1.376*** (0.263)	-0.990** (0.477)	-1.338*** (0.209)	-1.108*** (0.208)	-0.365 (0.370)	-1.550*** (0.244)	-1.324*** (0.231)	-0.627* (0.327)
House Strata: Level 2	15.15*** (1.590)	15.78*** (1.795)	13.83*** (2.240)	14.40*** (1.647)	14.87*** (1.832)	12.95*** (2.173)	14.49*** (1.704)	15.85*** (1.896)	12.10*** (2.037)
House Strata: Level 3	20.01*** (2.949)	19.85*** (3.559)	17.22*** (4.462)	22.68*** (2.779)	21.47*** (3.335)	24.75*** (4.403)	21.85*** (2.898)	21.90*** (3.516)	20.57*** (4.233)
House Strata: Level 4	28.24*** (4.830)	26.59*** (4.889)	12.29 (10.84)	29.09*** (3.982)	26.50*** (3.881)	18.00 (12.49)	30.81*** (4.421)	29.64*** (4.355)	13.18 (11.18)
House Strata: Level 5	23.65*** (6.286)	23.71*** (6.403)	-18.00** (8.730)	27.02*** (4.680)	24.76*** (4.689)	1.163 (8.318)	27.31*** (5.679)	27.07*** (5.812)	-10.36 (8.228)
House Strata: Level 6	26.52*** (7.803)	25.54*** (7.113)	-8.810 (13.86)	26.51*** (5.593)	25.66*** (5.680)	-17.97 (10.98)	28.91*** (6.760)	28.86*** (6.250)	-16.81* (9.802)
Mean precipitation	-0.180 (0.263)	-0.862** (0.380)	0.0635 (0.190)	-0.114 (0.184)	-0.527 (0.337)	0.0477 (0.179)	-0.153 (0.181)	-0.641** (0.276)	-0.0347 (0.153)
OBSERVATIONS	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150	2,175,363	1,506,211	669,150
R^2	0.392	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.372
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities.

Table B18: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, excluding Municipalities with top 1% of exposure, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.509 (0.712)	-2.267*** (0.843)	1.436* (0.781)	-0.563 (0.582)	-2.033*** (0.727)	0.886 (0.629)	-0.268 (0.605)	-2.182*** (0.546)	1.476** (0.689)
Exposure to SPP $\times$ Post	2.873** (1.147)	6.127*** (1.812)	1.748 (1.370)	-0.110 (0.696)	0.376 (1.102)	-0.516 (0.787)	1.327 (0.811)	3.216** (1.284)	0.455 (0.978)
AMT $\times$ Exposure to SPP $\times$ Post	-0.00435 (0.0397)	-0.108** (0.0504)	0.00207 (0.0468)	-0.000992 (0.0253)	0.0231 (0.0379)	-0.0125 (0.0272)	-0.00390 (0.0281)	-0.0356 (0.0393)	-0.00454 (0.0325)
Mean precipitation	0.0018 (0.235)	-0.354 (0.381)	0.123 (0.207)	-0.0374 (0.203)	-0.536 (0.407)	0.0910 (0.168)	-0.0244 (0.172)	-0.268 (0.277)	-0.00933 (0.162)
Mean precipitation $\times$ Exposure to SPP $\times$ Post	-0.0838 (0.0782)	-0.235 (0.148)	-0.0108 (0.0842)	-0.00678 (0.0481)	0.0525 (0.0978)	-0.0245 (0.0636)	-0.0452 (0.0594)	-0.166 (0.105)	0.00480 (0.0666)
OBSERVATIONS	2,171,492	1,506,211	665,280	2,171,492	1,506,211	665,280	2,171,492	1,506,211	665,280
R^2	0.392	0.384	0.336	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Table B19: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, excluding Municipalities with top 5% of exposure, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.621 (0.727)	-2.359*** (0.865)	1.325 (0.811)	-0.581 (0.600)	-2.167*** (0.730)	0.960 (0.650)	-0.322 (0.617)	-2.270*** (0.552)	1.453** (0.705)
Exposure to SPP $\times$ Post	2.547* (1.442)	5.727*** (1.952)	1.194 (1.910)	-0.600 (0.945)	-0.291 (1.204)	-0.782 (1.076)	0.957 (1.026)	2.915** (1.402)	-0.112 (1.321)
AMT $\times$ Exposure to SPP $\times$ Post	0.0287 (0.0479)	-0.0974* (0.0541)	0.0507 (0.0698)	0.0147 (0.0340)	0.0411 (0.0397)	-0.00571 (0.0385)	0.0236 (0.0351)	-0.0267 (0.0420)	0.0326 (0.0488)
Mean precipitation	0.0495 (0.234)	-0.345 (0.386)	0.187 (0.211)	-0.0436 (0.205)	-0.537 (0.411)	0.0901 (0.168)	0.00847 (0.169)	-0.253 (0.279)	0.0294 (0.162)
Mean precipitation $\times$ Exposure to SPP $\times$ Post	-0.114 (0.0859)	-0.240 (0.149)	-0.0544 (0.0957)	-8.94e-05 (0.0540)	0.0447 (0.0941)	-0.0271 (0.0732)	-0.0634 (0.0638)	-0.176* (0.103)	-0.0217 (0.0746)
OBSERVATIONS	2,147,373	1,504,785	642,587	2,147,373	1,504,785	642,587	2,147,373	1,504,785	642,587
R^2	0.392	0.384	0.331	0.335	0.312	0.280	0.443	0.430	0.366
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Table B20: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, excluding Municipalities with top 10% of exposure, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.548 (0.749)	-2.084** (0.914)	1.367* (0.820)	-0.520 (0.619)	-1.878** (0.793)	0.936 (0.659)	-0.237 (0.639)	-1.930*** (0.596)	1.414* (0.716)
Exposure to SPP $\times$ Post	3.700** (1.693)	7.331*** (1.581)	3.037 (2.400)	-0.242 (1.116)	0.158 (1.408)	-0.0889 (1.399)	1.634 (1.174)	3.939*** (1.306)	0.818 (1.619)
AMT $\times$ Exposure to SPP $\times$ Post	0.0228 (0.0562)	-0.136*** (0.0483)	0.0166 (0.0850)	0.0121 (0.0404)	0.00872 (0.0497)	0.00283 (0.0468)	0.0244 (0.0415)	-0.0482 (0.0410)	0.0272 (0.0589)
Mean precipitation	0.148 (0.240)	-0.257 (0.411)	0.277 (0.232)	-0.0576 (0.204)	-0.665 (0.422)	0.161 (0.164)	0.0629 (0.167)	-0.202 (0.302)	0.0969 (0.167)
Mean precipitation $\times$ Exposure to SPP $\times$ Post	-0.188* (0.107)	-0.340** (0.144)	-0.107 (0.147)	-0.0142 (0.0653)	0.0449 (0.110)	-0.114 (0.102)	-0.113 (0.0793)	-0.242** (0.109)	-0.0812 (0.112)
OBSERVATIONS	2,099,799	1,480,860	618,938	2,099,799	1,480,860	618,938	2,099,799	1,480,860	618,938
R^2	0.394	0.385	0.331	0.337	0.313	0.280	0.445	0.431	0.366
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Table B21: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, excluding Municipalities with no exposure, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.514 (0.731)	-2.321*** (0.811)	1.730** (0.821)	-0.664 (0.606)	-2.042*** (0.741)	1.058 (0.671)	-0.344 (0.615)	-2.148*** (0.545)	1.641** (0.730)
Exposure to SPP $\times$ Post	3.857*** (0.928)	6.124*** (1.809)	2.936** (1.189)	0.437 (0.636)	0.427 (1.105)	0.289 (0.717)	2.116*** (0.660)	3.289** (1.286)	1.406* (0.841)
AMT $\times$ Exposure to SPP $\times$ Post	-0.0311 (0.0338)	-0.113** (0.0507)	-0.0273 (0.0410)	-0.0126 (0.0239)	0.0194 (0.0390)	-0.0325 (0.0256)	-0.0230 (0.0242)	-0.0410 (0.0393)	-0.0271 (0.0284)
Mean precipitation	0.0702 (0.299)	-0.357 (0.384)	0.232 (0.285)	-0.0212 (0.263)	-0.540 (0.404)	0.189 (0.239)	0.0189 (0.222)	-0.264 (0.274)	0.00609 (0.224)
Mean precipitation $\times$ Exposure to SPP $\times$ Post	-0.121* (0.0701)	-0.213 (0.149)	-0.0563 (0.0737)	-0.0293 (0.0469)	0.0659 (0.0954)	-0.0525 (0.0561)	-0.0783 (0.0528)	-0.153 (0.103)	-0.0317 (0.0585)
OBSERVATIONS	2,047,351	1,499,740	547,610	2,047,351	1,499,740	547,610	2,047,351	1,499,740	547,610
R^2	0.385	0.383	0.332	0.325	0.311	0.279	0.434	0.429	0.364
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).

Table B22: Heterogeneous effect of the past-year average maximum temperature on Saber 11 scores by exposure to *Ser Pilo Paga*, with SPP at the extensive margin, 2014-II–2019-I.

VARIABLES	(1) Math	(2) Math	(3) Math	(4) Spanish	(5) Spanish	(6) Spanish	(7) Total	(8) Total	(9) Total
Avg. maximum temperature (AMT)	-0.285 (0.716)	-2.520** (0.956)	1.831** (0.804)	-0.514 (0.584)	-2.281*** (0.705)	0.955 (0.641)	-0.171 (0.607)	-2.381*** (0.601)	1.655** (0.705)
Exposed to SPP (1=Yes) $\times$ Post	15.36*** (3.722)	22.29*** (7.968)	15.60*** (4.733)	0.407 (2.614)	3.168 (6.392)	2.104 (3.046)	6.578** (2.725)	12.21** (5.814)	6.601** (3.222)
AMT $\times$ Exposed to SPP (1=Yes) $\times$ Post	-0.290** (0.119)	-0.287* (0.170)	-0.420** (0.161)	-0.0431 (0.0860)	0.0604 (0.100)	-0.118 (0.0986)	-0.142 (0.0878)	-0.0959 (0.117)	-0.216* (0.112)
Mean precipitation	0.149 (0.275)	-0.239 (0.431)	0.213 (0.256)	0.0227 (0.187)	-0.425 (0.403)	0.142 (0.168)	0.0938 (0.177)	-0.170 (0.306)	0.0541 (0.178)
Mean precipitation $\times$ Exposed to SPP (1=Yes) $\times$ Post	-0.456*** (0.163)	-0.610*** (0.129)	-0.203 (0.272)	-0.0849 (0.0999)	-0.111 (0.113)	-0.155 (0.169)	-0.287** (0.140)	-0.447*** (0.110)	-0.118 (0.191)
OBSERVATIONS	2,175,278	1,506,211	669,066	2,175,278	1,506,211	669,150	2,175,363	1,506,211	669,150
R^2	0.392	0.384	0.337	0.334	0.312	0.284	0.442	0.430	0.371
SCHOOL FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TIME-STATE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ATTRIBUTE CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HETEROGENEOUS TRENDS ^(a)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SAMPLE	All	Urban	Rural	All	Urban	Rural	All	Urban	Rural

Notes — Cluster (weather station level) robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The response variable is $100y$, where y is the standardized score of the specific subject (Math, Spanish) or total test score. Avg. maximum temperature captures the average daily maximum temperature (in °C) during the calendar year before the exam within each round. Mean precipitation is the average daily precipitation (mm/day) for the calendar year before the exam date. Attribute controls added to the regression include age (and its square), dummy variables for the maximum educational attainment of the mother, dwelling stratum classification, whether the test taker is female, self-identification as part of an ethnic minority, and whether the exam taker lives and studies in different Municipalities. (a) Trend heterogeneity is allowed by adding interactions between period (year-semester) dummies and quartiles of Municipality-level variables (namely Total High-School Students, Total Number of School Teachers, and Total Number of School Administrative Personnel).