# Appendix A

# Tables

| | *All U.S.-Born* | | | | | | *English-speaking U.S.-born* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **All observations** | | | **2+ siblings per year** | | | **All observations** | | | **2+ siblings per year** | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| *Variable* | *Obs.* | *Mean* | *Std. Dev.* | *Obs.* | *Mean* | *Std. Dev.* | *Obs.* | *Mean* | *Std. Dev.* | *Obs.* | *Mean* | *Std. Dev.* |
| ***Outcomes:*** | | | | | | | | | | | | |
| Math Standardized Score | 7,490,949 | 0.044 | 0.971 | 1,662,403 | 0.043 | 0.986 | 5,924,346 | 0.071 | 0.969 | 1,347,286 | 0.050 | 0.993 |
| Reading Standardized Score | 8,010,198 | 0.052 | 0.968 | 1,789,450 | 0.016 | 0.983 | 6,341,333 | 0.096 | 0.967 | 1,450,138 | 0.034 | 0.992 |
| Incidents (ever involved in) | 8,010,198 | 0.143 | 0.350 | 1,789,450 | 0.162 | 0.368 | 6,341,333 | 0.149 | 0.356 | 1,450,138 | 0.169 | 0.375 |
| ***Explanatory variable of interest:*** | | | | | | | | | | | | |
| Foreign-born Exposure | 7,490,949 | 0.079 | 0.070 | 1,662,403 | 0.074 | 0.067 | 5,924,346 | 0.065 | 0.057 | 1,347,286 | 0.060 | 0.052 |
| ***Individual or family characteristics:*** | | | | | | | | | | | | |
| Female (Indicator) | 7,490,949 | 0.495 | 0.500 | 1,662,403 | 0.498 | 0.500 | 5,924,346 | 0.495 | 0.500 | 1,347,286 | 0.498 | 0.500 |
| Age in Months | 7,490,949 | 131.9 | 23.6 | 1,662,403 | 135.4 | 23.2 | 5,924,346 | 132.1 | 23.6 | 1,347,286 | 135.5 | 23.2 |
| Special Education (Indicator) | 7,490,949 | 0.138 | 0.345 | 1,662,403 | 0.145 | 0.352 | 5,924,346 | 0.139 | 0.346 | 1,347,286 | 0.147 | 0.354 |
| Birth Order | 7,490,949 | 1.985 | 1.142 | 1,662,403 | 2.201 | 1.179 | 5,924,346 | 1.973 | 1.123 | 1,347,286 | 2.199 | 1.170 |
| White Student (Indicator) | 7,490,949 | 0.493 | 0.500 | 1,662,403 | 0.509 | 0.500 | 5,924,346 | 0.601 | 0.490 | 1,347,286 | 0.603 | 0.489 |
| Black (Indicator) | 7,490,949 | 0.225 | 0.418 | 1,662,403 | 0.271 | 0.444 | 5,924,346 | 0.255 | 0.436 | 1,347,286 | 0.297 | 0.457 |
| Hispanic (Indicator) | 7,490,949 | 0.217 | 0.412 | 1,662,403 | 0.165 | 0.371 | 5,924,346 | 0.082 | 0.274 | 1,347,286 | 0.052 | 0.223 |
| Asian (Indicator) | 7,490,949 | 0.020 | 0.141 | 1,662,403 | 0.014 | 0.116 | 5,924,346 | 0.013 | 0.112 | 1,347,286 | 0.007 | 0.082 |
| Other (Indicator) | 7,490,949 | 0.045 | 0.207 | 1,662,403 | 0.041 | 0.198 | 5,924,346 | 0.049 | 0.217 | 1,347,286 | 0.042 | 0.200 |
| Free/Reduced-Price Lunch (Indicator) | 7,490,186 | 0.536 | 0.499 | 1,662,403 | 0.579 | 0.494 | 5,923,759 | 0.486 | 0.500 | 1,347,286 | 0.546 | 0.498 |
| Limited English Proficiency (Indicator) | 7,490,949 | 0.038 | 0.190 | 1,662,403 | 0.019 | 0.136 | 5,924,346 | 0.004 | 0.066 | 1,347,286 | 0.002 | 0.043 |
| Mother High School DO (Indicator) | 5,219,361 | 0.224 | 0.417 | 1,658,296 | 0.219 | 0.414 | 4,164,506 | 0.194 | 0.395 | 1,344,541 | 0.200 | 0.400 |
| Mother High School Graduate (Indicator) | 5,219,361 | 0.376 | 0.484 | 1,658,296 | 0.365 | 0.481 | 4,164,506 | 0.381 | 0.486 | 1,344,541 | 0.367 | 0.482 |
| Mother Some College (Indicator) | 5,219,361 | 0.234 | 0.423 | 1,658,296 | 0.232 | 0.422 | 4,164,506 | 0.249 | 0.432 | 1,344,541 | 0.239 | 0.426 |
| Mother 4-year College or more (Indicator) | 5,219,361 | 0.166 | 0.372 | 1,658,296 | 0.185 | 0.388 | 4,164,506 | 0.176 | 0.381 | 1,344,541 | 0.194 | 0.396 |

**Table A1.A**: Summary statistics of U.S. born students. All statistics are computed on an unbalanced sample of students born between 1994 and 2002, observed in any grade between 3 and 10. Each variable is measured on observations such that the score in mathematics is non-missing; except the reading score and the incident variables, which are measured whenever available. Columns (1-3) show summary statistics computed on the entire sample of observations of U.S.-born students and Columns (4-6) on the restricted sample of observations such that at least two siblings are observed in a given year. In Columns (7-12) we do the same exercise for U.S.-born students speaking English. Columns (10-12) contain our main sample and it is identical to Table 1 in the text. Cumulative exposure to foreign-born students (foreign-born exposure) is computed as the average share of foreign-born students across previous school-specific cohorts including the current grade.

| | *Foreign-born peers of all U.S.-Born* | | | | | | *Foreign-born peers of English-speaking U.S.-born* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **All observations** | | | **U.S.-fam. 2+ siblings per year** | | | **All observations** | | | **U.S.-fam. 2+ siblings per year** | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| *Variable* | *Obs.* | *Mean* | *Std. Dev.* | *Obs.* | *Mean* | *Std. Dev.* | *Obs.* | *Mean* | *Std. Dev.* | *Obs.* | *Mean* | *Std. Dev.* |
| Math Standardized Score | 875,990 | -0.097 | 1.109 | 854,867 | -0.093 | 1.107 | 875,585 | -0.097 | 1.109 | 830,857 | -0.087 | 1.106 |
| Reading Standardized Score | 946,117 | -0.206 | 1.142 | 924,771 | -0.202 | 1.141 | 945,642 | -0.206 | 1.142 | 900,324 | -0.195 | 1.138 |
| Incidents (ever involved in) | 946,117 | 0.127 | 0.333 | 924,771 | 0.128 | 0.335 | 945,642 | 0.126 | 0.333 | 900,324 | 0.130 | 0.337 |
| Foreign-born Exposure | 875,990 | 0.176 | 0.107 | 854,867 | 0.176 | 0.107 | 875,585 | 0.176 | 0.107 | 830,857 | 0.173 | 0.106 |
| Female (Indicator) | 875,990 | 0.490 | 0.500 | 854,867 | 0.490 | 0.500 | 875,585 | 0.490 | 0.500 | 830,857 | 0.490 | 0.500 |
| Age in Months | 875,990 | 137.8 | 25.8 | 854,867 | 138.4 | 25.6 | 875,585 | 137.8 | 25.8 | 830,857 | 139.0 | 25.6 |
| Special Education (Indicator) | 875,990 | 0.087 | 0.282 | 854,867 | 0.087 | 0.282 | 875,585 | 0.087 | 0.282 | 830,857 | 0.087 | 0.282 |
| Birth Order | 875,990 | 2.160 | 1.355 | 854,867 | 2.154 | 1.359 | 875,585 | 2.160 | 1.355 | 830,857 | 2.157 | 1.360 |
| White (Indicator) | 875,990 | 0.131 | 0.337 | 854,867 | 0.130 | 0.336 | 875,585 | 0.131 | 0.337 | 830,857 | 0.133 | 0.339 |
| Black (Indicator) | 875,990 | 0.166 | 0.372 | 854,867 | 0.166 | 0.372 | 875,585 | 0.166 | 0.372 | 830,857 | 0.169 | 0.374 |
| Hispanic (Indicator) | 875,990 | 0.614 | 0.487 | 854,867 | 0.614 | 0.487 | 875,585 | 0.614 | 0.487 | 830,857 | 0.607 | 0.488 |
| Asian (Indicator) | 875,990 | 0.068 | 0.252 | 854,867 | 0.068 | 0.252 | 875,585 | 0.068 | 0.252 | 830,857 | 0.070 | 0.255 |
| Other (Indicator) | 875,990 | 0.022 | 0.145 | 854,867 | 0.021 | 0.145 | 875,585 | 0.022 | 0.145 | 830,857 | 0.022 | 0.146 |
| Free/Reduced-Price Lunch (Indicator) | 875,829 | 0.682 | 0.466 | 854,708 | 0.682 | 0.466 | 875,424 | 0.682 | 0.466 | 830,704 | 0.677 | 0.467 |
| Limited English Proficiency (Indicator) | 875,990 | 0.321 | 0.467 | 854,867 | 0.318 | 0.466 | 875,585 | 0.321 | 0.467 | 830,857 | 0.315 | 0.464 |

**Table A1.B**: Summary statistics of immigrant students. The summary statistics displayed are computed on the sample of foreign-born peers going to school with different groups of U.S.-born students. Columns (1-3) shows summary statistics computed on the sample of foreign-born peers of all U.S.-born students. Columns (4-6) shows the same statistics for the restricted sample of observations of foreign-born peers going to school with U.S.-born students in families such that at least two siblings are observed in a given year. In Columns (7-12) we repeat the same exercise after restricting to foreign-born peers going to school with U.S.-born students speaking English at home. Cumulative exposure to foreign-born students (foreign-born exposure) is computed as the average share of foreign-born students across previous school-specific cohorts including the current grade. Each variable is measured on observations such that the score in mathematics is non-missing; except the reading score variable, which is measured for observations such that the reading score is non missing.

| Panel A: Enrollment in Public School | | | | | | |
|---|---|---|---|---|---|---|
| | US born students | | 1st generation | | 2nd generation | |
| | Obs. | Mean | Obs. | Mean | Obs. | Mean |
| Census 2000 (5%) | | | | | | |
| Kindergarten | 6,415 | 82.29% | 646 | 84.83% | 2,582 | 81.14% |
| Grade 1 to 4 | 26,500 | 86.69% | 3,279 | 93.44% | 9,438 | 86.76% |
| Grade 5 to 8 | 26,581 | 87.86% | 4,477 | 93.52% | 8,244 | 87.58% |
| Grade 9 to 12 | 21,813 | 90.58% | 5,289 | 93.67% | 6,576 | 87.61% |
| Overall sample | 81,309 | 87.77% | 13,691 | 93.15% | 26,840 | 86.68% |
| Census 2010 (1%) | | | | | | |
| Kindergarten | 1,147 | 82.65% | 91 | 74.73% | 632 | 83.23% |
| Grade 1 to 4 | 4,556 | 85.45% | 557 | 89.77% | 2,301 | 88.57% |
| Grade 5 to 8 | 5,047 | 85.56% | 855 | 90.64% | 2,036 | 87.18% |
| Grade 9 to 12 | 4,726 | 87.85% | 1,114 | 92.91% | 1,861 | 88.07% |
| Overall sample | 15,476 | 86.01% | 2,617 | 90.87% | 6,830 | 87.53% |

| Panel B: Family Income (USD) | | | | | | |
|---|---|---|---|---|---|---|
| | US born students | | 1st generation | | 2nd generation | |
| | Obs. | Mean | Obs. | Mean | Obs. | Mean |
| Census 2000 (5%) | | | | | | |
| Public school | 71,364 | 55,838 | 12,648 | 43,526 | 23,264 | 52,842 |
| Private school | 9,945 | 102,409 | 928 | 86,163 | 3,576 | 106,669 |
| Overall sample | 81,309 | 61,534 | 13,576 | 46,441 | 26,840 | 60,014 |
| Census 2010 (1%) | | | | | | |
| Public school | 13,311 | 71,906 | 2,372 | 54,343 | 5,978 | 65,630 |
| Private school | 2,165 | 123,921 | 238 | 115,190 | 852 | 136,119 |
| Overall sample | 15,476 | 79,183 | 2,610 | 59,892 | 6,830 | 74,423 |

**Table A2:** This table reports the fraction of students by grade and family income enrolled in public and private schools in Florida. The data are based on Census 2000 and 2010 and report the statistics for U.S.-born students, first generation and second-generation immigrant students. "2nd generation" is identified as having the mother or the father born abroad.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | -0.123** | 0.019 | 0.077* | 0.293*** | 0.229*** |
| | (0.053) | (0.042) | (0.040) | (0.054) | (0.074) |
| | [-0.006] | [0.001] | [0.004] | [0.015] | [0.012] |
| SE clustered at family level | (0.052) | (0.048) | (0.048) | (0.071) | (0.082) |
| SE clustered at school level | (0.088) | (0.057) | (0.050) | (0.062) | (0.089) |
| Observations | 1,347,286 | 1,347,286 | 1,344,541 | 1,347,286 | 1,347,286 |
| R-squared | 0.302 | 0.359 | 0.379 | 0.682 | 0.769 |
| Mean LHS | 0.0504 | 0.0504 | 0.0510 | 0.0504 | 0.0504 |
| SD LHS | 0.993 | 0.993 | 0.993 | 0.993 | 0.993 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | -0.194*** | -0.026 | 0.040 | 0.176*** | 0.110* |
| | (0.049) | (0.039) | (0.037) | (0.048) | (0.064) |
| | [-0.010] | [-0.001] | [0.002] | [0.009] | [0.006] |
| SE clustered at family level | (0.050) | (0.046) | (0.045) | (0.067) | (0.077) |
| SE clustered at school level | (0.082) | (0.053) | (0.046) | (0.054) | (0.074) |
| Observations | 1,450,138 | 1,450,138 | 1,447,278 | 1,450,138 | 1,450,138 |
| R-squared | 0.303 | 0.356 | 0.377 | 0.667 | 0.752 |
| Mean LHS | 0.0340 | 0.0340 | 0.0345 | 0.0340 | 0.0340 |
| SD LHS | 0.992 | 0.992 | 0.992 | 0.992 | 0.992 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Lunch Status | | X | X | | |
| Mother's Education FE | | | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A3:** This table shows the estimates of a linear regression of test scores in mathematics (Panel A) and reading (Panel B) standardized by year and grade on the cumulative exposure to foreign-born students, computed as the average share of foreign-born students across previous school-specific cohorts including the current grade, and several controls. All regressions are run on an unbalanced longitudinal sample of U.S.-born students observed in grades from 3rd to 10th, who speak English at home and have at least one sibling, using observations in academic years in which at least two students are observed for each family. Individual controls include: gender, age in months, special education, and birth order fixed effects. Lunch status is a dummy variable equal to 1 if the student is eligible for free or reduced-price lunch. Mother's education fixed effects are three dummy variables equal to 1 if the mother of the student has a high school diploma, some college, or a four-year college or more, respectively. Robust standard errors clustered by school-cohort are reported below the main coefficient. Beta standardized coefficients in squared parenthesis below standard errors. Robust standard errors clustered either at the family or at the school level are also reported below the beta standardized coefficient. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | -0.081 | -0.069 | -0.107** | 0.348*** | 0.298*** |
| | (0.054) | (0.046) | (0.044) | (0.055) | (0.077) |
| | [-0.004] | [-0.004] | [-0.006] | [0.018] | [0.016] |
| Observations | 1,347,286 | 1,347,286 | 1,347,286 | 1,347,286 | 1,347,286 |
| R-squared | 0.253 | 0.294 | 0.342 | 0.666 | 0.754 |
| Mean LHS | 0.0504 | 0.0504 | 0.0504 | 0.0504 | 0.0504 |
| SD LHS | 0.993 | 0.993 | 0.993 | 0.993 | 0.993 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | -0.151*** | -0.128*** | -0.166*** | 0.233*** | 0.182*** |
| | (0.051) | (0.044) | (0.042) | (0.050) | (0.067) |
| | [-0.008] | [-0.007] | [-0.009] | [0.012] | [0.010] |
| Observations | 1,450,138 | 1,450,138 | 1,450,138 | 1,450,138 | 1,450,138 |
| R-squared | 0.250 | 0.286 | 0.339 | 0.650 | 0.735 |
| Mean LHS | 0.0340 | 0.0340 | 0.0340 | 0.0340 | 0.0340 |
| SD LHS | 0.992 | 0.992 | 0.992 | 0.992 | 0.992 |
| Time-invariant individual controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A4:** This table shows estimates from models equivalent to those of Table 4, with the unique difference that time-varying controls (special education needs, free lunch eligibility, and mother education) are removed. Time-invariant individual controls include: gender, age in months, race/ethnicity, and birth order fixed effects. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | *Sample restriction: exclusion of Puerto Rico born students* | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | -0.001 | 0.087** | 0.124*** | 0.322*** | 0.251*** |
| | (0.055) | (0.044) | (0.042) | (0.056) | (0.077) |
| | [0.000] | [0.004] | [0.006] | [0.016] | [0.013] |
| Observations | 1,347,288 | 1,347, 288 | 1,344,543 | 1,347, 288 | 1,347, 288 |
| R-squared | 0.302 | 0.359 | 0.379 | 0.682 | 0.769 |
| Mean LHS | 0.0504 | 0.0504 | 0.051 | 0.0504 | 0.0504 |
| SD LHS | 0.993 | 0.993 | 0.993 | 0.993 | 0.993 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | -0.059 | 0.055 | 0.099** | 0.210*** | 0.138** |
| | (0.052) | (0.041) | (0.039) | (0.050) | (0.067) |
| | [0.003] | [0.003] | [0.005] | [0.011] | [0.007] |
| Observations | 1,450,140 | 1,450, 140 | 1,447,280 | 1,450, 140 | 1,450, 140 |
| R-squared | 0.303 | 0.356 | 0.377 | 0.667 | 0.752 |
| Mean LHS | 0.034 | 0.034 | 0.0345 | 0.034 | 0.034 |
| SD LHS | 0.992 | 0.992 | 0.992 | 0.992 | 0.992 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Lunch Status | | X | X | | |
| Mother's Education FE | | | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A5** This table shows estimates from models equivalent to those of Table 4, with the exclusion of Puerto-Rico born students from the Foreign-born exposure variable. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized score (4th-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | 0.122** | 0.160*** | 0.183*** | 0.465*** | 0.491 |
| | (0.049) | (0.047) | (0.047) | (0.125) | (0.410) |
| | [0.006] | [0.008] | [0.009] | [0.023] | [0.025] |
| Math Score in 3rd Grade | 0.721*** | 0.696*** | 0.684*** | 0.586*** | 0.561*** |
| | (0.002) | (0.002) | (0.002) | (0.004) | (0.008) |
| | [0.693] | [0.669] | [0.658] | [0.563] | [0.539] |
| Observations | 549,541 | 549,541 | 548,313 | 549,541 | 549,541 |
| R-squared | 0.650 | 0.655 | 0.658 | 0.845 | 0.953 |
| Mean LHS | 0.0270 | 0.0270 | 0.0276 | 0.0270 | 0.027 |
| SD LHS | 0.990 | 0.990 | 0.989 | 0.990 | 0.990 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | 0.020 | 0.071 | 0.101** | 0.380*** | 0.213 |
| | (0.048) | (0.046) | (0.045) | (0.118) | (0.350) |
| | [0.001] | [0.004] | [0.005] | [0.019] | [0.011] |
| Reading Score in 3rd Grade | 0.710*** | 0.681*** | 0.667*** | 0.560*** | 0.525*** |
| | (0.002) | (0.002) | (0.002) | (0.004) | (0.008) |
| | [0.665] | [0.638] | [0.625] | [0.524] | [0.491] |
| Observations | 569,733 | 569,733 | 568,470 | 569,733 | 569,733 |
| R-squared | 0.620 | 0.627 | 0.631 | 0.827 | 0.946 |
| Mean LHS | -0.0133 | -0.0133 | -0.0128 | -0.0133 | -0.0133 |
| SD LHS | 0.978 | 0.978 | 0.978 | 0.978 | 0.978 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Lunch Status | | X | X | | |
| Mother's Education FE | | | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A6:** This table shows estimates from models equivalent to those reported in Table 4, except that (i) the score in mathematics (Panel A) and reading (Panel B) in 3rd grade is included as explanatory variable; (ii) the sample is restricted to a subset of observations that exclude the 3rd grade; (iii) the measure of immigrant exposure is calculated from the third grade to the current grade. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | *Sample: U.S. born students speaking any language at home* | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | -0.226*** | 0.003 | 0.086*** | 0.230*** | 0.161*** |
| | (0.042) | (0.033) | (0.032) | (0.044) | (0.061) |
| | [-0.015] | [0.000] | [0.006] | [0.016] | [0.011] |
| Observations | 1,662,404 | 1,662,404 | 1,658,297 | 1,662,404 | 1,662,404 |
| R-squared | 0.289 | 0.342 | 0.360 | 0.675 | 0.763 |
| Mean LHS | 0.0430 | 0.0430 | 0.0437 | 0.0430 | 0.0430 |
| SD LHS | 0.986 | 0.986 | 0.986 | 0.986 | 0.986 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | -0.372*** | -0.064** | 0.026 | 0.227*** | 0.169*** |
| | (0.039) | (0.032) | (0.030) | (0.039) | (0.052) |
| | [-0.025] | [-0.004] | [0.002] | [0.016] | [0.012] |
| Observations | 1,789,451 | 1,789,451 | 1,785,148 | 1,789,451 | 1,789,451 |
| R-squared | 0.292 | 0.341 | 0.361 | 0.661 | 0.746 |
| Mean LHS | 0.0158 | 0.0158 | 0.0165 | 0.0158 | 0.0158 |
| SD LHS | 0.983 | 0.983 | 0.983 | 0.983 | 0.983 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Lunch Status | | X | X | | |
| Mother's Education FE | | | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A7:** This table shows estimates from models equivalent to those reported in Table 4, except that the sample of U.S.-born students includes students speaking any language at home. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| 1st gen migrant exposure | -0.159*** | -0.064 | 0.009 | 0.294*** | 0.229*** |
| | (0.055) | (0.044) | (0.042) | (0.054) | (0.074) |
| | [-0.008] | [-0.003] | [0.000] | [0.015] | [0.012] |
| 2nd gen migrant exposure | 0.067** | 0.156*** | 0.127*** | -0.002 | 0.013 |
| | (0.032) | (0.028) | (0.027) | (0.035) | (0.048) |
| | [0.007] | [0.016] | [0.013] | [-0.000] | [0.001] |
| Observations | 1,347,286 | 1,347,286 | 1,344,541 | 1,347,286 | 1,347,286 |
| R-squared | 0.302 | 0.359 | 0.379 | 0.682 | 0.769 |
| Mean LHS | 0.0504 | 0.0504 | 0.0510 | 0.0504 | 0.0504 |
| SD LHS | 0.993 | 0.993 | 0.993 | 0.993 | 0.993 |
| | *Panel B: Reading standardized score* | | | | |
| 1st gen migrant exposure | -0.255*** | -0.132*** | -0.047 | 0.174*** | 0.108* |
| | (0.051) | (0.041) | (0.039) | (0.048) | (0.064) |
| | [-0.014] | [-0.007] | [-0.002] | [0.009] | [0.006] |
| 2nd gen migrant exposure | 0.112*** | 0.199*** | 0.163*** | 0.012 | 0.036 |
| | (0.031) | (0.027) | (0.026) | (0.033) | (0.043) |
| | [0.011] | [0.020] | [0.017] | [0.001] | [0.004] |
| Observations | 1,450,138 | 1,450,138 | 1,447,278 | 1,450,138 | 1,450,138 |
| R-squared | 0.303 | 0.356 | 0.377 | 0.667 | 0.752 |
| Mean LHS | 0.0340 | 0.0340 | 0.0345 | 0.0340 | 0.0340 |
| SD LHS | 0.992 | 0.992 | 0.992 | 0.992 | 0.992 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Lunch Status | | X | X | | |
| Mother's Education FE | | | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A8:** This table shows estimates from models equivalent to those reported in Table 4, except that 2nd generation immigrant cumulative exposure is included as additional regressor. A student is considered 2nd generation immigrant if the mother is born abroad. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | *Sample restriction: exclusion of counties with high military personnel* | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | -0.132** | 0.004 | 0.065 | 0.289*** | 0.217*** |
| | (0.054) | (0.043) | (0.040) | (0.055) | (0.076) |
| | [-0.007] | [0.000] | [0.003] | [0.015] | [0.012] |
| Observations | 1,251,718 | 1,251,718 | 1,249,347 | 1,251,718 | 1,251,718 |
| R-squared | 0.301 | 0.359 | 0.379 | 0.682 | 0.769 |
| Mean LHS | 0.0368 | 0.0368 | 0.0374 | 0.0368 | 0.0368 |
| SD LHS | 0.996 | 0.996 | 0.996 | 0.996 | 0.996 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | -0.197*** | -0.035 | 0.035 | 0.191*** | 0.128* |
| | (0.051) | (0.040) | (0.038) | (0.049) | (0.066) |
| | [-0.011] | [-0.002] | [0.002] | [0.010] | [0.007] |
| Observations | 1,347,542 | 1,347,542 | 1,345,075 | 1,347,542 | 1,347,542 |
| R-squared | 0.304 | 0.357 | 0.378 | 0.668 | 0.753 |
| Mean LHS | 0.0197 | 0.0197 | 0.0202 | 0.0197 | 0.0197 |
| SD LHS | 0.995 | 0.995 | 0.995 | 0.995 | 0.995 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Race FE | | X | X | | |
| Lunch Status | | X | X | | |
| Mother's Education FE | | | X | | |
| Family FE | | | | X | |
| Family x Year FE | | | | | X |

**Table A9:** This table shows estimates from models equivalent to those reported in Table 4, except that the sample excludes counties with high presence of military personnel (Bay, Brevard, Clay, and Okaloosa). Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Sample: | ***All*** | ***Same school*** | ***Different school*** |
| | *Panel A: Math standardized score (3rd-10th grade)* | | |
| Foreign-born Exposure | 0.199** | 0.243** | 0.173 |
| | (0.082) | (0.114) | (0.108) |
| | [0.011] | [0.013] | [0.009] |
| Observations | 1,118,170 | 425,816 | 692,354 |
| R-squared | 0.785 | 0.770 | 0.795 |
| Mean LHS | 0.0928 | 0.0666 | 0.109 |
| SD LHS | 0.980 | 0.985 | 0.977 |
| | *Panel B: Reading standardized score (3rd-10th grade)* | | |
| Foreign-born Exposure | 0.078 | 0.087 | 0.084 |
| | (0.072) | (0.113) | (0.089) |
| | [0.004] | [0.005] | [0.005] |
| Observations | 1,199,280 | 438,962 | 760,318 |
| R-squared | 0.765 | 0.766 | 0.765 |
| Mean LHS | 0.0827 | 0.0595 | 0.0961 |
| SD LHS | 0.981 | 0.987 | 0.977 |
| Individual controls | X | X | X |
| School x Year FE | X | X | X |
| Grade x Year FE | X | X | X |
| Family x Year FE | X | X | X |

**Table A10:** This table shows estimates from a model equivalent to the one reported in Column (5) of Table 4 with different sample selections. In Column (1), we include only observations of siblings in families with exactly 2 siblings in a given year. In Column (2), among the observations used in Column (1), we select only observations of siblings going to the same school in a given year. In Column (3), among the observations used in Column (1), we select only observations of siblings going to different schools in a given year. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| Standardized scores (3rd-10th grade) *Alternative IV Model* | | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| | *IV* | *Red. Form* | *OLS* |
| *Panel A: Math standardized score (3rd-10th grade)* | | | |
| Foreign-born Exposure | 0.515*** | | 0.221*** |
| | (0.110) | | (0.067) |
| | [0.028] | | [0.012] |
| Foreign-born Exposure (Predicted) | | 0.280*** | |
| | | (0.060) | |
| | | [0.016] | |
| Observations | 854,191 | 854,191 | 854,191 |
| R-squared | - | 0.688 | 0.688 |
| Mean LHS | 0.149 | 0.149 | 0.149 |
| SD LHS | 0.974 | 0.974 | 0.974 |
| First stage (coefficient) | 0.545*** | - | - |
| First stage (se) | (0.005) | - | - |
| First stage (F stat) | 3,758 | - | - |
| *Panel B: Reading standardized score (3rd-10th grade)* | | | |
| Foreign-born Exposure | 0.331*** | | 0.074 |
| | (0.101) | | (0.063) |
| | [0.018] | | [0.004] |
| Foreign-born Exposure (Predicted) | | 0.180*** | |
| | | (0.055) | |
| | | [0.010] | |
| Observations | 921,371 | 921,371 | 921,371 |
| R-squared | - | 0.671 | 0.671 |
| Mean LHS | 0.137 | 0.137 | 0.137 |
| SD LHS | 0.979 | 0.979 | 0.979 |
| First stage (coefficient) | 0.545*** | - | - |
| First stage (se) | (0.005) | - | - |
| First stage (F stat) | 11,569 | - | - |
| | | | |
| Individual controls | X | X | X |
| Year x Grade FE | X | X | X |
| Year x School FE | X | X | X |
| Family FE | X | X | X |

**Table A11**: This table shows results on the instrumental variable approach using as instrument for foreign-born exposure the exposure that the student would have had if she/he had attended the same school attended by the eldest sibling in the given grade. Column (1) presents the Two Stage Least Square coefficient, Column (2) presents the reduced form coefficient, and Column (3) shows the OLS version of the coefficient. All regressions are run on an unbalanced longitudinal sample of U.S.-born students observed in grades from 3rd to 10th, who speak English at home and have at least one sibling. We further restrict the sample by excluding households with twins, and children whose firstborn sibling is not in our sample for a given grade. Each observation is a student-year. Individual controls are the same as Table 4. At the bottom of Column (1) we report the coefficient and standard error for the variable *Foreign-*

*born exposure* in the first stage of the 2SLS estimation. Robust standard errors in parenthesis clustered by cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | *Math stdz score* | | | *Reading stdz score* | | |
| Foreign-born Exposure | 0.268*** | 0.213** | 0.217*** | 0.150* | 0.115 | 0.122 |
| | (0.083) | (0.083) | (0.083) | (0.080) | (0.080) | (0.080) |
| | [0.014] | [0.011] | [0.011] | [0.008] | [0.006] | [0.006] |
| Teacher experience | 0.006*** | | 0.005*** | 0.005*** | | 0.004*** |
| | (0.000) | | (0.000) | (0.000) | | (0.000) |
| | [0.026] | | [0.024] | [0.021] | | [0.019] |
| Class size | | 0.047*** | 0.047*** | | 0.049*** | 0.049*** |
| | | (0.001) | (0.001) | | (0.001) | (0.001) |
| | | [0.130] | [0.130] | | [0.135] | [0.135] |
| Observations | 1,250,364 | 1,249,578 | 1,249,578 | 1,249,346 | 1,248,515 | 1,248,515 |
| R-squared | 0.314 | 0.785 | 0.787 | 0.784 | 0.782 | 0.785 |
| Dependent Variable (mean) | 0.0476 | 0.0475 | 0.0475 | 0.0303 | 0.0301 | 0.0301 |
| Dependent Variable (sd) | 0.993 | 0.993 | 0.993 | 0.988 | 0.988 | 0.988 |
| Individual Controls | X | X | X | X | X | X |
| School x Year FE | X | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X | X |
| Family x Year FE | X | X | X | X | X | X |

**Table A12:** This table shows estimates from a model equivalent to the one reported in Column (5) of Table 4, including cumulative teacher experience and cumulative class size as additional controls. Teacher experience is computed as the average experience of teachers to which each student has been exposed, for each subject, in the previous years and grades. Class size is computed as the average size of the classes of whom the student has been part, for each subject, in the previous years and grades. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | | Segregation: current school | | Segregation: first school | |
| | | *High* | *Low* | *High* | *Low* |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | | 0.296 | 0.368*** | 0.213 | 0.304** |
| | | (0.198) | (0.134) | (0.201) | (0.151) |
| | | [0.011] | [0.022] | [0.009] | [0.018] |
| Foreign-born Exposure (weighted) | 0.264*** | | | | |
| | (0.096) | | | | |
| | [0.010] | | | | |
| Observations | 1,347,103 | 681,801 | 656,548 | 674,090 | 670,528 |
| R-squared | 0.769 | 0.849 | 0.858 | 0.859 | 0.859 |
| Mean LHS | 0.0504 | 0.0315 | 0.0778 | 0.0886 | 0.0119 |
| SD LHS | 0.993 | 0.984 | 0.997 | 0.975 | 1.010 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | | 0.005 | 0.144 | 0.008 | 0.293** |
| | | (0.163) | (0.121) | (0.173) | (0.139) |
| | | [0.000] | [0.008] | [0.000] | [0.017] |
| Foreign-born Exposure (weighted) | 0.120 | | | | |
| | (0.087) | | | | |
| | [0.004] | | | | |
| Observations | 1,448,497 | 717,491 | 717,330 | 708,145 | 708,273 |
| R-squared | 0.752 | 0.839 | 0.847 | 0.850 | 0.853 |
| Mean LHS | 0.0339 | 0.00498 | 0.0694 | 0.0815 | -0.0160 |
| SD LHS | 0.992 | 0.985 | 0.994 | 0.975 | 1.007 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Family x Year FE | X | X | X | X | X |

**Table A13**: This table shows the estimates of a linear regression of test scores in mathematics (Panel A) and reading (Panel B) standardized by year and grade on the cumulative exposure to foreign-born students, computed as the average share of foreign-born students across previous school-specific cohorts including the current grade, and several controls. In Column (1), share of foreign-born students is weighted by a segregation index computed at the school-specific cohort level. In Columns (2) to (5) we estimate the same model as in Table 4 Column (5), except that we divide the sample based on the segregation index being above or below the median. In Columns (2) and (3) the segregation index is computed in the current school, while in Columns (4) and (5) the relevant segregation index is the one of the initial school in which the student is observed in our data. See the text for details about the construction of the segregation index. All regressions are run on an unbalanced longitudinal sample of U.S.-born students, observed in grades from 3rd to 10th, who speak English at home and have at least one sibling, using observations in academic years in which at least two students are observed for each family. Individual controls include: gender, age in months, special education, and birth order fixed effects. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| | *Panel A: Math standardized score* | | |
| Migrant exposure | 0.224*** | 0.228*** | 0.230*** |
| | (0.076) | (0.077) | (0.076) |
| | [0.012] | [0.012] | [0.012] |
| Cumulative race diversity index | 0.009 | | |
| | (0.030) | | |
| | [0.001] | | |
| Cumulative migrants' race diversity index | | 0.008 | |
| | | (0.011) | |
| | | [0.002] | |
| Cumulative migrants' country diversity index | | | 0.274 |
| | | | (0.285) |
| | | | [0.002] |
| Observations | 1,347,286 | 1,318,365 | 1,318,365 |
| R-squared | 0.769 | 0.772 | 0.772 |
| Dependent Variable (mean) | 0.0504 | 0.0516 | 0.0516 |
| Dependent Variable (sd) | 0.993 | 0.994 | 0.994 |
| | *Panel B: Reading standardized score* | | |
| Migrant exposure | 0.072 | 0.088 | 0.103 |
| | (0.065) | (0.066) | (0.065) |
| | [0.004] | [0.005] | [0.005] |
| Cumulative race diversity index | 0.073*** | | |
| | (0.026) | | |
| | [0.011] | | |
| Cumulative migrants' race diversity index | | 0.023** | |
| | | (0.010) | |
| | | [0.004] | |
| Cumulative migrants' country diversity index | | | 0.343 |
| | | | (0.219) |
| | | | [0.003] |
| Observations | 1,450,138 | 1,420,655 | 1,420,655 |
| R-squared | 0.752 | 0.755 | 0.755 |
| Dependent Variable (mean) | 0.0340 | 0.0348 | 0.0348 |
| Dependent Variable (sd) | 0.992 | 0.992 | 0.992 |
| Individual Controls | X | X | X |
| School x Year FE | X | X | X |
| Grade x Year FE | X | X | X |
| Family x Year FE | X | X | X |

**Table A14:** This table shows estimates from a model equivalent to the one reported in Column (5) of Table 4, including three measures of cumulative diversity indexes as controls. Column (1) includes a measure of cumulative

diversity index based on overall school race/ethnicity composition; Column (2) includes a measure of cumulative diversity index based on immigrants' race/ethnicity; Column (3) includes a measure of cumulative diversity index based on immigrants' country of origin. See the text for details about the construction of the diversity indexes. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Restriction:* | *Full sample* | *No free lunch* | *Free lunch* | *White* | *Black* |
| | *Panel A: Math standardized score* | | | | |
| Foreign-born Exposure | 0.316*** | -0.011 | 0.545*** | 0.206* | 0.464*** |
| | (0.084) | (0.124) | (0.118) | (0.119) | (0.160) |
| | [0.017] | [-0.001] | [0.030] | [0.011] | [0.025] |
| Immigrant performance index | 0.020** | 0.016 | 0.024** | 0.018* | 0.020 |
| (Math score) | (0.009) | (0.013) | (0.012) | (0.011) | (0.017) |
| | [0.006] | [0.005] | [0.007] | [0.005] | [0.006] |
| Black Exposure | -0.002 | -0.048 | 0.108* | -0.097 | 0.122 |
| | (0.046) | (0.075) | (0.059) | (0.084) | (0.075) |
| | [-0.000] | [-0.011] | [0.030] | [-0.012] | [0.033] |
| White Exposure | 0.063 | -0.118 | 0.144** | 0.058 | 0.080 |
| | (0.050) | (0.087) | (0.069) | (0.069) | (0.102) |
| | [0.016] | [-0.019] | [0.040] | [0.011] | [0.019] |
| Asian Exposure | 0.434*** | 0.624*** | 0.182 | 0.720*** | 0.013 |
| | (0.141) | (0.193) | (0.222) | (0.181) | (0.301) |
| | [0.009] | [0.017] | [0.003] | [0.017] | [0.000] |
| FRPL Exposure | -0.241*** | -0.187*** | -0.260*** | -0.154*** | -0.405*** |
| | (0.037) | (0.057) | (0.051) | (0.048) | (0.075) |
| | [-0.057] | [-0.042] | [-0.053] | [-0.034] | [-0.080] |
| Limited English Prof. Exposure | -0.062 | -0.168* | -0.024 | -0.059 | 0.092 |
| | (0.054) | (0.094) | (0.070) | (0.089) | (0.096) |
| | [-0.005] | [-0.013] | [-0.002] | [-0.004] | [0.008] |
| Special Education Exposure | -0.248*** | -0.157** | -0.245*** | -0.201*** | -0.322*** |
| | (0.052) | (0.078) | (0.071) | (0.068) | (0.099) |
| | [-0.012] | [-0.008] | [-0.013] | [-0.010] | [-0.017] |
| Observations | 1,271,246 | 585,107 | 686,139 | 764,962 | 374,307 |
| R-squared | 0.779 | 0.770 | 0.741 | 0.774 | 0.730 |
| Mean LHS | 0.0592 | 0.481 | -0.301 | 0.314 | -0.489 |
| SD LHS | 0.993 | 0.867 | 0.952 | 0.911 | 0.951 |
| | *Panel B: Reading standardized score* | | | | |
| Foreign-born Exposure | 0.193*** | -0.162 | 0.431*** | 0.082 | 0.375*** |
| | (0.072) | (0.117) | (0.097) | (0.110) | (0.129) |

| | | | | | |
|---|---|---|---|---|---|
| | [0.010] | [-0.009] | [0.024] | [0.004] | [0.022] |
| Immigrant performance index | 0.025*** | 0.037*** | 0.014 | 0.024** | 0.008 |
| (Reading score) | (0.008) | (0.013) | (0.010) | (0.010) | (0.015) |
| | [0.007] | [0.010] | [0.004] | [0.007] | [0.002] |
| Black Exposure | -0.116*** | -0.049 | -0.066 | -0.060 | -0.018 |
| | (0.040) | (0.081) | (0.050) | (0.077) | (0.062) |
| | [-0.027] | [-0.008] | [-0.019] | [-0.007] | [-0.005] |
| White Exposure | 0.002 | -0.026 | 0.032 | 0.042 | -0.067 |
| | (0.043) | (0.070) | (0.059) | (0.063) | (0.084) |
| | [0.001] | [-0.006] | [0.009] | [0.008] | [-0.017] |
| Asian Exposure | 0.454*** | 0.548*** | 0.468** | 0.620*** | 0.102 |
| | (0.129) | (0.183) | (0.191) | (0.172) | (0.263) |
| | [0.010] | [0.014] | [0.009] | [0.014] | [0.002] |
| FRPL Exposure | -0.230*** | -0.182*** | -0.227*** | -0.144*** | -0.429*** |
| | (0.032) | (0.053) | (0.044) | (0.045) | (0.062) |
| | [-0.054] | [-0.040] | [-0.047] | [-0.031] | [-0.088] |
| Limited English Prof. Exposure | -0.128*** | -0.016 | -0.200*** | -0.000 | -0.098 |
| | (0.048) | (0.087) | (0.061) | (0.083) | (0.081) |
| | [-0.010] | [-0.001] | [-0.019] | [-0.000] | [-0.009] |
| Special Education Exposure | -0.289*** | -0.206*** | -0.241*** | -0.291*** | -0.285*** |
| | (0.045) | (0.072) | (0.059) | (0.063) | (0.078) |
| | [-0.014] | [-0.011] | [-0.013] | [-0.014] | [-0.016] |
| | | | | | |
| Observations | 1,371,517 | 630,822 | 740,695 | 824,567 | 405,141 |
| R-squared | 0.761 | 0.740 | 0.729 | 0.749 | 0.720 |
| Mean LHS | 0.0414 | 0.463 | -0.318 | 0.296 | -0.507 |
| SD LHS | 0.992 | 0.889 | 0.932 | 0.933 | 0.904 |
| | | | | | |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Family x Year FE | X | X | X | X | X |

**Table A15:** This table shows estimates from Table 9 including controls for other exposures. These cumulative exposure variables are calculated using equation 1 in the text and computed as leave-out-means. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

| | Standardized scores (3rd-10th grade) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Restriction:* | *Full sample* | *No free lunch* | *Free lunch* | *White* | *Black* |
| | | | *Panel A: Math standardized score* | | |
| Foreign-born Exposure | 0.317*** | -0.009 | 0.546*** | 0.208* | 0.464*** |
| | (0.084) | (0.124) | (0.118) | (0.119) | (0.160) |
| | [0.017] | [-0.001] | [0.030] | [0.011] | [0.025] |
| Immigrant performance index | -0.129* | -0.094 | -0.197** | -0.085 | -0.161 |
| (Behaviour) | (0.071) | (0.109) | (0.094) | (0.094) | (0.130) |
| | [-0.004] | [-0.003] | [-0.007] | [-0.003] | [-0.006] |
| Black Exposure | 0.002 | -0.115 | 0.114* | -0.093 | 0.127* |
| | (0.046) | (0.087) | (0.059) | (0.084) | (0.075) |
| | [0.000] | [-0.018] | [0.031] | [-0.011] | [0.035] |
| White Exposure | 0.067 | -0.044 | 0.147** | 0.062 | 0.084 |
| | (0.050) | (0.075) | (0.069) | (0.069) | (0.102) |
| | [0.017] | [-0.010] | [0.041] | [0.012] | [0.020] |
| Asian Exposure | 0.444*** | 0.636*** | 0.180 | 0.739*** | 0.013 |
| | (0.141) | (0.192) | (0.222) | (0.182) | (0.301) |
| | [0.009] | [0.017] | [0.003] | [0.017] | [0.000] |
| FRPL Exposure | -0.243*** | -0.189*** | -0.263*** | -0.156*** | -0.407*** |
| | (0.037) | (0.057) | (0.051) | (0.048) | (0.074) |
| | [-0.057] | [-0.043] | [-0.053] | [-0.035] | [-0.080] |
| Limited English Prof. Exposure | -0.062 | -0.169* | -0.024 | -0.060 | 0.093 |
| | (0.054) | (0.094) | (0.070) | (0.089) | (0.096) |
| | [-0.005] | [-0.013] | [-0.002] | [-0.004] | [0.008] |
| Special Education Exposure | -0.249*** | -0.158** | -0.245*** | -0.203*** | -0.322*** |
| | (0.052) | (0.078) | (0.071) | (0.068) | (0.099) |
| | [-0.012] | [-0.008] | [-0.013] | [-0.010] | [-0.017] |
| Observations | 1,271,246 | 585,107 | 686,139 | 764,962 | 374,307 |
| R-squared | 0.779 | 0.770 | 0.741 | 0.774 | 0.730 |
| Mean LHS | 0.0592 | 0.481 | -0.301 | 0.314 | -0.489 |
| SD LHS | 0.993 | 0.867 | 0.952 | 0.911 | 0.951 |
| | | | *Panel B: Reading standardized score* | | |
| Foreign-born Exposure | 0.195*** | -0.159 | 0.433*** | 0.085 | 0.378*** |
| | (0.072) | (0.117) | (0.097) | (0.110) | (0.129) |
| | [0.010] | [-0.009] | [0.025] | [0.004] | [0.022] |
| Immigrant performance index | -0.189*** | -0.241** | -0.183** | -0.154* | -0.146 |
| (Behaviour) | (0.062) | (0.102) | (0.081) | (0.085) | (0.110) |
| | [-0.006] | [-0.007] | [-0.006] | [-0.004] | [-0.006] |

| | | | | | |
|---|---|---|---|---|---|
| Black Exposure | -0.107*** | -0.037 | -0.059 | -0.052 | -0.011 |
| | (0.040) | (0.081) | (0.050) | (0.076) | (0.062) |
| | [-0.025] | [-0.006] | [-0.016] | [-0.006] | [-0.003] |
| White Exposure | 0.008 | -0.017 | 0.035 | 0.048 | -0.064 |
| | (0.043) | (0.070) | (0.059) | (0.063) | (0.084) |
| | [0.002] | [-0.004] | [0.010] | [0.009] | [-0.016] |
| Asian Exposure | 0.442*** | 0.540*** | 0.441** | 0.615*** | 0.074 |
| | (0.129) | (0.184) | (0.192) | (0.174) | (0.263) |
| | [0.009] | [0.014] | [0.008] | [0.014] | [0.002] |
| FRPL Exposure | -0.233*** | -0.186*** | -0.228*** | -0.147*** | -0.429*** |
| | (0.032) | (0.053) | (0.044) | (0.045) | (0.062) |
| | [-0.054] | [-0.041] | [-0.047] | [-0.032] | [-0.088] |
| Limited English Prof. Exposure | -0.127*** | -0.017 | -0.198*** | -0.001 | -0.094 |
| | (0.048) | (0.087) | (0.061) | (0.083) | (0.081) |
| | [-0.010] | [-0.001] | [-0.019] | [-0.000] | [-0.009] |
| Special Education Exposure | -0.290*** | -0.209*** | -0.240*** | -0.293*** | -0.284*** |
| | (0.045) | (0.072) | (0.059) | (0.063) | (0.078) |
| | [-0.014] | [-0.011] | [-0.013] | [-0.014] | [-0.016] |
| Observations | 1,371,517 | 630,822 | 740,695 | 824,567 | 405,141 |
| R-squared | 0.761 | 0.740 | 0.729 | 0.749 | 0.720 |
| Mean LHS | 0.0414 | 0.463 | -0.318 | 0.296 | -0.507 |
| SD LHS | 0.992 | 0.889 | 0.932 | 0.933 | 0.904 |
| Individual Controls | X | X | X | X | X |
| School x Year FE | X | X | X | X | X |
| Grade x Year FE | X | X | X | X | X |
| Family x Year FE | X | X | X | X | X |

**Table A16:** This table shows estimates from Table 10 including controls for other exposures. These cumulative exposure variables are calculated using equation 1 in the text and computed as leave-out-means. Robust standard errors in parenthesis clustered by school-cohort. Beta standardized coefficients in squared parenthesis below standard errors. *** p<0.01, ** p<0.05, * p<0.1.

# Figures

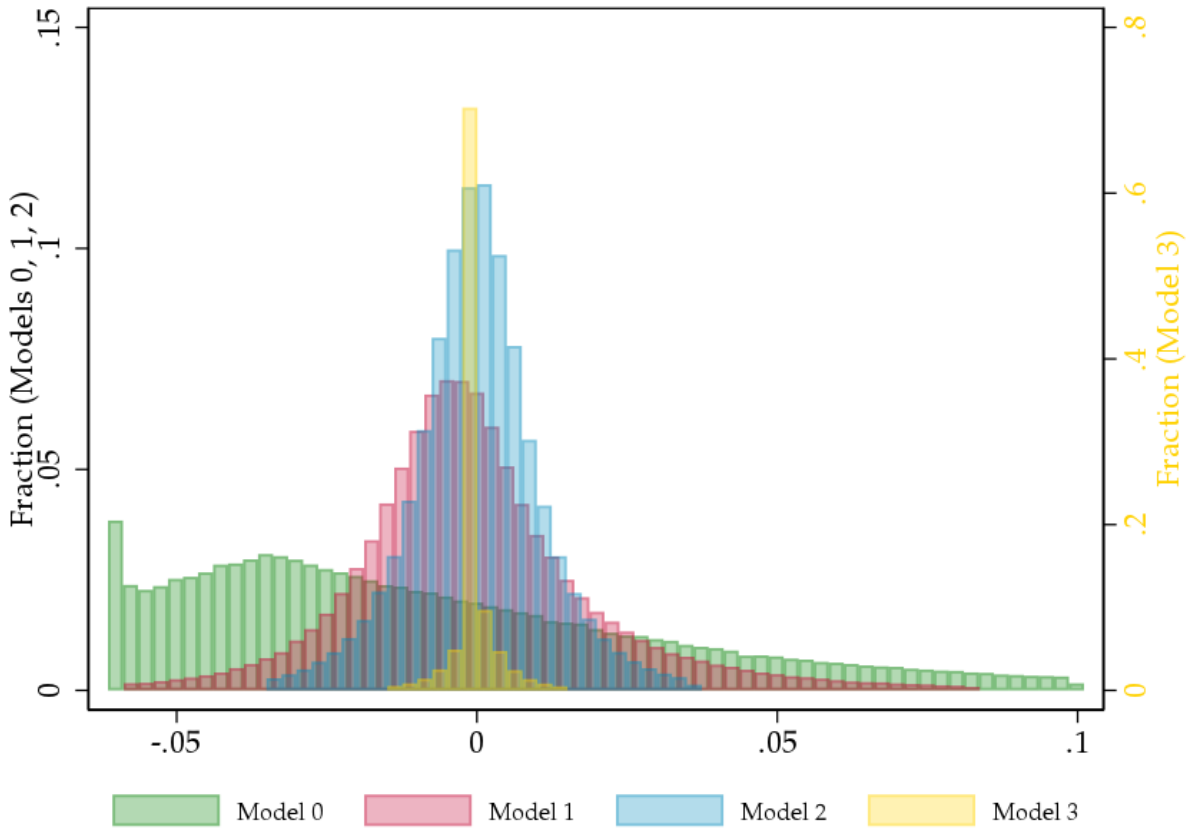


**Figure A1:** Distribution of cumulative exposure to foreign-born students and its residuals. Model 0 refers to the demeaned distribution (i.e., the raw distribution centered at zero). Model 1 is the distribution of residuals after conditioning on school-year and grade-year fixed effects; Model 2 is the distribution of residuals after conditioning on school-year, grade-year, and family fixed effects; Model 3 is the distribution of residuals after conditioning on school-year, grade-year, and family-year fixed effects. Distributions corresponding to models 0 through 2 are described by the left y-axis, while the distribution corresponding to Model 3 is described by the y-axis on the right-hand side of the graph.

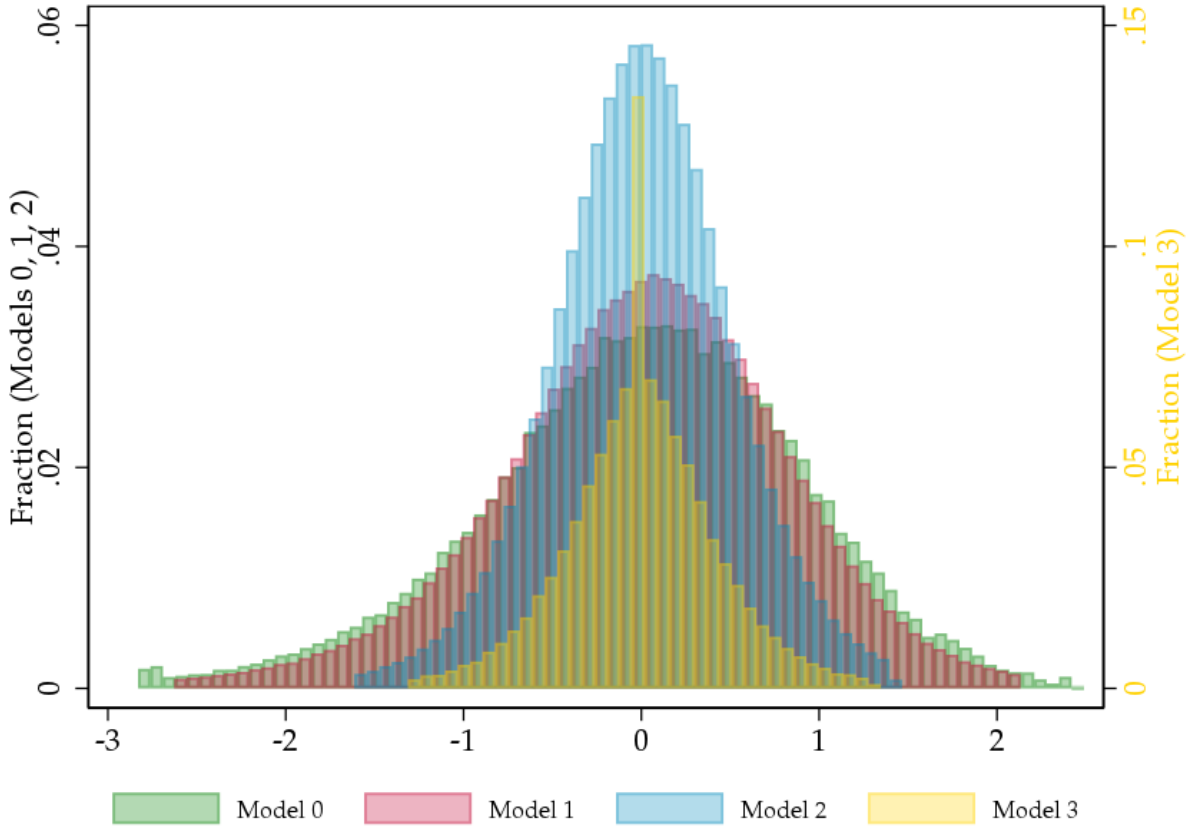


**Figure A2:** Distribution of standardized math scores and its residuals. Model 0 refers to the demeaned distribution (i.e., the raw distribution centered at zero). Model 1 is the distribution of residuals after conditioning on school-year and grade-year fixed effects; Model 2 is the distribution of residuals after conditioning on school-year, grade-year, and family fixed effects; Model 3 is the distribution of residuals after conditioning on school-year, grade-year, and family-year fixed effects. Distributions corresponding to models 0 through 2 are described by the left y-axis, while the distribution corresponding to Model 3 is described by the y-axis on the right-hand side of the graph.

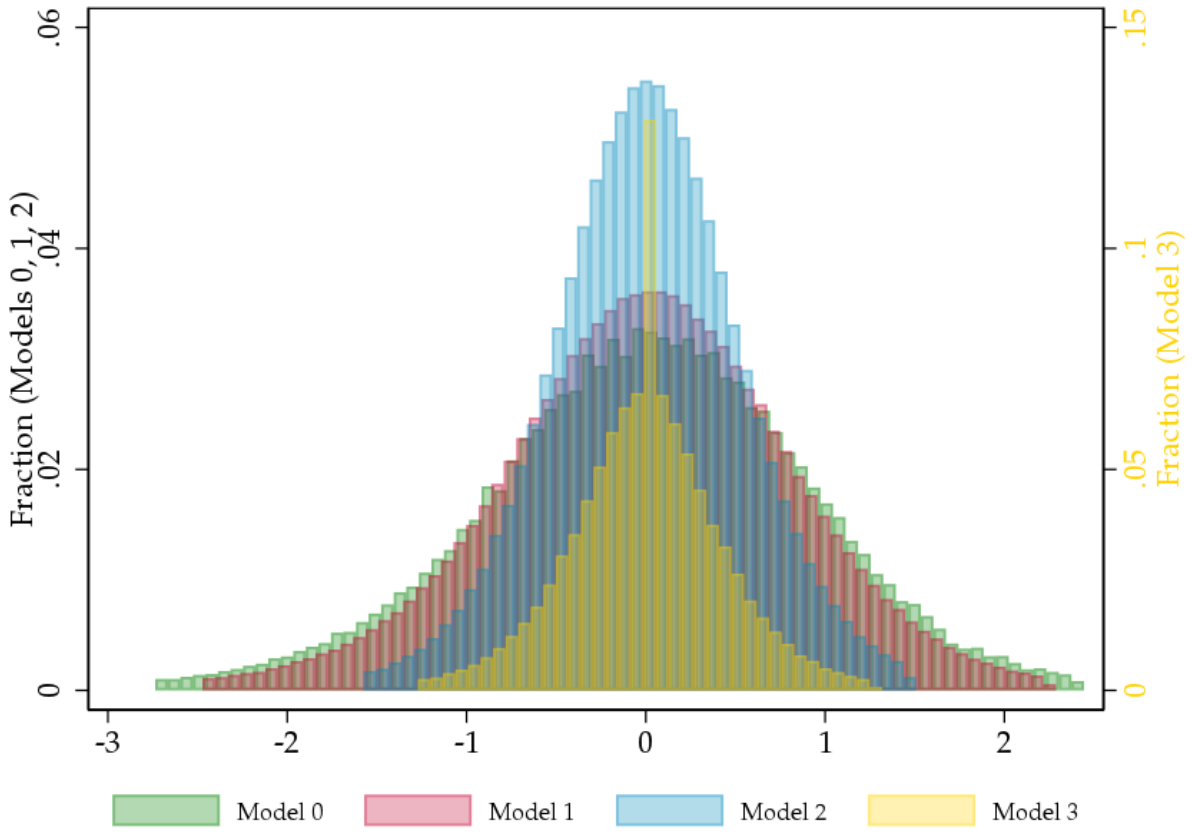


**Figure A3:** Distribution of standardized reading scores and its residuals. Model 0 refers to the demeaned distribution (i.e., the raw distribution centered at zero). Model 1 is the distribution of residuals after conditioning on school-year and grade-year fixed effects; Model 2 is the distribution of residuals after conditioning on school-year, grade-year, and family fixed effects; Model 3 is the distribution of residuals after conditioning on school-year, grade-year, and family-year fixed effects. Distributions corresponding to models 0 through 2 are described by the left y-axis, while the distribution corresponding to Model 3 is described by the y-axis on the right-hand side of the graph.

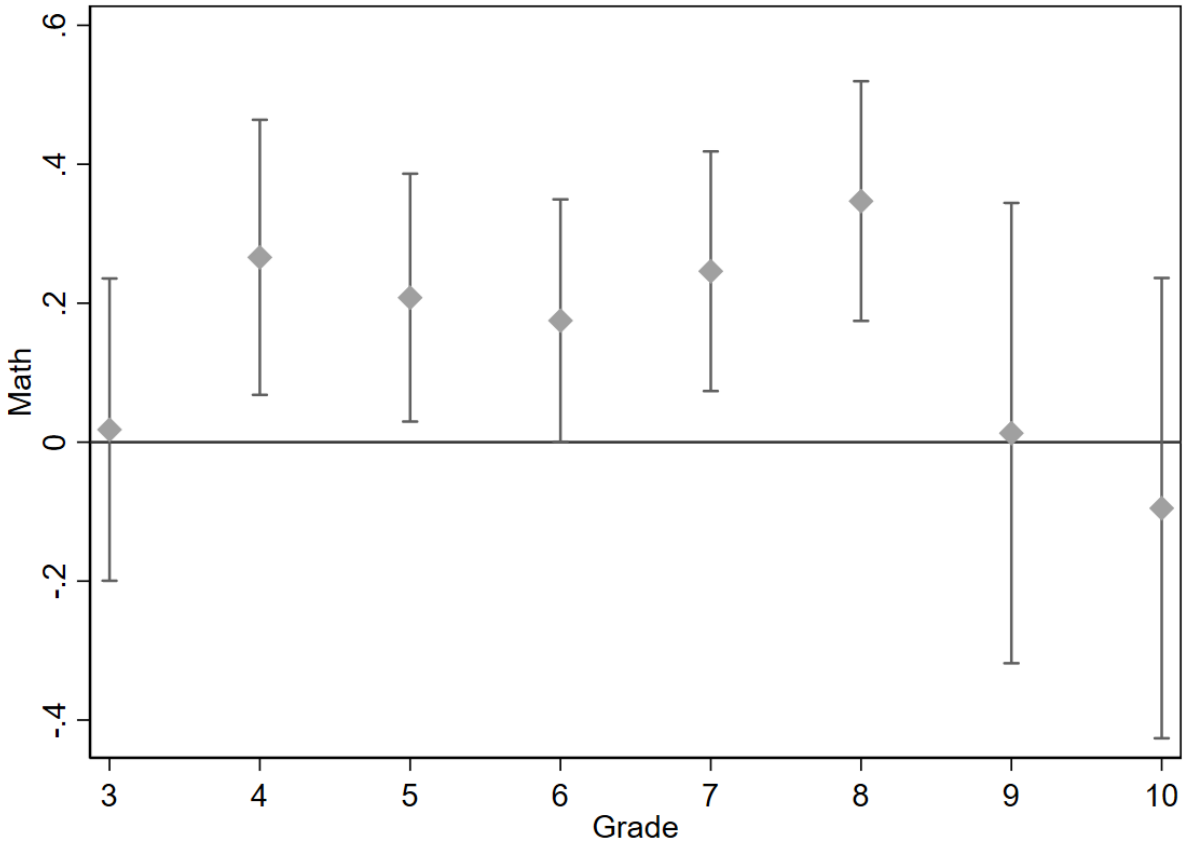


**Figure A4_A:** This figure plots the coefficient of the variable *Foreign-born Exposure* (with its 95% confidence intervals) in a regression with the same specification as Table 4, Column (5), Panel A (math test score as outcome), but on the subsamples of students enrolled in each grade.

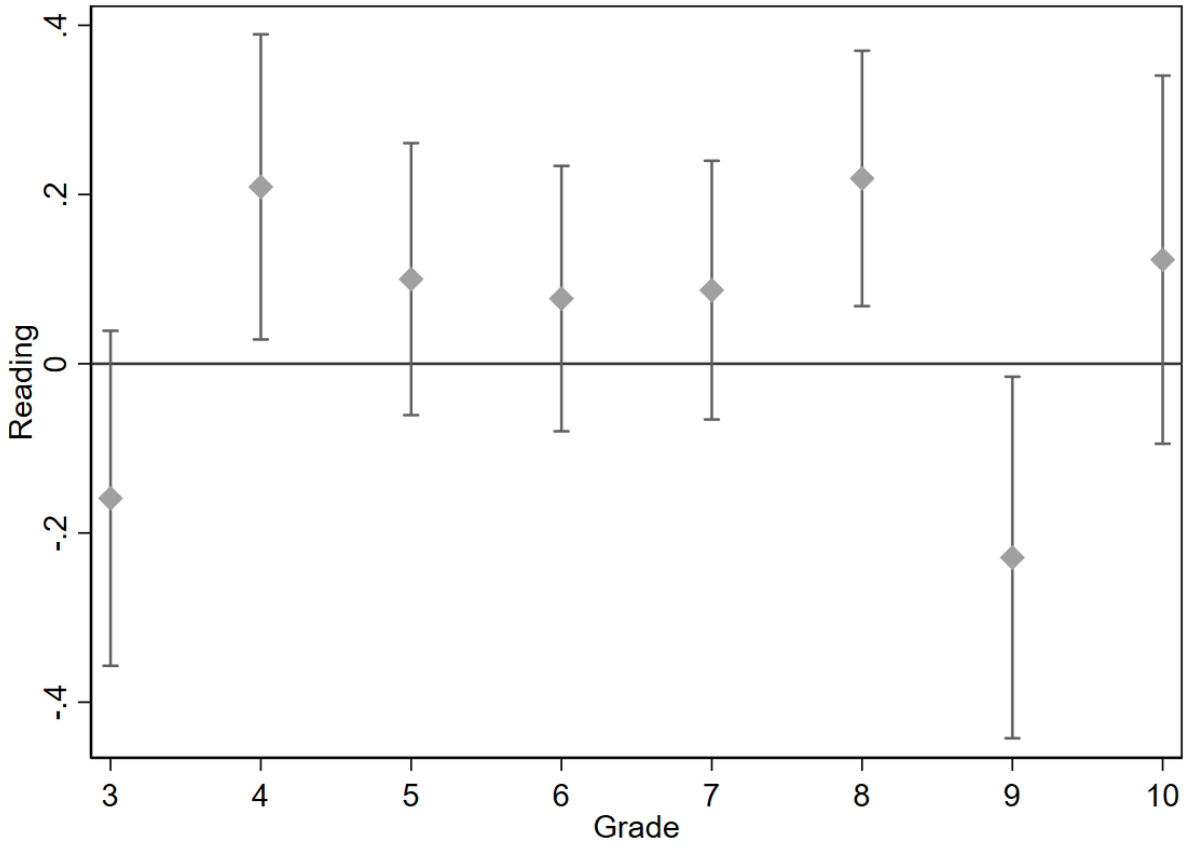


**Figure A4_B:** This figure plots the coefficient of the variable *Foreign-born Exposure* (with its 95% confidence intervals) in a regression with the same specification as Table 4, Column (5), Panel B (reading test score as outcome), but on the subsamples of students enrolled in each grade.

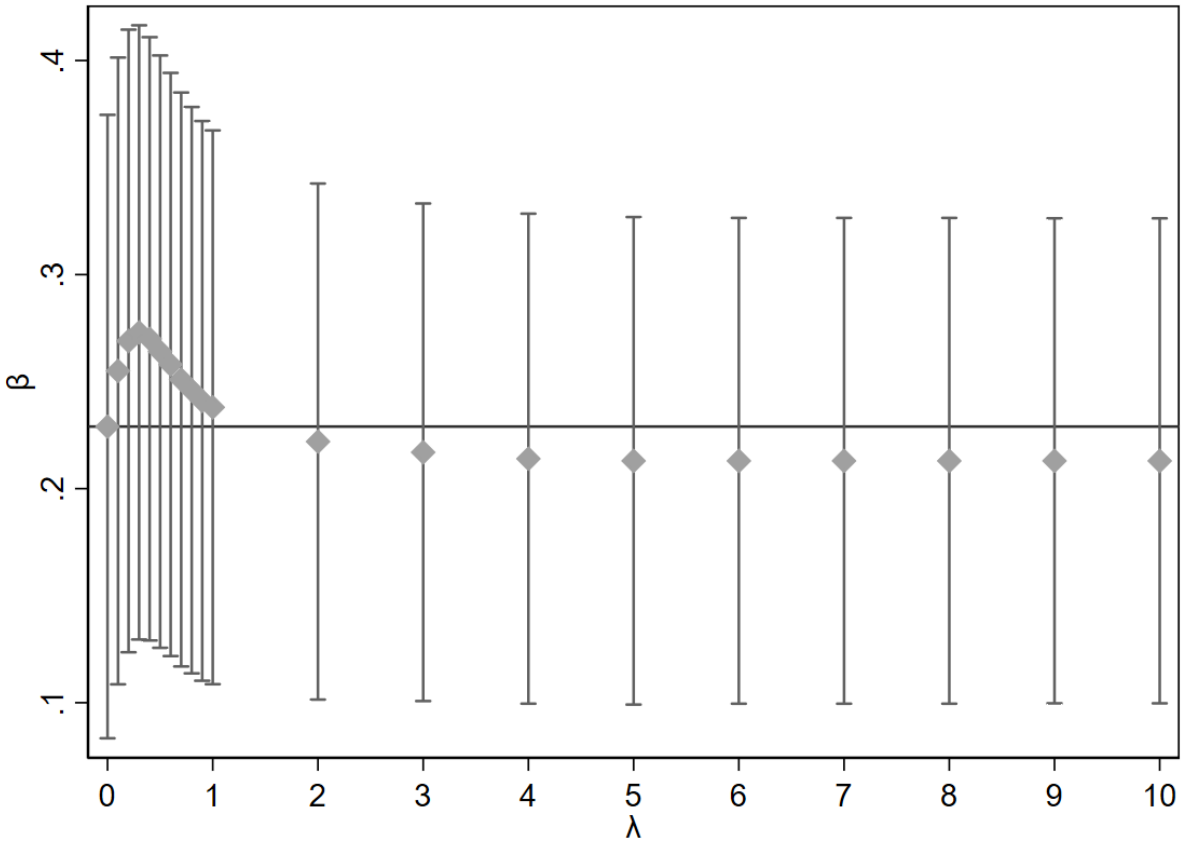


**Figure A5_A:** This figure plots the coefficients for cumulative exposure in the specification of Table 4, Column (5) (Panel A: math score as outcome), with their 95% confidence intervals, using different lambda based on the equation (1) in the text. The coefficient corresponding to lambda=0 is the same as the one reported in Column (5) of Table 4, Panel A (0.229).

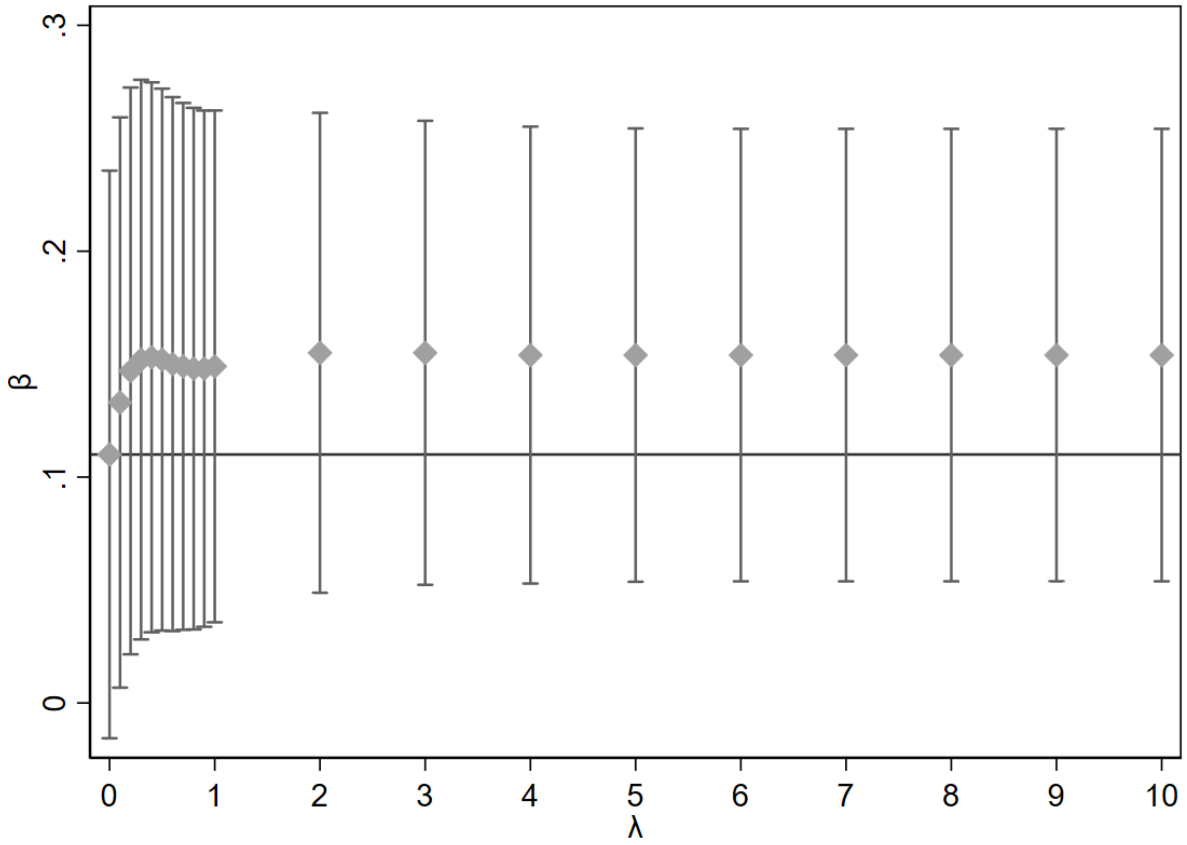


**Figure A5_B:** This figure plots the coefficients for cumulative exposure in the specification of Table 4, Column (5) (Panel B: reading score as outcome), with their 95% confidence intervals, using different lambda based on the equation (1) in the text. The coefficient corresponding to lambda=0 is the same as the one reported in Column (5) of Table 4, Panel B (0.110).

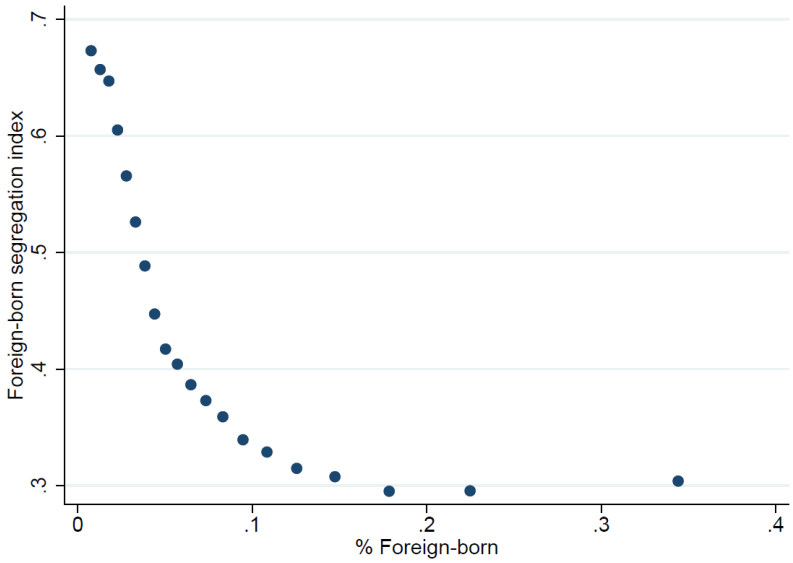


**Figure A6:** This figure reports the binned scatter plot depicting the average segregation index as a function of the share of foreign-born students across school-grade-year cells. See the text for details about the construction of the segregation index.

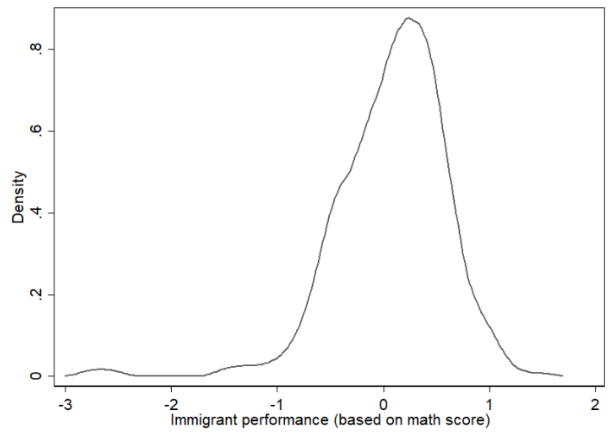


**Figure A7_A**: This graph shows the distribution of the cross-country immigrant performance index based on math performance. We construct the country-specific performance index by averaging the standardized math score by country of origin.

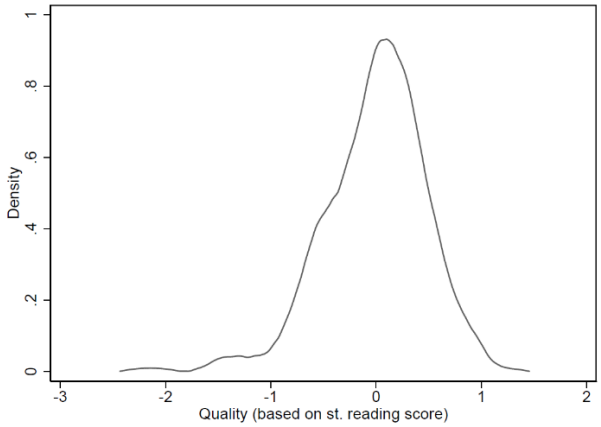


**Figure A7_B:** This graph shows the distribution of the cross-country immigrant performance index based on reading performance. We construct the country-specific performance index by averaging the standardized reading score by country of origin.

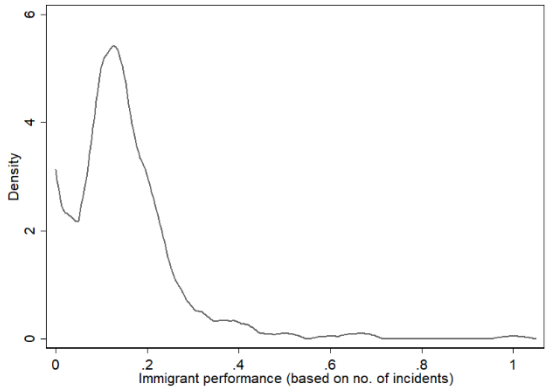


**Figure A7_C:** This graph shows the distribution of the cross-country immigrant performance index based on number of incidents. We construct the country-specific performance index by averaging the number of incidents by country of origin.

# Appendix B

Miller, Shenhav and Grosz (forthcoming) show that the external validity of estimates obtained relying on within-family variation might be limited if the research design suffers from "selection into identification." To address this potential issue, we implement the observable-based reweighting procedure described in Miller, Shenhav and Grosz (forthcoming).

Miller et al. estimate a model with a binary treatment (in their case given by the participation in the Head Start program). When using family fixed effects, the identifying variation comes exclusively from those families with variation in the treatment (in their case one sibling in the Head Start program and one not). They define these families as "switchers." To the extent that treatment effects are heterogeneous and that these families are different from the rest of the population, this approach introduces a bias because of selection into identification: the parameter would be identified from the variation coming from a non-random (and small) subset of families. To correct for this selection bias, they propose a re-weighting exercise based on two propensity scores: one is the probability of being a program participant and part of the target population, and the other is the probability of being a "switcher."

Our setting is different because of two dimensions. First, we do not have a program or a policy with a corresponding target population. Second, our treatment is not binary. We address these issues in the following way. As for the target policy, we make the plausible assumption that the probability of being in the target population is 1: migrants can go to any school and therefore any US born student in our sample can be exposed to them.

As for the issue of the lack of a binary treatment, Miller et al. suggest the following for the continuous case: "…while we have focused on the case where $D_i$ is binary, it is worth noting that selection into identification can also be present when $D_i$ is continuous. It is not clear how frequently this will manifest in practice, however, since groups are more likely to have variation in a continuous covariate. Even so, it may still be worthwhile to verify the number of switchers, since there may be persistent bunching at one value of $D_i$, such as at zero maternal income or at zero instances of an uncommon event." We therefore applied their procedure for our continuous case as follows:

- First, we ran a regression of cumulative exposure on family/year fixed effects (the corresponding fixed effects we use in our most conservative specification) and computed the residuals.
- We defined "switchers" those students for whom the residuals are approximately equal to zero (meaning that once we control for family/year fixed effects there is no residual variation in exposure, which implies no residual variation within the family either within kid over time or between siblings). We use as a threshold for the residuals the same value used by Miller et al. (residuals in absolute value greater or equal than 0.000001)[1].

[1] See, e.g., https://github.com/nshenhav/Selection-into-Identification-Replication-Files/blob/main/dofiles/0makepsiddata.do, at line 1581.

- Using this procedure, we find that the fraction of switchers is equal to 95.7%, implying that selection into identification is not a concern in our case. For a comparison, the fraction of switchers in one of the regressions in Miller et al. was 7%.[2]

**References**

Miller, D., N. Shenhav and M. Grosz (forthcoming), "Selection into Identification in Fixed Effects Models with Application to Head Start," *Journal of Human Resources*.

[2] Miller et al. 2021 (avilable at http://jhr.uwpress.org/content/early/2021/11/03/jhr.58.5.0520-10930R1.full.pdf+html), Table 4, column (2). Other columns show switcher rates around 50%.