



High School Curriculum helps Indiana's urban and rural students on SAT.

Family Background, Locality, and the Influence on SAT Scores for Indiana Class of 2000

by Tina Tuttle

The factors that contribute to academic success have attracted the attention of many researchers. In Indiana, this issue receives much attention and is a popular subject of research. Recent research by Ed St. John and Associates at Indiana University has examined the links between family background, income and academic success. This research brief summarizes recent research and more detailed reports can be found on the IPAS website at www.indiana.edu/~ipas1/ which explore the factors of the Indiana 2000 high school graduate cohort related to their college pathways.

Among the findings:

- Indiana students in urban and rural areas have lower SAT scores than suburban students, but the difference was not as substantial as that at the national level.
- While there was a difference in SATs between high and low income students, this difference in scores diminished when researchers accounted for demographic characteristics and curriculum choices.
- There was a 100 point difference in SAT scores between the regular diploma and the academic honors diploma controlling for the effects of income and other factors, indicating the benefits for all income groups of a rigorous curriculum in raising SAT scores.

Family Background and SAT scores

Research has shown that family income and parental education are strongly linked to academic success in both secondary school and going to college after high school. At the national level, some researchers explain achievement gaps between different racial and ethnic groups by student demographic differences (Choy, 2002; White, 1982). Others argue the gap is explained by access to adequate school resources (Haycock, 1998, Klein et al., 1997; Ludwig & Bassi, 1999; Payne & Biddle, 1999).

So, if income is related to parental education and therefore to access to good school resources, then how does family background relate to SAT scores?

To examine student achievement as measured by the SAT and demographic background, the IPAS re-

Category		percentage in the Indiana Cohort	percentage in Nat'l cohort
low income	less than \$30K	15.1%	17.9%
middle income	\$30-70K	43.5%	34.8%
high income	above \$70K	25.8%	25.8%
no income reported	n/a	15.7%	20.1%

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Family Background, Locality, and SAT Scores (*con't*)

search team looked at the Indiana high school graduating class of 2000, and broke them down into three income groups: low, middle and high (see display 1). Using a statistical method called ordinary least squares regression that controls for many background and academic variables, they compared high income students to middle income and low income to middle income to investigate the relationship between family background and SAT score.

In the first analysis, researchers looked at just income and SAT and found a very strong relationship that is often seen by casual observers—higher income was associated with high SAT scores for both the national and Indiana student populations.

However, when researchers took into account other variables like demographic (ethnic, gender, parental education) and curriculum choices (courses in high school), this relationship diminishes. This means that for students who made [or were able to make] certain curriculum choices in high school, these choices (or ability to make these choices) minimize the effects of poverty in academic achievement as it is measured by the SAT. Having the opportunities to take advanced courses reduced the negative effect of poverty on SAT scores.

Specifically, when the other factors are taken into consideration, students from high income families scored an average of 6 points higher than, and low income scored -6 points lower than middle income students. So income played a much less important role in students' SAT score than did the curriculum choices the students made (See Hoosier Brief 1 for more on curriculum, high school diplomas and the SAT).

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Locale and SAT scores

Where a student lives and goes to school (locale) is related to performance on the SAT. Locale is also associated with income or poverty, but this analysis takes income into account and gives a better indication of difference based on school and community resources. Compared to students from suburbs and towns, students in rural areas were predicted to score 24 points lower, and 16 points lower for students in urban locales (see display 2 and 3).

When the researchers looked at the diploma types for the state of Indiana all income groups show a 100 point difference between the regular diploma and honors diploma indicating that all income groups benefit equally by a rigorous curriculum.

Conclusions

Students in urban and rural areas not only have lower SAT scores but also because of differences in income and other social background variables as well as access to quality academic experiences. Since these effects were substantially lower in Indiana than they were nationally, the availability of advanced curricula in urban high schools in Indiana helps equalize achievement.

While the availability of advanced courses in high schools has resulted in increases in college-prepared graduates, IPAS analysts express caution in the increasing drop-out rate (St. John, Musoba, Simmons, & Chung, 2000), especially with growing policy emphasis on Core 40 as a baseline diploma over the current regular diploma.



Special Acknowledgement:

Further information on IPAS research; additional briefs and related publications are available from the IPAS website at www.indiana.edu/~ipas1/resources.html.

Family Background, Locality, and SAT Scores (con't)

Analysts emphasize the importance to develop a balanced approach for assessing the impact of high school reform, including the high school diploma.

Note: This report is based on OLS regression analyses of SAT scores of the 2000 cohort: a sample of 100,000 national and Indiana SAT test takers. Regressions explain or predict a particular occurrence, in this case SAT scores, based on the simultaneous consideration of a group of variables, portioning out how much the difference in SAT score is explained by each. Regressions do not show causality; therefore average results may not be matched by an individual student. The figures in this report should be interpreted as the change in SAT score while at the same time considering the other variables: gender, ethnicity, family income, parent education, school locale, educational aspirations, class rank, academic coursework and GPA.

Display 2. Predicted SAT score difference by Locale, compared to students in suburbs/towns

Locale	National	Indiana
Large/Med City	-16.2	-6.5
Rural area	-23.7	-17.3

Display 3. Geographic Locale Distribution of Indiana Class of 2000

Locale Distribution Groups of Class of 2000	Percentage in Indiana	Percentage in National Cohort
suburbs/town/no response	51.6%	55.7%
Large/Med city	26.9%	32.5%
Rural area	21.5%	11.8%

References

- Becker, W.E. (2003) *Omitted variables and sample selection issues in the NCES research on financial aid and college participation*. Report prepared for the Advisory Committee on Student Financial Assistance, Washington, DC.
- Choy, S. (2002). *Access and persistence: Findings from 10 years of longitudinal research on students*. Washington, DC: American Council on Education.
- Haycock, K. (1998) Good teaching matters: How well-qualified teachers can close the gap. *Thinking K-16*, 3(2).
- Heller, D.E. (2003). *Review of NCES research on financial aid and college participation*. Report prepared for the Advisory Committee on Student Financial Assistance, Washington, DC.
- Klein, S.P., Josavnioc, J., Stecher, B.M, et al. (1997). Gender and racial/ethnic differences on performance assessments in science. *Educational Evaluation and Policy Analysis* 19(2), 83-97.
- Ludwig, J. & Bassi, L.J. (1999). The puzzling case of school resources and student achievement. *Educational Evaluation and Policy Analysis*, 21(4), 385-403.
- Payne, K.J., & Biddle, B.J. (1999). Poor school funding, child poverty, and mathematics achievement. *Educational Researcher*, 28(6), 4-13.
- St. John, E.P. (2003) *Refinancing the college dream: Access, equal opportunity, and justice for taxpayers*. Baltimore: Johns Hopkins University Press.
- St. John, E.P., Musoba, G.D., Simmons, A.B. & Chung, C.G. (2000). *Meeting the Access Challenge Indiana's Twenty-first Century Scholars Program*. Indianapolis: Lumina Foundation for Education.
- White, K.R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin*, 91, 461-481.