Graphic Detail

Geographic Information Systems (GIS) organize and clarify the patterns of human activities on the Earth's surface and their interaction with each other. GIS data, in the form of maps, can quickly and powerfully convey relationships to policymakers and the public. This department of Cityscape *includes maps that convey important housing or community development policy issues or solutions. If you have made such a map and are willing to share it in a future issue of* Cityscape*, please contact john.c.huggins@hud.gov.*

Leveling the Playing Field: School District Spending in Diverse Communities

Alexander Din
Dewberry

The United States is the only industrialized nation that funds its public schools from local- and state-level taxes (Payne and Biddle, 1999). School resource disparities across districts reflect economic differences between the wealthy and poor. A school district's spending per student in each district is based on the economic needs of the students or the school as a whole, which typically is based on median household income. School districts typically determine how much funding each school receives by calculating a cost per student that is the ratio of total school cost to the number of students. The cost-per-student ratio is then divided by the median household income in that district to derive a spending-to-income (SIC) ratio—

SIC ratio = [cost per student/median household income]. (1)

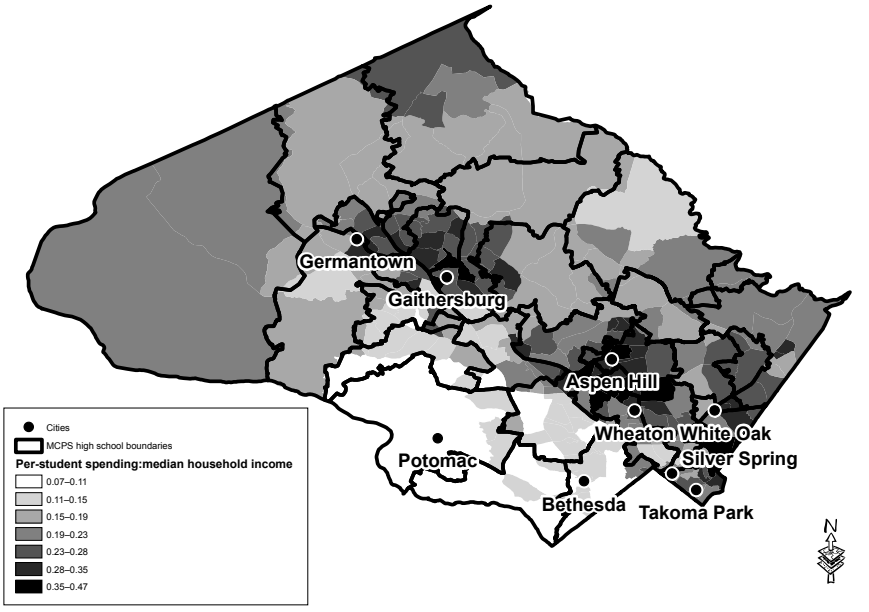
Using Montgomery County, Maryland, as an example, these costs can be visualized in a spatial analysis to determine if spending is distributed according to income differences.

Exhibit 1 shows the geographic distribution of per-student SIC ratios overlaid with high school boundaries. The map shows that spending per student is higher in and around three population centers—Gaithersburg, Wheaton-Aspen Hill, and Silver Spring—areas with many lower- to middle-income households. The map indicates that areas of lower median household income are receiving more per-student spending than areas where the median household income is high.

These areas are also where schools serve higher levels of racially or ethnically diverse student populations that often are disadvantaged in getting an equal education. A cluster analysis of SIC and ethnic diversity may help determine if areas of higher spending correlate with higher ethnic diversity and, subsequently, lower to middle median incomes.

Exhibit 1

Ratio of Per-Student Spending to Median Household Income



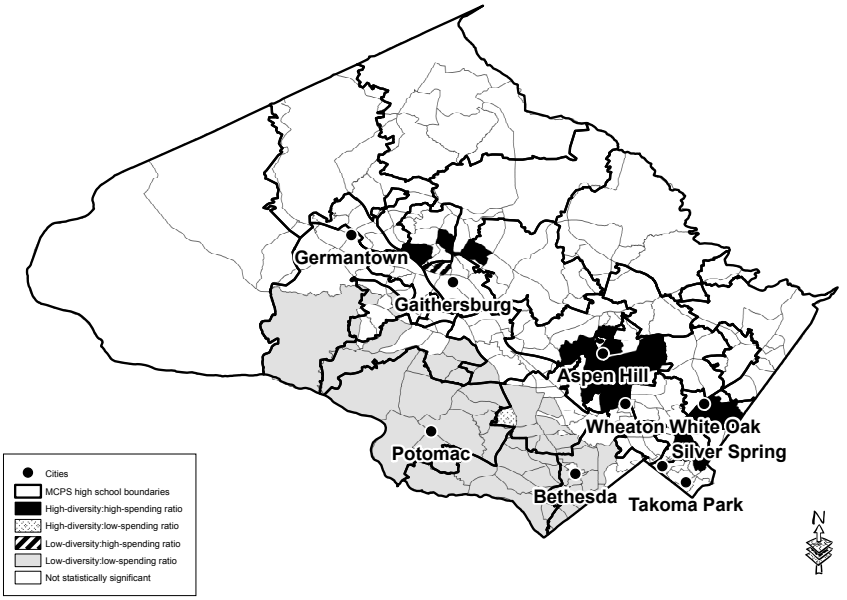
MCPS = Montgomery County Public Schools.

The map in exhibit 2 shows that several census tracts with *high diversity* and *high spending per student* (black) are concentrated in three clusters in the county—around Gaithersburg, Wheaton-Aspen Hill, and Silver Spring. These three areas would be and are the target areas for higher spending per student. One tract around Gaithersburg shows the anomaly of having *low diversity* but *high spending* (diagonal stripes). In the southern part of the county, around Bethesda and Potomac, *ethnic diversity* and *spending per student* both are *low* (light gray). One outlier tract shows an area with *high diversity* but *low spending* (dots).

Communities with lower median household incomes in Montgomery County appear to benefit from the revenue drawn from wealthier communities. The two maps in this article suggest that Montgomery County is providing students in areas of lower median incomes and higher ethnic diversity with more funding to help those students receive a more equal education.

Exhibit 2

Cluster Analysis of Diversity Index and Spending-to-Income Ratio



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Author

Alexander Din is a GIS Analyst for Dewberry, primarily supporting comprehensive remapping and map modernization of the Coastal Barrier Resource System on behalf of the U.S. Fish and Wildlife Service.

References

Payne, Kevin, and Bruce Biddle. 1999. "Poor School Funding, Child Poverty, and Mathematics Achievement," *Educational Researcher* 28 (6): 4–13.