

# School-Level Poverty Measures: An Exploratory Pilot Project

## SLDS WEBINAR SUMMARY

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### WEBINAR PRESENTERS

Alex Mattera and Susan Williams, *Virginia Department of Education*

Dan Ralyea, *South Carolina Department of Education*

### MODERATOR

Jeff Sellers, *SLDS Grant Program State Support Team*

Although understanding how poverty affects student learning is essential for equity-focused education policy and practices, students' household income and poverty are difficult to measure. Eligibility for free and reduced-price lunch (FRPL) programs often serves as a proxy measure for student poverty, but those data were not designed for education research and policymaking.

In 2019, 15 states received supplemental funding to their federal Statewide Longitudinal Data Systems (SLDS) Grant Program awards to help explore alternative measures of student poverty. Part of this project involves testing the accuracy and usefulness of statistically modeled household income estimates from the National Center of Education Statistics' Spatially Interpolated Demographic Estimates (SIDE) Project.

To use SIDE and its accompanying online application, BlindSIDE, state education agencies (SEAs) must provide student address locations geocoded with latitude and longitude coordinates. The states participating in the poverty measures pilot project vary in the scope and quality of their existing student address data collections. Some have established processes for collecting and geocoding student addresses. Others are determining how to create or improve their student address collections and add latitude and longitude coordinates.

Representatives from SEAs in South Carolina and Virginia share their approaches to collecting and preparing student address information for use with the BlindSIDE application, including their methods of geocoding addresses.

### South Carolina: Cleaning, Validating, and Geocoding Student Address Data for BlindSIDE

Before joining the NCES school-level poverty measures project, the South Carolina Department of Education (SCDE) was exploring alternatives to using FRPL eligibility as a poverty indicator. Several years earlier, it created the Pupil in Poverty (PIP) indicator to identify students whose families had received benefits from one of several social services or programs during the past 3 years, including the Supplemental Nutrition Assistance Program (SNAP); Temporary Assistance for Needy Families (TANF); Medicaid; or services for migrant, foster, or homeless students. Because not all eligible families apply for these benefits, SCDE continued to look for additional ways to identify students living in poverty.

#### Collecting student addresses

South Carolina schools collect student addresses annually to confirm residency when students re-

## What Are SIDE and BlindSIDE?

The National Center for Education Statistics' (NCES) SIDE Project uses new, experimental statistical models to estimate household income based on the neighborhood conditions where students live. Given the latitude and longitude coordinates of a student's home address, SIDE pulls income data from the 25 nearest households with children that are part of the U.S. Census's American Community Survey (ACS). It then weights those income data based on proximity to the address in question to predict household income at that location.

SIDE estimates are expressed as income-to-poverty ratio (IPR) values, which indicate relative income levels on a continuous scale from 0 to 999. Once fully reviewed and validated, a SIDE-estimated IPR of 100 would correspond to the federal poverty level. A household with an IPR of 130 or less would meet the income threshold for free school lunch (up to 130 percent of the federal poverty level), and households with IPRs between 131 and 185 would qualify for reduced-price lunch (up to 185 percent of the federal poverty level).

The BlindSIDE application lets users attach SIDE IPR estimates to addresses without sharing sensitive student data with NCES. Through a password-protected account, state agencies load a comma separated values (CSV) file of geocoded data to the browser-based BlindSIDE application. The file must contain unique identifiers for students and schools, as well as latitude and longitude coordinates for student addresses. BlindSIDE then assigns IPR estimates from SIDE to each set of address coordinates. In addition to attaching the IPR estimates to the agency's data file, BlindSIDE provides a school-level data file with descriptive statistics summarizing the IPR estimates.

enroll. SCDE and its school districts use a common PowerSchool student information system, which allows SCDE to pull student addresses from each district into a statewide collection. However, these addresses were not validated or standardized.

Through a contract with Level Data, SCDE began using the U.S. Postal Service's Coding Accuracy Support System (CASS) to validate and standardize student addresses. With CASS, SCDE offers its districts a bulk data-scrubbing service and address certification at the time the information is entered into districts' data systems. The service is voluntary, and not all districts use CASS to clean their student address data.

### ***Geocoding student addresses***

In preparation for testing the BlindSIDE application, SCDE worked with Level Data to explore and evaluate geocoding services to attach latitude and longitude coordinates to student addresses. The department's initial geocoding attempt assigned coordinates based on an address's 5-digit zip code when the full street address was not recognized. This method resulted in several student addresses having identical coordinates at the geographic center of a zip code, which could appear in a body of water or other location clearly not corresponding to a residence.

Using ZIP+4 codes, which add four digits to a standard zip code, gave SCDE more precise locations for its student addresses but did not always correspond to actual homes. ZIP+4 codes represent

portions of postal carrier routes that may change over time, making them less reliable for identifying student addresses.

SCDE settled on a rooftop geocoding method, which assigns geocodes based on the location of a physical building on the property associated with the address. This approach gives SCDE a high degree of confidence in the accuracy of its geocoded data.

### ***Next steps***

Before submitting student address coordinates to BlindSIDE, SCDE is validating its rooftop-based geocodes for a pilot district by comparing them to geocodes that the district recently generated independently for a rezoning effort. After that review, SCDE plans to submit geocodes for that district to BlindSIDE to receive IPR estimates. SCDE then will submit data for additional districts as their geocoded address data are generated and validated.

After receiving IPR estimates for students from BlindSIDE, SCDE will compare the estimates to its PIP indicator to determine the correlation between the two measures. For students with multiple addresses on file, SCDE plans to submit all known addresses to BlindSIDE and use the address with the lowest IPR estimate for analysis.

SCDE continues to communicate to its districts the importance of validating and standardizing their student address data. In addition to the poverty

measures project, high-quality address data can help SCDE plan more efficient bus routes and, when connected to poverty estimates, allocate supplementary state funds for low-income students. SCDE also has provided cleaned student address information back to districts to help strengthen their understanding and use of other data, including disciplinary incidents.

## **Virginia: Creating and Preparing a New Student Address Collection**

Like many SEAs, the Virginia Department of Education (VDOE) began seeking alternative poverty measures due to recent changes in FRPL eligibility criteria that allow more students to receive school meals than may have met income requirements previously. VDOE uses information about student poverty to distribute funding for services that support low-income students. VDOE and the Virginia General Assembly are interested in finding alternatives to FRPL eligibility for school funding and other programs.

### ***Collecting student addresses***

VDOE has a longitudinal data system of student records spanning about 2 decades, with well-established processes for collecting, standardizing, and verifying the data. However, the student record collection did not contain addresses before VDOE joined the NCES-funded poverty measures pilot project.

To evaluate SIDE income estimates as an alternative poverty indicator, VDOE activated fields in its data collection system to begin gathering student addresses. Following its data governance process, VDOE notified its local education agencies—known in Virginia as school divisions—about the poverty measures project and the reason for collecting address data. To report student address information clearly and accurately, division staff members received training and resources on how to use the two address line fields and a zip code field. Validation checks within the data system help ensure that street addresses are formatted properly and do not contain post office boxes or nonresidential addresses. If a student has multiple addresses, school divisions determine which to report as the student’s primary address to the SEA.

After school divisions complete their fall 2021 student record collections, a team of 10 division leaders and program specialists will verify and approve each division’s data. Then VDOE will publish the data in its fall membership collection, which can be used for analysis.

### ***Geocoding student addresses***

To geocode its student addresses, VDOE is working with the Virginia Geographic Information Network’s geographic information system clearinghouse, which also supports state emergency response services. Additionally, VDOE has used the open-source tool QGIS to attach latitude and longitude coordinates to relatively small numbers of records.

Because address data are new to VDOE’s student record collection, they present some challenges related to accuracy and consistency. As in South Carolina, some addresses may return geocodes pointing to a body of water. Some street addresses might be associated with multiple city names. VDOE analysts are exploring multiple geocoding approaches to generate accurate coordinates for these data, including potentially using different methods for different parts of the state based on population density.

### ***Next steps***

Once VDOE analysts feel confident in their geocoding processes, they plan to begin submitting address coordinates to BlindSIDE to generate IPR estimates. They are considering using school addresses rather than student addresses for an initial test because the dataset is smaller and more familiar.

VDOE hopes to answer three primary research questions using IPR estimates from SIDE:

- How do SIDE-modeled poverty data correlate with available state data on FRPL eligibility and economically disadvantaged status?
- How do SIDE-modeled poverty data change our understanding of concentrated or dispersed student and family poverty in Virginia?
- How would SIDE-modeled poverty data change the distribution of state funds and identification of priority schools or communities for educational intervention?

After analyzing these questions in the pilot project, VDOE will evaluate the viability of using SIDE data as a poverty measure on an ongoing basis. Analysts will determine their confidence in the student address and SIDE IPR data, their capacity to continue collecting and geocoding student address data, the effect of SIDE-based poverty measures on school funding, and policymakers’ interest in and political will to keep using the measure. This information will determine whether VDOE continues to collect student address data from its divisions and using SIDE.

## Conclusion

Poverty measures such as SIDE estimates may offer a valuable alternative to FRPL eligibility data for supporting equity-related policy and investments in education. However, many SEAs need to collect new data or use existing data in new ways to evaluate the accuracy and usefulness of SIDE estimates. They may need to spend considerable time and effort preparing student address data and testing different methods of geocoding those data for use in BlindSIDE. In some cases, SEAs can use or expand on address collections or geocoding services managed by other state agencies, such as transportation departments or emergency services. Others will need to establish entirely new data collections or contracts for geocoding services. Through NCES's school-level poverty measures pilot project, SEAs across the nation are finding best practices and approaches that can be adapted by other states considering similar methods of measuring student poverty.

## Additional Resources

National Center for Education Statistics: School Neighborhood Poverty  
<https://nces.ed.gov/programs/edge/Economic/NeighborhoodPoverty>

SLDS Issue Brief: School-Level Poverty Measures Using BlindSIDE  
<https://slds.ed.gov/#communities/pdc/documents/20935>

South Carolina Department of Education  
<https://ed.sc.gov/>

Virginia Department of Education: Data Collection  
[https://www.doe.virginia.gov/info\\_management/data\\_collection/index.shtml](https://www.doe.virginia.gov/info_management/data_collection/index.shtml)