

A Proposal for Collecting School-Level Resource Data on the Schools and Staffing Survey

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Introduction

Since 1987, the National Center for Education Statistics (NCES) has collected national data on the characteristics of public and private schools through periodic administrations of the Schools and Staffing Survey (SASS), which is scheduled to be administered for the fourth time in 1999–2000. The overall objective of SASS is to provide a detailed and comprehensive picture of American elementary and secondary education, through an interrelated set of questionnaires sent to local education agencies (districts), schools, principals, and teachers. Analyses of the existing SASS data have benefited from the linkages across these different components of the SASS. But analyses have been constrained by the limited information collected on certain critical issues—one of them being school resources or finances.

This paper reports on an exciting possibility being explored by NCES—a proposal to expand the resource and finance data collected as part of the

1999–2000 SASS. The proposal, which currently is being tested for feasibility, has two major components. The first part of the proposal is to collect more detailed information about staffing resources in the schools in the SASS sample in order to improve understanding of how schools allocate personnel resources, which account for more than 85 percent of expenditures in most school sites (Levine, Chambers, Duenas, and Hikido, 1998). The second component involves gathering expenditure data for individual schools in the SASS sample. This represents a departure from existing educational finance data collections, such as the National Public Education Financial Survey (NEPFS) or the Annual Survey of Local School Governments—Schools (Form F-33), which collect data at the district level, but not for individual schools. Moreover, the SASS finance survey would represent the first collection of traditional finance data from a nationally representative sample of private schools in 20 years.¹

¹ The last national survey of private schools was conducted in 1978–79. See McLaughlin, D. H. and Wise, L.L. 1980. *Nonpublic Education of the Nation's Children*. Technical Report 9. Palo Alto, CA: American Institutes for Research.

In this paper, we discuss the rationale for the collection of school-level resource and expenditure data, and we outline the proposals that have been developed to collect such data as part of SASS. In the first section of the paper, we review the kinds of policy issues that could be addressed with improved resource and expenditure data. In the next section, we present an overview of two approaches to collecting improved school-level resource data—a Resource Cost Model (RCM) approach and a traditional finance approach. In the third section, we describe the elements of these two approaches that may be incorporated in the 1999–2000 SASS. Finally, the paper concludes with a discussion of how the proposed additions to SASS fit in with other NCES efforts to expand knowledge about the allocation of resources at the school level.

Underlying Policy Issues

The effort to collect expanded school-level resource and expenditure data has been undertaken by NCES in response to the demand of education finance researchers for improved data to address a number of important education policy issues. A review of the literature, combined with a discussion among a half-dozen prominent education finance experts,² suggests that the collection of improved resource and expenditure data would support analysis of the types of policy issues outlined in table 1 and discussed briefly below.

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Resource Allocation and Productivity Issues

One of the most hotly debated questions of educational policy concerns the effects of school re-

sources on student outcomes.³ Much of the research in this area has relied on district-level data on per-pupil expenditures to measure school resources, but it is clear that this measure provides only a very crude index of the educational resources allocated to particular students and programs. In order to make progress in understanding the effects of resources on student outcomes, we need a much better understanding of the ways resources are used to produce education services. In particular, we need to understand how schools differ in the resources available and the ways these resources are allocated to different services and programs (i.e., special education or bilingual education). Furthermore, we need to understand how district-level resources (i.e., resources in curriculum coordination and professional development) support school-level activities.

Costs and Effects of Policy Initiatives

Closely related to issues of resource allocation and productivity are questions concerning the costs and effects of policy initiatives. Better data are needed to evaluate such questions of interest as the effects of finance reform on district allocations to schools, the costs of modifying school programs to implement new standards in mathematics and science, the cost of new school designs (for example, the New American School designs), and the costs of new forms of professional development (i.e., mentoring, networks,

and study groups).

Equity and Adequacy

Educational equity has been a major focus of both policy and research interest. Most studies of

² These education finance experts included Matthew Cohen (Ohio Department of Education), Margaret Goertz (University of Pennsylvania), Richard Laine (Illinois State Board of Education), David Monk (Cornell University), Allen Odden (University of Wisconsin), and Leanna Steifel (New York University). Also present for the discussion on January 9, 1998, were NCES Associate Commissioners Paul Planchon and Martin Orland, as well as Steve Broughman, William Fowler, Frank Johnson, Daniel Kasprzyk, and Mary Rollefson of NCES, and Jay Chambers, Michael Garet, Julia Isaacs, Lauri Peternick, and Joel Sherman of the American Institutes for Research.

³ See Hedges, L.V., Laine, R.D., and Greenwald, R. April, 1994. "Does Money Matter? A Meta-Analysis of Studies of the effects of Differential School Inputs on Student Outcomes." *Educational Researcher*. 23 (3):5–14; and Hanushek, E.A. Summer, 1997. "Assessing the Effects of School Resources on Student Performance: An Update." *Educational Evaluation and Policy Analysis*. 19(2).

Table 1.—Policy issues driving demand for school-level resource data
<p>Resource allocation and productivity How do schools allocate resources? How much is spent on instruction and how much on administration? What is the relationship between school expenditures and student outcomes?</p>
<p>Costs and effects of policy initiatives How does Initiative X affect school staffing patterns and expenditures?</p>
<p>Equity and adequacy How much variation is there in per-pupil expenditures among schools?</p>
<p>School-based management What data are needed to inform school management decisions?</p>
<p>Accountability Are resources under grant Y being spent as intended? How do resource allocations in school Z compare with allocations in similar schools?</p>
<p>Congressional interests and public inquiries How much is spent on administrative expenditures at the school site and the central office?</p>
SOURCE: American Institutes for Research.

educational equity have used district-level data, and these studies have documented wide disparities in per-pupil spending across districts within a state as well as across states. Of significant interest, but much less studied, is whether resources are distributed in an equitable manner across schools within a district.

In addition to examining equity issues, researchers have also focused on the *adequacy* of resource provision—that is, the minimum resources required to insure that all students have an appropriate opportunity to learn. Differences in student populations affect the level of resources that are required to provide an adequate level of educational services. For example, students with limited English proficiency (LEP) or in need of special education may require more services and, thus, more resources than other students.

School-Based Management

Recent reforms in school organization have sought to increase the degree to which staff at the school-site level are involved in making key educational decisions. But most districts lack the capacity to provide detailed school-level financial and resource data to support decision making. To the extent resource allocation decisions are made at the school level, school staff require detailed information on school budgets and expenditures. Such information is critical, for example, to support principals and teachers in understanding the budgetary tradeoffs involved in allocating resources to types of staff—for example, teachers, teacher aides, and clerical staff. In making decisions about such allocations, schools may also require “benchmark” information about the staffing allocations in high-performing schools serving similar student populations.

Accountability

One key function of information on school expenditures is to determine whether resources are being spent as intended. Such information is required to inform parents and community members on what is happening at the school-level (in charter schools, choice programs, etc.), as well as to inform state and federal agencies and private foundations on the ways in which resources for special programs are deployed.

Congressional Interests and Public Inquiries

NCES often is asked to address questions of interest to policy-makers and other audiences. For example, in the Improving America's Schools Act of 1994, Congress directed the Commissioner of NCES to study methods to gather information about spending for administration at the school and district levels. In another example, the international Organization for Economic Cooperation and Development (OECD) requests NCES to report the total amount spent per year on elementary and secondary education in the United States, including spending in both public and private schools. Another frequently asked question of NCES concerns how much is spent on instructional technology. Improved resource and expenditure data are required to answer these and other inquiries directed to NCES.

Two Approaches to the Collection of School-Level Resource Data

During 1997, researchers at the American Institutes for Research (AIR) were asked by NCES to develop two approaches to collecting data about the allocation of resources in public and private schools—a Resource Cost Model (RCM) approach and a traditional finance approach. Work on the RCM approach was undertaken by a team of AIR researchers in Palo Alto, California, under the leadership of Jay Chambers, while work on the traditional finance approach was undertaken by a team

of researchers at AIR's Pelavin Research Center in Washington, D.C., under the leadership of Joel Sherman. Each of these two approaches is summarized below, first in general terms, and then as a specific data collection strategy developed by the AIR research teams.

Overview of the Resource Cost Model (RCM) Approach

The RCM approach is essentially a bottom-up approach to the analysis of school resources. In contrast to the more traditional accounting systems that study resources by dividing a total budget down into fine-grained spending categories, the RCM approach starts at the level of service delivery and builds up to total costs by aggregating specific resources used in an educational program. It requires four basic steps: 1) specifying the types of physical

The RCM approach is essentially a bottom-up approach to the analysis of school resources . . . [It] starts at the level of service delivery and builds up to total costs by aggregating specific resources used in an educational program.

ingredients (teachers, books, etc.) used in an educational program; 2) measuring the intensity of these resources by quantifying them; 3) assigning prices to the specific physical ingredients; and 4) using the price data to aggregate resources across the entire program to determine overall program costs. The four steps in this process are illustrated in the four columns of table 2, which shows how staff resource costs could be measured in Rosemont School, a hypothetical elementary school serving 400 students. Although in this example the educational program under analy-

sis is an entire school, the RCM approach also can be used very effectively to study resources associated with a specific program within a school, such as a special education program or compensatory education program.

The level of detail and scope of data collection required by the RCM approach depends to a large extent upon decisions made during the first step outlined above: determining the categories of resources under study. In the example shown in table 2, data are collected for staffing resources only, across a broad range of staff ranging from teachers to custodians. A more streamlined model might split staff

Table 2.—Staff resources at Rosemont School: physical ingredients, quantities, prices, and total costs

Physical ingredient	Quantity (Full-time equivalent)	Price per unit, in dollars*	Total cost, in dollars
Principal	1.0	\$96,000	\$96,000
Assistant principal	1.0	74,000	74,000
Instructional coordinator	0.0	73,000	0
Librarian	0.8	64,000	51,200
Library aide	0.5	28,000	14,000
Teacher 1 (MA)	12.0	54,000	648,000
Teacher 2 (BA)	6.0	49,000	294,000
Music/arts teacher	1.2	49,000	58,800
Physical education teacher	1.5	44,000	66,000
Special education aide	2.0	20,000	40,000
Bilingual English as a Second Language aide	2.0	23,000	46,000
Other teacher aide	4.0	20,000	80,000
Counselor	1.0	50,000	50,000
Nurse	0.4	67,000	26,800
Social worker	0.2	53,000	10,600
Psychologist	0.1	65,000	6,500
Speech therapist	0.1	64,000	6,400
Health aide	1.0	33,000	33,000
Secretary/Clerical staff	5.0	33,000	165,000
Lunch-room attendant	1.0	28,000	28,000
Custodian	2.0	28,000	56,000
Total	42.8	—	1,850,300

— Not applicable.

*Prices include salaries at Rosemont School, multiplied by a 0.28 fringe benefit rate.

NOTE: Rosemont is a hypothetical elementary school with 400 students. Staffing costs per student are \$1,850,300 ÷ 400, or \$4,626.

SOURCE: American Institutes for Research.

among fewer categories than the 21 categories shown in table 2, or might be limited to instructional and administrative staffing resources under the assumption that variations in intensity of these staffing resources have the most significant effect on educational outcomes. An expanded model might list more categories of teachers (i.e., bilingual teachers, special education teachers, general education teachers by subject matter, Title I teachers, or reading specialists), or might collect data for more categories of staff (i.e., physical/occupational therapists, audiologists, or maintenance workers). Ideally, one might want to compile a detailed listing of all individuals working in a school (or all staff involved with in a

specific educational program under study), and collect selected data about each staff member. In addition, a full-fledged model would include data on textbooks, computers, science equipment, facilities, and other non-staffing resources.

Once the staff and other resources under study are identified, the next step is to measure the intensity of resources used. Staffing resources in each staffing category can be measured in a variety of ways: numbers of full-time and part-time staff, full-time equivalents (as in table 2), hours of labor, days of service, etc. Quantifying staff contributions can be complicated when staff are shared among sev-

eral schools. An itinerant music teacher, for example, who works 3 days in Rosemont school and 2 days in Greenwood school is a full-time employee, but should be counted as an 0.6 full-time equivalent (FTE) employee when measuring staff resources at Rosemont. (In the 8th line of table 2, Rosemont is reported as having 1.2 in FTE music/arts teachers, including the itinerant music teacher and an itinerant art teacher who also teaches 3 days a week). In Rosemont, as in many schools, staff who perform student support functions are most likely to be shared among several schools. For example, the nurse is at Rosemont 2 days a week (0.4 in FTEs), the social worker 1 day a week (0.2 in FTEs), and the school psychologist and speech pathologist are each assigned to Rosemont for only half a day per week (0.1 in FTEs). As this example demonstrates, the measurement of staff in full-time equivalents, though difficult for some respondents to do, provides a more accurate measure of staff resources than simpler measures, such as the number of part-time staff.

The final challenge involves attaching prices to each resource. Attaching prices to resources allows the analyst to aggregate resources across categories. One approach is to take actual prices, based on salary and benefit information for staff, and actual prices paid for non-staff resources. The example in table 2 assumes that actual salaries are used in the analysis of staffing resources at Rosemont schools, with a 28 percent fringe benefit rate used to allocate employee benefits across all categories of staff. An alternative approach is to assign a standard set of prices, drawn from national data on salaries, benefits, and prices. The advantage to this latter approach is that it allows researchers to compare the intensity (quantity) of resources used across educational settings, measured separately from variations caused by differ-

ences in local prices.⁴ Such a comparison is critical to answering the question, do variations in quantities of services make a difference?

Initial Proposal for Collecting RCM Data through SASS

A set of specific recommendations for collecting RCM data as part of SASS are set forth by Levine, Chambers, Duenas, and Hikido (1998) in a recently published NCES Working Paper (NCES 97-42). In their proposal, Levine et al. focus primarily on the collection of staffing resources at the school site level.⁵ Specifically, they recommend that data on staffing resources be collected through Staff Listing Forms, to be filled out by the school principal or school secretary. Their proposed Staff Listing Forms would collect information for all individuals in the school, including information on the number of hours per week spent in various teaching, administrative, and support positions. This would allow fairly accurate measures, in hours per week, of the intensity of staffing resources devoted to various school-related activities. The proposed forms represent a substantial expansion over the existing Teacher Listing Forms, which collect more limited data on teaching assignments and which have been used to generate the sample of teachers surveyed through SASS, but have not been used for analytical purposes.

Levine et al. focus primarily on the collection of staffing resources at the school site level . . . [by collecting data] through Staff Listing Forms, to be filled out by the school principal or school secretary.

Because of their interest in comparing the intensity of resources across schools while controlling for variations in local prices, Levine et al. propose attaching national prices to the data on staffing resources collected through the Staff Listing Forms. The national price data would be drawn from the samples of teacher and administrator salaries that are already collected through other components of

⁴ For example, assume a teacher with a master's degree and 5 years experience and training in mathematics receives \$33,000 in compensation (salaries and benefits) in small, rural school districts in Idaho, \$44,000 in large, urban districts in California, and \$39,000 nationally. Use of the national price of \$39,000 in analyzing resource costs in schools in Idaho and California will allow better measurement of the real differences in staff resources across different schools.

⁵ In recognition of the potential burden posed by the collection of detailed resource data, Levine et al. do not recommend collecting data about non-staffing resources at the school or about any resources at the central administrative offices.

the SASS, supplemented through a small amount of additional salary and benefit data collected in a new, short survey to school business officers in the SASS sample.

Overview of the Traditional Finance Approach

The traditional finance approach relies on expenditure data collected through the accounting system of the public school district or private school. Expenditure data are typically collected and analyzed by function, object, and program. While the accounting systems differ across districts and states, many systems employ a core set of functions, including instruction, administration, student and instructional support, and operations and maintenance. Accounting systems frequently record a small set of objects, including salaries, supplies, and contracted services. In addition, many accounting systems account for expenditures by program—for example, regular education, vocational education, and community programs.

The function/object/program framework forms the basis of a number of existing school finance surveys. For example, the National Public Education Finance Survey (NPEFS), requires all states to report expenditures across a function by object by program matrix. To guide states in the collection of these data, NCES has developed a national accounting guide, *Fundamentals of Financial Accounting for Local and State School Systems* (NCES, 1990).

There are a number of challenges involved in collecting traditional expenditure data at the district and school levels. First, many districts do not follow the NCES accounting handbook, and there is considerable variation across districts in the ways particular expenditures are treated. For example, principals' salaries are classified as administrative expenditures by NCES, but as instructional expenditures in many school districts. NCES also makes a distinction between “instructional support ser-

vices,” such as library services and professional development, and “student support services,” such as health, counseling, and attendance services; however, some states ask districts to classify all such services into one general “support services” category. One challenge in collecting district finance data, therefore, is to align the local accounting system with the standard NCES definitions.

The effort to collect and report finance data at the school-level must confront a second challenge as well: the collection of school-level finance data requires districts to report data associated with a selected school—despite the fact that the district-wide accounting systems of many districts do not directly track expenditures to specified school sites. The district/school problem is not an issue for private schools, although in some private schools, analogous difficulties may arise distinguishing school expenditures from expenditures for an affiliated church.

While the accounting systems differ across districts and states, many systems employ a core set of functions, including instruction, administration, student and instructional support, and operations and maintenance.

One approach to resolving these challenges to the collection of school-level finance data is to use software packages, such as “In\$ite, The Finance Analysis Model for Education”™ developed by Coopers and Lybrand, to reclassify the data gathered in local school accounting systems to fit with a standard set of accounting categories (Cooper, Sampiere, and Speakman, 1994). Under such software packages, districts are provided with an array of algorithms that can be used

to allocate centrally-billed expenditures (such as centrally-billed utilities or itinerant teachers) to specific school sites. For example, expenditures could be allocated by square foot of building space, student enrollment, number of students transported, etc. Such a system has the advantage of drawing from a district's existing administrative records, but requires participating school districts to purchase the software package, and take the time in the first year of use to translate or “map” the data in a local accounting system to the predefined functions, programs and school site locations used in the software package.

Initial Proposal to Collect Finance Data through SASS

Isaacs, Best, Cullen, Garet, and Sherman (1998) have developed a proposal for collecting public school expenditure data using a mailed survey conducted as part of SASS, along with a comparable proposal for collecting expenditures data for private schools (Isaacs, Garet, and Sherman, 1997). In both questionnaires, respondents are asked to report expenditures across a simplified set of functions and objects, as shown in table 3. To reduce burden on respondents, the functions are fairly broad. For example, data on expenditures for instructional support and student services are collected as one broad category, rather than as two separate categories as in the NCES accounting manual. Likewise, three different NCES administrative functions (General, Business, and Central Support Services) have been collapsed into one overarching administrative function. Finally, expenditures for equipment, benefits, and long-term debt are not collected in as much detail as the expenditures for salaries and other current operating expenditures.

The questionnaires would be sent to the public school district business officer and the private school principal (who, in large schools, would forward it to the business manager). For the public schools, the function by object data are collected in three parts: expenditures for the district as a whole; central-office expenditures; and school-based expenditures at a selected school in the SASS sample (e.g., expenditures at school sites). Central office expenditures include general administrative expenditures (e.g., the superintendent's office), business administration, and coordination of support services, operations and maintenance, etc. All expenditures other than expenditures for central-office operations are defined as school-based expenditures.

For the public schools, the function by object data are collected in three parts: expenditures for the district as a whole; central-office expenditures; and school-based expenditures at a selected school in the SASS sample . . .

To accommodate the diverse capabilities of district accounting systems, school-based expenditures are reported in two sections:

- **Section A: Actual Expenditures at Selected School.** Districts are asked to report actual expenditures for the selected school in Section A to the extent that such expenditures are known, and tracked to that specific school site. Respondents are instructed to report zeros in Section A if the district's accounting system does not track any expenditures to specific school locations.
- **Section B: School-level Expenditures Not Assigned to Any Specific School.** Districts are to use Section B to report any expenditures for school-based services that are not assigned to any particular school or location. This might include itinerant staff (e.g., itinerant music teachers), personnel or materials used in schools on an "as-needed" basis (e.g., psychologists, maintenance workers), or personnel or materials associated with school-based services but which are accounted for under a central office location (e.g., nurses coded to central location, centrally-billed utilities). Section B includes all expenditures other than central-office expenditures if a district's accounting system does not track any expenditures to specific school locations.

An estimate of the operating expenditures for each school in the district's sample may be obtained by summing the reported expenditures under Section A: *Actual Expenditures at the Selected School* and the school's proportional share of overall district expenditures under Section B: *School-level Expenditures Not Assigned to Any Specific School*. To ease response burden and maintain data comparability, the questionnaire does not ask districts to carry out the calculations necessary to allocate a share of Section B: *School-level Expenditures Not Assigned to Any Specific School* to each target

Table 3.—Collection of expenditure data by functions and objects

Functions	Objects				
	Salaries	Supplies and contracted services	Equipment	Benefits	Facilities, debt
Instruction	¹ ✓	✓		² ✓	
Instructional support and student services	¹ ✓	✓			
Administration	✓	✓			
Plant/maintenance	✓	✓			
Food service	✓	✓		✓	
Transportation	✓	✓		✓	
Other	✓	✓		✓	
Total	✓	✓	✓	✓	✓

¹ In the public school expenditure survey, salaries for instruction and support services are reported separately for special education and regular education.

² Instruction-related computers.

SOURCE: American Institutes for Research.

school. Instead, enrollment and other basic data for the district and the selected school are collected in another item in the survey, allowing NCES to perform the necessary calculations during data cleaning and analysis.⁶

An example of how expenditure data might be reported appears in table 4, which displays expenditures for Rosemont School, the hypothetical school with the staffing resources shown in table 2. In this example, as in many schools, instructional expenditures primarily consist of salary and benefit expenditures for teachers at the school, but also include some centrally-billed salary and benefit expenditures (a \$50,000 allocation for Rosemont's itinerant music and art teachers), as well as expenditures for instructional supplies.⁷ In total, instructional expenditures account for 60 percent of all school expenditures.

Expenditures for instructional support and student services are much lower (14 percent of the total, as shown in the second row of table 4), but include significant expenditures for staff who are shared among several schools and accounted for centrally (i.e., Rosemont's allocation of salaries and benefits for the shared librarian, nurse, social worker psychologist, and speech pathologist). In this example, all administrative expenditures are tracked to the specific school.

The \$1,848,000 total in expenditures for salaries and benefits shown in the last row of table 4 is within \$2,300 of the salaries and benefits calculated under the RCM approach illustrated in table 2. The \$2,300 difference reflects differences in shared staff—in this example, the finance model reports lower expenditures for shared teachers and support staff, but higher expenditures for centrally-billed mainte-

⁶ Depending on the purpose of the analysis, central-office expenditures can also be allocated to target schools based on student enrollment or other criteria.

⁷ Note that the \$50,000 allocation for Rosemont's itinerant music/art teachers differs from the \$58,500 resource cost figure derived from staff FTEs reported in table 2. The \$50,000 allocation is a proportion of the district's total spending on itinerant teachers: in this example, 10 percent of total district spending of \$500,000 for itinerant teachers because Rosemont student enrollment is 10 percent of the district's total enrollment. The precision of the reported expenditure data is diminished by this need to use estimated allocations for centrally-billed expenditures such as itinerant teachers. The data would be more accurate if Rosemont's accounting system tracked all expenditures to the school—including itinerant teacher salaries, prorated to each school on the basis of time spent at the school—but few accounting systems can do so at this time.

nance staff (who are not listed as school staff in table 2 because maintenance staff in this district are not assigned to specific schools).⁸ Differences between salary expenditures calculated under the RCM approach and the finance approach would probably be larger with actual data collected under normal circumstances—and the comparison could not be made very easily if the RCM resource estimates were calculated with national prices rather than actual salaries for each staff member. A final difference between the two approaches is that the finance data reported in table 4 include expenditures for supplies and contracted services, which were, of course, not included in the staff resources reported in table 2.⁹

Recommendations for Collection of School-Level Data through SASS

In January 1998, a group of education finance experts met with staff from NCES and AIR to discuss the RCM and traditional finance approaches to the collection of school-level data.¹⁰ During a day-long meeting devoted to analyzing both approaches, the technical work group recommended to NCES that both types of data be collected as part of the 1999–2000 SASS: staffing data in line with the RCM approach and expenditure data in line with the traditional finance approach.

The two types of data are expected to serve complementary purposes. Traditional finance data provide basic information on differences in total expenditures and expenditures per pupil across schools, as well as information to address basic resource al-

location questions, such as the allocation of expenditures across functions (i.e., between instruction and administration) and between the school site and the central office. To answer more detailed questions regarding how dollars are spent, and how services are delivered, researchers would like the more detailed staffing data collected under the RCM approach. RCM data would move the emphasis closer to the point of the instruction and allow an analysis of differences in resource use between different educational programs, such as special education or compensatory education.

An integrated collection of traditional finance data and staffing data collected under the RCM approaches provides certain analytical benefits. For example, using expenditure data, analysts might estimate differences between public and private schools in per-pupil spending for instructional salaries.

If differences in per-pupil spending are observed, RCM staffing data might then be used to determine how much of the observed difference in spending can be explained by differences in the intensity of staff resources (i.e., by the number of regular and special education teachers, special education aides, bilingual/ESL teacher aides, and other teacher aides).¹¹ Public/private differences in staff quality or staff pricing (salaries and benefits) would also need to be examined; and such differences could begin to be explored, at least for teachers and administrators,

through other components of the SASS.

Traditional finance data provide basic information on differences in total expenditures and expenditures per pupil across schools . . . [while the] RCM data would move the emphasis closer to the point of the instruction.

⁸ More specifically, the finance model allocates expenditures for itinerant teachers, shared support staff, and other centrally-billed expenditures on the basis of school enrollment, building square footage, or other such parameters, while the resource cost model allocates expenditures on the basis of time spent in the school (measured in table 2 in terms of full-time equivalents (FTEs), but in simpler models, simply as counts of full-time and part-time staff).

⁹ Because the proposed public school expenditure survey also collects data on central-office expenditures, these can also be included in reports of per-pupil expenditures. For example, the note to table 4 suggests that per-pupil expenditures at Rosemont school are \$5,285 when limited to school-based expenditures, and \$5,730 per student when including a share of central-office expenditures.

¹⁰ See footnote 2 for a list of meeting participants.

¹¹ Such an analysis might be conducted by estimating a regression model predicting per-pupil spending on instructional salaries based on a public/private indicator variable, staff hours per pupil for types of instructional staff, and the interaction of the indicator variable and the measures of staff hours.

Table 4.—Expenditure data for Rosemont School, by function, object, and location

Functions	Salaries and benefits ¹	Supplies and contracted services	Total for function	Function as percent of total school expenditures
Instruction				
Expenditures tracked to Rosemont ²	1,174,000	45,500		
Rosemont allocation of centrally-billed expenditures ³	50,000	100		
<i>Subtotals</i>	<i>1,224,000</i>	<i>45,600</i>	<i>1,269,600</i>	<i>60</i>
Instructional support and student services				
Expenditures tracked to Rosemont ²	163,000	25,900		
Rosemont allocation of centrally-billed expenditures ³	100,000	100		
<i>Subtotals</i>	<i>263,000</i>	<i>26,000</i>	<i>289,000</i>	<i>14</i>
Administration				
Expenditures tracked to Rosemont ²	269,000	1,000		
Rosemont allocation of centrally-billed expenditures ³	0	0		
<i>Subtotals</i>	<i>269,000</i>	<i>1,000</i>	<i>270,000</i>	<i>13</i>
Operations and Maintenance				
Expenditures tracked to Rosemont ²	56,000	63,000		
Rosemont allocation of centrally-billed expenditures ³	8,000	60,000		
<i>Subtotals</i>	<i>64,000</i>	<i>123,000</i>	<i>187,000</i>	<i>9</i>
Food service				
Expenditures tracked to Rosemont ²	0	0		
Rosemont allocation of centrally-billed expenditures ³	28,000	60,200		
<i>Subtotals</i>	<i>28,000</i>	<i>60,200</i>	<i>88,200</i>	<i>4</i>
Total school-level expenditures	1,848,000	255,800	2,103,800	100
¹ Benefits are allocated across salaries assuming a constant 28 percent fringe benefit rate.				
² Expenditures tracked to Rosemont are actual expenditures as reported by district accounting system.				
³ Rosemont allocations are based on school:district ratios of students, full-time equivalent teachers, square feet in buildings, and number of meals served.				
NOTE: Rosemont is a hypothetical elementary school with 400 students. Per-pupil expenditures are \$2,103,800 ÷ 400 students, or \$5,260. In addition, per-pupil expenditures for central-office salaries (superintendent, finance, etc.) in Rosemont's district are \$283, and per-pupil expenditures for central-office supplies and contracted services are \$162, bringing total per-pupil expenditures (including central administration) to \$5,705.				
SOURCE: American Institutes for Research.				

While recognizing the virtue of collecting both expenditure and RCM data as part of SASS, the technical work group was cognizant of the potential burden posed by both types of data collection. NCES staff responsible for overseeing the administration of SASS were particularly concerned that expansions to the existing Teacher Listing Forms might lower response rates and thus endanger the validity of the teacher sample. Moreover, the addition of a separate component on school finances might overwhelm the SASS, both in terms of response burden

and budgetary costs. The technical work group therefore recommended that scaled-down versions of the RCM and traditional finance instruments be developed.

Recommendations for Collecting RCM Data Through SASS

The technical work group recommended that improved staffing resource data be collected by making relatively modest modifications to two sets

of existing SASS instruments: the Teacher Listing Form and the Public and Private School Questionnaires. The work group recommended that, in a departure from the past, data from the Teacher Listing Form be entered into an analytical database, allowing researchers access to more detailed data about the complete set of teachers at each sampled school (i.e., the grade range taught, subject matter taught, full- or part-time status, ethnicity, status as a new teacher, and status as a teacher of students with limited English proficiency). If field testing is favorable, the Teacher Listing Form will be expanded to collect more information about part-time status (i.e., $\frac{1}{4}$ time or less, $\frac{1}{4}$ to $\frac{1}{2}$ time, $\frac{1}{2}$ to $\frac{3}{4}$ time) and more information about special education teachers (i.e., whether teaching in a self-contained special education classroom or serving as a resource teacher/specialist).

Because of concerns about response burden, the technical work group did not recommend a full-scale expansion of the teacher listing form to cover all staff in the school. Instead, they recommended that items in the existing Public School Questionnaire (and the corresponding items in the Private School Questionnaire) be expanded to ask more detailed questions about various categories of staff. The new categories under consideration are shown in **bold type** in table 5. As in past rounds of SASS, principals will be asked to report the number of staff in full-time and part-time positions for each category, a measure of staffing intensity which simplifies the burden for respondents, but reduces the precision of estimates for itinerant and other part-time staff.

The current proposal does not include the collection of additional salary data directly through the SASS. (Some salary, but not benefit, information already is collected for a *sample* of teachers and the principal at each SASS school). This lack of emphasis on the collection of additional price data reflects, in part, the greater interest of researchers at the January 1998 meeting in staffing data than in price data.

However, there also are other alternatives for collecting the price data.

For example, the Current Population Survey (CPS) collects annual data on salaries for a national sample of individuals classified by occupation, industry, and type of employer. Using CPS data, it is possible to obtain national estimates of the salaries earned by broad categories of workers that may be used as reasonable approximations of the salaries earned by different types of school staff. The average salary earned by secretaries employed in local governments, for example, might be used as an approximation of the average salary of school secretaries. And the average salary of cleaning and building service occupations employed in local governments might be used as an approximation of the average salary of school custodians.

In addition to information on salaries, information on the dollar value of staff benefits is required to attach appropriate prices to staff resources. The technical work group recommended that SASS explore the possibility of adding a SASS item on fringe benefit rates. This question would be added to the proposed expenditure survey and asked of school business officers, who would be asked, for the first time, to participate in the SASS.

Recommendations for Collecting Finance Data

Through SASS

The consensus of the technical work group was that it was important to collect expenditure data in addition to the staffing data discussed above. These data are needed to determine per-pupil expenditures, as well as allocations across functions and between the central office and the school sites.

No concrete recommendations were made by the group regarding specific changes to be made to the public or private school instruments developed by Isaacs et al. Several researchers suggested, however, that the instruments be scaled down, perhaps

The work group recommended that, . . . data from the Teacher Listing Form be entered into an analytical database, allowing researchers access to more detailed data about the complete set of teachers at each sampled school . . .

Table 5.—Staffing data proposed for SASS Public School Questionnaire

- a. Principals
- b. Vice principals and assistant principals
- c. Instructional coordinators and supervisors
 - c1 Special education coordinators, supervisors or administrators***
 - c2 Other instructional coord. and supervisors, such as curriculum specialists
- d. Library media specialists/librarians
- e. School counselors
- f. Other student support services professional staff (*in past this was one category; now proposed to be split among the five sub-categories below*):
 - f1 Nurses***
 - f2 Social workers***
 - f3 Psychologists***
 - f4 Speech pathologists***
 - f5 Occupational or physical therapists, other professional staff***
- g. Teachers (*not split among different categories because this information is collected elsewhere*)
- h. Aides or Assistants
 - h1 Library media center aides
 - h2 Health and other non-instructional aides providing student support services***
 - h3 Special education aides***
 - h4 Bilingual/English as a Second Language teacher aides***
 - h5 Other teacher aides such as kindergarten or Title I aides
- i. Secretaries and other clerical support staff
- j. Food service personnel***
- k. Custodial and maintenance personnel, security personnel***
- l. Other employees if cannot assign to any category above (formerly included food service, custodial and maintenance, and other)

*New category or sub-category under consideration for the Schools and Staffing Survey (SASS).

SOURCE: American Institutes for Research.

by further reducing the amount of detail collected with regard to equipment and long-term debt.

Work on refining the public school expenditure instrument is still underway. There may be more time for refining the expenditure instruments than time for the staffing instruments, because the expenditure survey should, ideally, be administered during the school year following the administration of the main SASS instruments. That is, if the SASS is administered in the fall of 1999, with questions about school characteristics pertaining to the 1999–2000 school year, the expenditure survey should be administered in the fall of 2000, when financial records of actual expenditures for 1999–2000 are available. In this way, the expenditure data would cover the same school year as the staffing data and other data on school characteristics.

The private school finance survey developed by Isaacs, Garet, and Sherman (1997) is ready for full-scale SASS field-testing, having undergone successful pilot tests in 17 private schools. In addition to collecting data on school expenditures, the private school finance survey includes items on income and contributed resources. In this latter item, respondents are asked to indicate, through simple check-off boxes, an estimate of the quantity of services and materials contributed by public agencies (e.g., student transportation, remedial instruction), religious institutions (e.g., space, custodial services, book-keeping assistance), and parents and others (e.g., donated supplies or equipment, volunteer labor). Because of confidentiality concerns and distrust of the government, the reaction of the private school universe to this proposed addition to SASS will depend to a large degree on the ability of NCES to work

closely with the major private school associations—several of which have been involved in survey development and have expressed interest in supporting NCES efforts to gather more of these types of data.

SASS Resource Data: An Incremental Step Forward

The proposal to include expenditure and resource components in SASS represents an important step forward in improving understanding of how resources are allocated within and among schools. SASS is well-suited to cross-state comparisons of school resource levels and resource utilization patterns, as well as national estimates, because the SASS sample design supports state-reliable estimates.¹² Furthermore, because SASS collects such a rich assortment of data on school characteristics, researchers will be able to analyze how resource allocations vary among schools with different programs and services, alternative forms of school organization, and varying student body characteristics. The SASS sample size is large enough to allow the data to be reported for specific sub-groups. For example, typical resource allocations could be reported for large public high schools in high-poverty urban areas, small public elementary schools in suburban areas, or Catholic elementary schools. SASS data on teacher and principal characteristics can be used to begin to add some understanding of how teacher and administrator quality, as measured by education and years of experience, are related to resource allocations. Finally, the collection of comparable staffing

and expenditure data for public and private schools will enable powerful comparisons between the public and private sectors.

It is important to be aware, however, of the limitations of the proposal for collecting school-level resource and finance data through SASS, and of the need for ongoing work on complementary data collection and data analysis strategies to improve understanding of school-level resources. First, the instruments discussed in this article are still undergoing refinement and have not yet been submitted to full-scale field testing in a large sample of schools. More will be known about the feasibility of this data collection strategy after completion of the SASS field testing scheduled for fall of 1999.

Second, administration of a national survey such as SASS is only one means for NCES to support the collection of school-level resource data. During the technical work group meeting of education finance experts in January 1998, NCES Associate Commissioners Paul Planchon and Martin Orland noted that NCES has been exploring ways to collect school-level resource data through two principal means—a national sample survey and administrative records. Members of the technical work group urged NCES to proceed on both fronts at the same time—the sample survey because it can be accomplished more readily in the short-term, and a collection from administrative records because of its promise to yield more comprehensive data in the longer run.¹³

SASS is well-suited to cross-state comparisons of school resource levels and resource utilization patterns, as well as national estimates, because the SASS sample design supports state-reliable estimates.

¹² State-reliable estimates are supported for the public sector only. SASS is designed to support estimates at the national and affiliation level for the private sector.

¹³ A universe of administrative records is needed, for example, to compare resource allocations across different schools in a district. Such intra-district equity comparisons cannot be done through SASS or other national surveys that sample from a small number of schools in each district.

NCES might play a number of roles in supporting improved administrative records. For example, NCES could encourage standardization across states and districts in methods of collecting staffing data and in methods of allocating finance data to the school level, playing a leadership role similar to the role it has played in standardizing district-level finance records through development of the *Financial Accounting for State and Local School System*. NCES might also provide technical assistance to improve administrative records or to “harvest” the data existing in state systems.

In addition, research on school finance would be improved by the development of additional resource measures beyond those proposed to be included in the 1999–2000 SASS. For example, productivity analyses would benefit from more comprehensive measures of resources (including the adequacy of facilities and other non-staffing resources), as well as more information about teacher quality and student needs. One particularly important area for further work concerns the development of methods to identify the variation in resources used by students who, although enrolled in the same school, participate in different types of educational activities. For example, the resources used by high school students enrolled in laboratory courses or courses with small enrollments may differ substantially from the resources used by students in other types of courses.

Finally, although much can be gained by an improved understanding of the cost structure of schools, the long-run goal of researchers and policy-makers is to measure educational productivity, a task that requires measures of outputs (i.e., educational outcomes) in addition to inputs or resources. Although SASS provides some limited measures of outcomes (i.e., reported graduation rates, college-going rates, absenteeism), SASS school-level data are not at this point linked to direct measures of student educational attainment.¹⁴ Linking student outcome data linked to the proposed school-level resource and expenditure to be collected as part of SASS would provide a substantial new opportunity for the analysis of educational productivity.

¹⁴ For discussion of a proposal to add school-level measures of attainment to the SASS, see Wu, G., Royal, M., and McLaughlin, D., *Development of a SASS 1993–94 school-level achievement subfile: Using state assessments and state NAEP. Feasibility study.* NCES Working Paper No. 97–44. Project Officer, Michael Ross. Washington, D.C.: NCES, 1997.

References

- Abramson, R., Cole, C., Fondelier, S., Jackson, B., Parner, R., and Kaufman, S., *1993–94 Schools and Staffing Survey: Sample Design and Estimation*. NCES Technical/Methodology Report 96–089. Washington, D.C.: NCES, 1996.
- Berne, R., Stiefel, L., and Moser, M. “The coming of age of school-level finance data.” *Journal of Education Finance*. Vol. 22(3) Winter 1997: 246–254.
- Berne, R. and Stiefel, L. “Student-level school resource measures.” *Selected Papers in School Finance 1995*. Washington, D.C.: National Center for Education Statistics.
- Busch, C., and Odden, A., “Improving educational policy and results with school-level data: A synthesis of multiple perspectives,” *Journal of Education Finance*. Vol. 22(3) Winter 1997: 225–245.
- Cohen, M., “Issues in school-level analysis of education expenditure data.” *Journal of Education Finance*. Vol. 22(3) Winter 1997: 255–279.
- Cooper, B., Sampiere, B., and Speakman, S. T. *The Finance Analysis Model, Linking Resources for Education*. Chicago, IL: Coopers & Lybrand and Washington, D.C.: the Center for Workforce Preparation, 1994.
- Goertz, Margaret. “The challenge of collecting school-based data.” *Journal of Education Finance*. Vol. 22(3) Winter 1997: 291–302.
- Hanushek, E.A. “Assessing the Effects of School Resources on Student Performance: An Update.” *Educational Evaluation and Policy Analysis*. Vol. 19(2) Summer 1997.
- Hedges, L.V., Laine, R. D., and Greenwald, R. “Does money matter? A Meta-analysis of studies of the effects of differential school inputs on student outcomes.” *Educational Researcher*. April 1994 Vol. 23 (3):5–14
- Isaacs, J., Best, C., Garet, M., Sherman, J., and Cullen, A., *Collection of Public School Expenditure Data: Development of a Questionnaire*, NCES Working Paper No. 98–01. Project Officer, Stephen Broughman. Washington, D.C.: NCES, 1998.
- Isaacs, J., Garet, M., and Sherman, J., *Collection of Private School Finance Data: Development of a Questionnaire*, NCES Working Paper No. 97–22. Project Officer, Stephen Broughman. Washington, D.C.: NCES, 1997.
- Levine, R., Chambers, J., Duenas, I., and Hikido, C. *Improving the Measurement of Staffing Resources at the School Level: The Development of Recommendations for NCES for the Schools and Staffing Survey (SASS)*. NCES Working Paper No. 97–42. Project Officer, Mary Rollefson. Washington, D.C.: NCES, 1998.
- Monk, D. H., “Challenges surrounding the collection and use of data for the study of education finance and productivity.” *Journal of Education Finance*. Vol. 22(3) Winter 1997: 303–316.
- Monk, D. H., Brian, O.B., and Roelke, C.F., “Teacher resource use within New York state secondary schools.” *Selected Papers in School Finance 1996*. Washington, D.C.: National Center for Education Statistics.

National Center for Education Statistics. *Fundamentals for Financial Accounting for State and Local Accounting Systems*. (Washington, D.C.: National Center for Education Statistics, 1990).

Picus, L. O. "Does Money Matter in Education?" *Selected Papers in School Finance 1995*. Washington, D.C.: National Center for Education Statistics.