Appendices

Federal Efforts to Improve the Lowest-Performing Schools:
District Views on School Improvement Grant Requirements

Appendix 1: Confidence Intervals and Statistical Significance

Many of the tables, figures, and footnotes in the report provide information about whether the difference between estimated percentages is statistically significant. Statistical significance signals whether this difference is likely to be due to chance. If it appears that the difference in estimated percentages is due to chance (i.e., the difference is not statistically significant), then we cannot say that districts are more likely to do one thing than another.

For example, we estimate that 65% of districts with schools eligible to receive SIG funds agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance, while 27% of districts that were not eligible to receive SIG funds agreed or strongly agreed with the statement. The difference between 65% and 27% is statistically significant, which indicates that the difference is larger than is likely to be explained by chance alone. Therefore, we can say that a higher percentage of districts that were eligible to receive SIG funds than districts that were not eligible to receive SIG funds agreed with the statement. On the other hand, an estimated 27% of districts that were eligible to receive SIG funds and 26% of districts that were not eligible to receive SIG funds disagreed or strongly disagreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance. The difference between the 27% of eligible districts and 26% of districts that were not eligible to receive SIG funds that disagreed or strongly disagreed is not statistically significant. Therefore, we cannot say that a higher percentage of districts that were eligible to receive SIG funds than districts that were ineligible disagreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance.

One method of determining the statistical significance of the difference between two percentages is to compare the confidence intervals of the two percentages. Confidence intervals provide information about the accuracy of the estimated percentages. If the confidence intervals for two percentages do not overlap, then the difference is statistically significant. Exhibit 1 illustrates how ranges of estimated percentages (the confidence intervals) of SIG eligible and ineligible districts that agreed, disagreed, and were not sure that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance are used to determine statistical significance.
Exhibit 1: Confidence intervals for Figure 2

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance

Exhibit reads: An estimated 65% of districts with schools eligible for ARRA SIG funds agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance, compared to an estimated 27% of districts that had no SIG eligible schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 65 (52, 77); 27 (17, 40); 8 (3, 21); 27 (21, 33); 26 (20, 32); 48 (41, 54). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools eligible for ARRA SIG funds that agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance is between 52% and 77%.

In this case, the bars depicting the confidence interval for the estimated percentage of districts that had schools eligible to receive SIG funds that disagreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance and the confidence interval for the estimated percentage of districts that were not eligible to receive SIG funds that disagreed with the statement overlap, indicating that the difference between the two percentages is not statistically significant. Conversely, the bars depicting the confidence interval for the estimated percentage of districts that were eligible to receive SIG funds that agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance and the confidence interval for the estimated percentage of districts that were not eligible to receive SIG funds that agreed with the statement do not overlap, indicating that the difference between the percentages is statistically significant.

Appendix 3 provides confidence intervals for all the percentages, figures, and tables that are reported in the main body of the report.
Appendix 2: Study Methods

This appendix describes the sampling procedures used to select potential districts to participate in the *Center on Education Policy’s District Survey, 2011*. Also described are the methods used to develop and administer the survey and the analytic process used to obtain population estimates from the survey responses. The survey was developed, administered, and analyzed with support from Policy Studies Associates, CEP’s contractor for this project.

SURVEY SAMPLE

We started with the publicly accessible dataset from the 2007-2008 Common Core of Data Local Education Agency Universe Survey conducted by the National Center of Education Statistics (NCES). This dataset contains information on 18,090 elementary and secondary education agencies located in the 50 states and the District of Columbia; American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands; the Department of Defense schools; and the Bureau of Indian Education.

From the dataset of 18,090 education agencies, we removed the 4,778 agencies that did not match our study population criteria. Specifically, we removed the agencies that were located outside of the 50 states and the District of Columbia; that were not operating; or that were regional education service agencies, federally and state-operated agencies, charter agencies, or designated as “other education agencies.”

The dataset also included agencies that were component(s) of a supervisory union, sharing a superintendent and administrative services with other local school districts. In these cases, we retained the agency defined as the “supervisory union” and removed the component agencies associated with the unions. We removed the local education agencies (LEAs) that did not directly educate students through the employment of teachers and the operation of school buildings; many of these agencies represented towns that sent their students to neighboring districts or cooperative districts. Finally, we also removed agencies that solely served special segments of the population, such as vocational centers, correctional facilities, schools for the blind or deaf, and schools of performing arts. Exhibit 1 summarizes the edits that we made to the dataset to arrive at our sample frame.
Exhibit 1: Variables Used to Build Sample Frame

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Description</th>
<th>Use*</th>
<th>LEAs Subtracted</th>
<th>Unduplicated Deletions**</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIPST</td>
<td>Federal Information Processing Standards (FIPS) state code</td>
<td>Eliminated LEAs from locations outside of the 50 states and the District of Columbia (X&gt;56; n=42)</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>BOUND07</td>
<td>The boundary change indicator is a classification of changes in an education agency's boundaries since the last report to NCES</td>
<td>Eliminated LEAs that had closed (X=2; n=149), were temporarily closed (X=6; n=35), or were scheduled to be operational in the future (X=7; n=56)</td>
<td>240</td>
<td>282</td>
</tr>
<tr>
<td>TYPE07</td>
<td>Agency type code</td>
<td>Eliminated agencies defined as</td>
<td>3,835</td>
<td>3,925</td>
</tr>
<tr>
<td>UNION07</td>
<td>Indicator linking supervisory units and component agencies</td>
<td>Eliminated agencies that were represented in the dataset by a supervisory union. Eliminated LEAs from CA (n=12), IN (n=3), NH (n=175), NYC (n=34), VT (n=291), and VA (n=2); eliminated supervisory unions from MT (n=56)</td>
<td>573</td>
<td>4,498</td>
</tr>
<tr>
<td>SCH07</td>
<td>Number of schools associated with the agency</td>
<td>Eliminated LEAs that did not directly educate students or that served special populations of students</td>
<td>280</td>
<td>4,778</td>
</tr>
</tbody>
</table>

Exhibit reads: The FIPST variable eliminated LEAs that existed outside the 50 states and the District of Columbia; this variable netted 42 deletions, which brought the total number of unduplicated deletions to 42.

* The X stands for the variable name in each row.

** The unduplicated count is cumulative from top to bottom.

To stratify the sample frame by geographic location and area population density, we used the ULOCAL07 variable in the NCES dataset, which is an indicator of a district's location relative to a populous area. The NCES dataset contains four main location types, as well as three subtypes with each location type. We used the four main types but not the subtypes in our stratification. In other words, we used the main location type city as a stratum, but we did not create additional strata to distinguish among the subtype locations of large, medium, or small.

Exhibit 2 presents definitions for the main location types, identifies the number of districts in each location type in the sample frame, reports the number of students who attend school in the districts in the sample frame, and identifies the number of districts in each location type that we
sampled. We used disproportional stratification in order to include sufficient numbers of each type of district in our survey.

Exhibit 2: Definitions and Frequencies of Sample Strata

<table>
<thead>
<tr>
<th>Location Type</th>
<th>Definition ¹</th>
<th>Number (and percent) of districts in the sample frame</th>
<th>Number (and percent) of K-12 students in the sample frame</th>
<th>Number (and percent) of districts in the sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>Territory inside an urbanized area (a densely settled area that has a census population of at least 50,000 people and inside a principal city (the largest city inside the urbanized area))</td>
<td>751 (5.6)</td>
<td>13,447,851 (28.8)</td>
<td>261 (27.3)</td>
</tr>
<tr>
<td>Suburb</td>
<td>Territory inside an urbanized area (a densely settled area that has a census population of at least 50,000 people and outside a principal city (the largest city inside the urbanized area))</td>
<td>2,741 (20.6)</td>
<td>18,384,606 (39.4)</td>
<td>234 (24.6)</td>
</tr>
<tr>
<td>Town</td>
<td>Territory inside an urban cluster (a densely settled area that has a census population of 2,500 to 49,999 people)</td>
<td>2,502 (18.8)</td>
<td>5,904,016 (12.6)</td>
<td>226 (23.7)</td>
</tr>
<tr>
<td>Rural</td>
<td>Territory outside of urbanized areas (densely settled areas that have a census population of at least 50,000 people and urban clusters (densely settled areas that have a census population of 2,500 to 49,999 people))</td>
<td>7,318 (55.0)</td>
<td>8,967,808 (19.2)</td>
<td>234 (24.5)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td>13,312 (100.0)</td>
<td>46,704,281 (100.0)</td>
<td>955 (100.0)</td>
</tr>
</tbody>
</table>

Exhibit reads: Locales defined as "city" consist of 5.6 percent of the districts in the sample frame, contain 28.8 percent of the students who attend the districts in the sample frame, and represent 27.3 percent of the districts sampled for the study.

¹ We derived the definitions from U.S. Census Bureau definitions: [www.census.gov](http://www.census.gov).

In addition to the four ULOCAL07 location types, we also included a stratification level for districts that belonged to the Council of Great City Schools (CGCS). We sent surveys to all CGCS districts in an effort to include the perspectives of many of the largest school districts in the country. Because of the weighting that we used when we conducted our analyses, the intentional sampling of the CGCS districts does not affect the representativeness of the findings.

SURVEY DEVELOPMENT

The challenge in developing the survey was to strike a reasonable balance between minimizing the response burden and collecting enough data to describe how LEAs are responding to budget
changes and federal and state reforms. The survey included 28 questions across three sections: district fiscal issues, state standards, and district uses of ARRA funds.

In the section on district fiscal issues, the survey included questions for the 2010-11 and 2011-12 school years regarding the status of funding in the district including and excluding ARRA and/or Education Jobs funds; strategies that the district adopted to account for declining budgets, if applicable; and the status of local progress on education reforms. In the section on state standards, the survey included questions on the ways in which local administrators had learned about the Common Core State Standards (CCSS); the extent to which state education agencies had provided technical support on implementing the CCSS at the local level; administrators’ perspectives on the rigor of the CCSS relative to previous standards; strategies that the district was using to implement the CCSS; and challenges that the district was facing as a part of the CCSS implementation process. In the section on district uses of ARRA funds, the survey included questions regarding the use of ARRA SIG funds, ARRA Title I funds, and ARRA IDEA funds in the district.

As part of survey development, we sent a draft of the instrument to central office administrators in LEAs in three states. We asked the administrators to review the instrument and provide feedback on the appropriateness and clarity of the wording and on the focus of the survey questions. We also asked them to estimate the amount of time required to complete the survey and to indicate who else in their districts might be involved in responding to individual items. The final version of the survey reflects the feedback that we received.

SURVEY ADMINISTRATION

In February 2011, CEP contacted the superintendents of the districts in the sample to explain the purpose of the survey and to provide background information on CEP and its previous reports and research on state- and district-level implementation of ARRA. A week later, we sent the survey to the local superintendents. One week after the print version of the survey arrived in the districts, we sent an electronic version of the survey to the superintendents via email. We sent a reminder postcard a few days after distribution of the email. Two weeks later we sent a reminder email. One week after the reminder email, we mailed another copy of the print survey to the superintendents.

Districts returned surveys between the end of February and the beginning of May 2011. We received completed responses from 457 of the 955 districts in our sample; this corresponds to a response rate of 48 percent. Given our previous work with school districts and understanding of the current climate of data requests from districts, we anticipated a 50-percent response rate at the outset of the survey. If we assume that district non-response occurred at random, then the response rate does not affect the representativeness of the survey findings.

DATA ANALYSES

To obtain the population estimates from the sample responses, we multiplied each sample response by a weighting factor specific to that particular stratum and question. The weighting factors were stratum-specific because the proportion of districts included in the sample from
each stratum was not equal (i.e., we used a disproportional stratified sample). The weighting variables were also question-specific because we dealt with missing responses by eliminating the cases from the set of responses used in the analysis. This approach to treating missing data has the advantage of simplifying the reporting of results; it has the disadvantage of increasing the estimated standard errors.

We calculated both the standard error and confidence interval for each of the estimated response frequencies presented in the report that describes the survey findings. The estimated standard error of a proportion provides information about the accuracy of the percentage estimate. The size of the standard error is influenced by the distribution of responses, the number of respondents, and the size of the population. Estimated standard errors are used to construct confidence intervals for the estimated percent. The confidence interval for a proportion indicates the degree of certainty that the true value for the population of all districts in the nation is included in a particular range. For proportions, the confidence interval is not symmetric relative to the estimated percent (except in the case where the estimated percent equals 50); this is because a proportion has a lower and upper bound (0 and 1, respectively), and the boundary affects the calculation of the interval. Additional information about the confidence intervals for specific responses is available in Appendix 3 accompanying the report.

After we drew our survey sample from the sample frame, we discovered that a number of districts that were listed in the Common Core of Data as being operational were, in fact, no longer operating. Because we drew the sample randomly, we could estimate the total number of districts in the Common Core of Data that were listed as open but that were closed; this estimate was 572 districts. We subtracted these districts from the denominator in our analyses. That is, we estimate the size of the sample frame to be 12,740 districts.
Appendix 3:  
Confidence Intervals for Survey Responses
Exhibit 1: Confidence intervals for text on Page 3

Percent of nation’s school districts that were eligible for ARRA SIG funds and percent of nation’s school districts that received ARRA SIG funds

<table>
<thead>
<tr>
<th>Eligible for ARRA SIG funds</th>
<th>15%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received ARRA SIG funds</td>
<td>12%</td>
</tr>
</tbody>
</table>

Exhibit reads: An estimated 15% of all school districts had schools in their district identified as eligible for ARRA SIG funds since January 2010 and an estimated 12% had one or more schools in the district that received ARRA SIG funds.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 15 (12, 19); 12 (9, 17). This means, for example, that we are 95 percent certain that the actual percentage of districts that were eligible for ARRA SIG funds is between 12% and 19%.

Percent of nation’s school districts that were eligible for ARRA SIG funds that actually received ARRA SIG funds

<table>
<thead>
<tr>
<th>Were eligible and received ARRA SIG funds</th>
<th>73%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were eligible and have not received ARRA SIG funds</td>
<td>28%</td>
</tr>
</tbody>
</table>

Exhibit reads: An estimated 73% of districts that were eligible for SIG funds actually received ARRA SIG funds, while an estimated 28% of eligible districts had not received ARRA SIG funds.
Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 73 (58, 83); 28 (17, 42). This means, for example, that we are 95 percent certain that the actual percentage of districts that were eligible for ARRA SIG funds and also received these funds is between 58% and 83%.

**Exhibit 2: Confidence intervals for Figure 1**

Percentage of ARRA SIG recipient districts with one or more schools implementing various reform models

Exhibit reads: An estimated 76% of districts with schools that received ARRA SIG funds had one or more schools implementing the transformation model in school year 2010-11, an estimated 42% had one or more schools implementing the turnaround model, an estimated 23% had one or more schools implementing the restart model, and an estimated 12% had closed one or more schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 76 (56, 88); 42 (25, 62); 23 (11, 42); 12 (4, 30). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools that received ARRA SIG funds that had one or more schools implementing the transformation model is between 56% and 88%.
Exhibit 3: Confidence intervals for text on Page 4

Percent of ARRA SIG recipient districts that had received state assistance in implementing one or more SIG intervention models

Exhibit reads: An estimated 74% of districts with schools that received ARRA SIG funds had received state assistance in implementing one or more SIG intervention models.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 74 (57, 86); 26 (14, 43). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools that received ARRA SIG funds that had received state assistance in implementing one or more SIG intervention models is between 57% and 86%.

Percent of ARRA SIG recipient districts that had positive, negative, mixed, or too soon to tell results in implementing one or more intervention models

Exhibit reads: An estimated 33% of districts with schools that received ARRA SIG funds had positive results in implementing one or more SIG intervention models, an estimated 5% had negative results, an estimated 4% had mixed results, and 49% said that it was too soon to tell.
Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 33 (18, 52); 5 (1, 31); 4 (1, 13); 49 (31, 67). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools that received ARRA SIG funds that had positive results in implementing one or more SIG intervention models is between 18% and 52%.

**Exhibit 4: Confidence intervals for Figure 2**

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance

Exhibit reads: An estimated 65% of districts with schools eligible for ARRA SIG funds agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance, compared with an estimated 27% of districts that had no SIG eligible schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 65 (52, 77); 27 (17, 40); 8 (3, 21); 27 (21, 33); 26 (20, 32); 48 (41, 54). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools eligible for ARRA SIG funds that agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance is between 52% and 77%.

**Exhibit 5: Confidence intervals for Figure 3**

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that concentrating large amounts of federal funds on a small number of low-achieving schools is an effective means of improving these schools

Exhibit reads: An estimated 58% of districts with schools eligible for ARRA SIG funds agreed or strongly agreed that concentrating large amounts of federal funds on a small number of low-achieving schools is an effective means of improving these schools, compared with an estimated 16% of districts that had no SIG eligible schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 58 (46, 70); 28 (19, 38); 14 (7, 27); 16 (12, 22); 45 (39, 52); 38 (32, 45). This means, for example, that we are 95 percent certain that the actual percentage of districts with
schools eligible for ARRA SIG funds that agreed or strongly agreed that concentrating large amounts of federal funds on a small number of low-achieving schools is an effective means of improving these schools is between 46% and 70%.

**Exhibit 6: Confidence intervals for Figure 4**

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that concentrating large amounts of federal funds on a small number of low-achieving schools is a more effective improvement strategy than distributing these funds to all schools identified for improvement under NCLB.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 45 (32, 58); 40 (28, 53); 16 (12, 22); 47 (41, 54); 37 (31, 44). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools eligible for ARRA SIG funds that agreed or strongly agreed that concentrating large amounts of federal funds on a small number of low-achieving schools is a more effective improvement strategy than distributing these funds to all schools identified for improvement under NCLB is between 32% and 58%.

**Exhibit 7: Confidence intervals for Figure 5**

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that using a competitive grant application process is an effective way of distributing ARRA SIG funds to support improvement of low-achieving schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 40 (28, 53); 47 (34, 61); 13 (6, 26); 17 (13, 23); 50 (44, 57); 33 (27, 39). This means, for example, that we are 95 percent certain that the actual percentage of districts with...
schools eligible for ARRA SIG funds that agreed or strongly agreed that using a competitive grant application process is an effective way of distributing ARRA SIG funds to support improvement of low-achieving schools is between 28% and 53%.

**Exhibit 8: Confidence intervals for Figure 6**

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that contracting with external entities to assist low-achieving schools is an effective way of improving those schools

Exhibit reads: An estimated 49% of districts with schools eligible for ARRA SIG funds agreed or strongly agreed that contracting with external entities to assist low-achieving schools is an effective way of improving those schools, compared with an estimated 28% of districts that had no SIG eligible schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 49 (36, 62); 39 (27, 53); 12 (6, 23); 28 (22, 34); 31 (25, 38); 42 (35, 48). This means, for example, that we are 95 percent certain that the actual percentage of districts with schools eligible for ARRA SIG funds that agreed or strongly agreed that contracting with external entities to assist low-achieving schools is an effective way of improving those schools is between 36% and 62%.

**Exhibit 9: Confidence intervals for Figure 7**

Percentage of SIG-eligible and ineligible districts that agreed, disagreed, or were not sure that three years is an appropriate amount of time to improve the lowest-achieving schools

Exhibit reads: An estimated 33% of districts with schools eligible for ARRA SIG funds agreed or strongly agreed that three years is an appropriate amount of time to improve the lowest-achieving schools, compared with an estimated 32% of districts that had no SIG eligible schools.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 33 (22, 47); 50 (37, 63); 17 (9, 30); 32 (26, 39); 28 (23, 35), 39 (33, 46). This means, for example, that we are 95 percent certain that the actual percentage of districts with
schools eligible for ARRA SIG funds that agreed or strongly agreed that three years is an appropriate amount of time to improve the lowest-achieving schools is between 22% and 47%.

**Exhibit 10: Confidence intervals for Table 1**

Percentage of all districts that agreed, disagreed, or were not sure about the effectiveness of key provisions of the ARRA SIG program

- The criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance
- Concentrating large amounts of federal funds on a small number of low-achieving schools is an effective means of improving these schools
- Concentrating large amounts of federal funds on a small number of low-achieving schools is a more effective improvement strategy than distributing these funds to all schools identified for improvement under the No Child Left Behind Act
- Using a competitive grant application process for distributing federal funds is an effective way of distributing these funds to support improvement of low-achieving schools in my state
- Contracting with external entities (e.g., institutions of higher education, regional technical assistance providers, other non-profit and for-profit organizations) to assist low-achieving schools is an effective way to improve those schools
- Three years is an appropriate amount of time to improve the lowest-achieving schools

**Percent of all LEAs**

Exhibit reads: An estimated 33% of the nation’s school districts agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance.

Note: The 95 percent confidence intervals for the estimates in the figure are as follows: 33 (28, 39); 26 (21, 31); 31 (36, 47); 23 (18, 28); 43 (37, 49); 35 (29, 40); 20 (16, 26); 46 (40, 52); 34 (28, 40); 21 (17, 26); 49 (43, 55); 30 (24, 35); 31 (26, 37); 32 (27, 38); 37 (31, 43); 33 (27, 38); 32 (27, 37); 36 (30, 42). This means, for example, that we are 95 percent certain that the actual percentage of all districts that agreed or strongly agreed that the criteria used to identify low-achieving schools appropriately identify those schools that need the most assistance is between 28% and 39%.