$CHOOLS IN CRISIS: MAKING ENDS MEET

The Opportunity Cost of Smaller Classes: A State-By-State Spending Analysis

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RAPID RESPONSE

Two seemingly different threads are in play on the issue of class size. The first is manifested in media reports that tell us that class sizes are rising to concerning levels. The second thread appears in the work of some researchers[1] and education leaders[2] and suggests that repurposing class-size reduction funds to pay for other reforms may not be such a bad idea.

Both threads are evidence of current budget tensions. Constrained revenues[3] are forcing some districts to cut staff, and any tinkering with staffing can drive up enrollment in some classes. While smaller classes are on many levels desirable, it is also true that smaller classes come with a hefty price tag. And so, in an environment of scarce resources, those seeking better outcomes in education have begun rethinking previous decisions to lock up their funds in small classes.

For those who support smaller classes, the argument has been that smaller classes yield better outcomes for students, all else being equal. The other side generally doesn't dispute some level of benefit to smaller classes, but suggests that it is not enough to consider only the benefits; rather, leaders must weigh the relative benefits of smaller classes against the benefits of other possible reforms in order to seek the *best* possible effect for a given expenditure level. [4]

Practically speaking, class sizes already vary from state to state, and any discussion of tradeoffs makes most sense in the context of the existing arrangement. Political tolerance for raising class sizes might depend on the magnitude of current class sizes, as well as the level of funds that can be repurposed in doing so. This brief provides a state-by-state context to the class size discussion by estimating current class sizes by state and by modeling the marginal funds associated with modest changes to each state's average class size. In other words: what are class sizes now? And, how much money is at stake?

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1. Matthew Chingos and Grover J. "Russ" Whitehurst, "Class Size: What Research Says and What It Means for State Policy" (Brown Center on Education Policy at Brookings, 2011), http://www.brookings.edu/papers/2011/0511_class_size_whitehurst_chingos.aspx.

2. Eva Moskowitz, "The Cost of Small Class Size," *The Washington Post*, March 27, 2011.

3. Phil Oliff and Michael Leachmen, "New School Year Brings Steep Cuts in State Funding for Schools" (Center on Budget and Policy Priorities), http://www.cbpp.org/files/9-1-11sfp.pdf.

4. Chingos and Whitehurst, "Class Size: What Research Says."

Just how big are classes these days?

In following news and blog coverage of class-size increases, one might think class sizes have now jumped to levels unprecedented in recent decades. Most reports begin with a statement about how class sizes are "swelling,"[5] "ballooning"[6] or in some cases, "skyrocketing."[7] We then hear about a single case example, such as the 9th grade Spanish classroom in an Oregon school with 40 students[8] or a Las Vegas elementary class with 41 students.[9] By contrast, when reports involve district averages, the numbers are often more muted, showing increases of just one to three students.[10] The result: those in the class-size debate may not be operating with an accurate sense of the current range of class sizes. In fact, a survey of Washington insiders working at the federal level reports that 92 percent of respondents assumed average elementary class sizes are substantially larger than national averages indicate.[11]

Also notably missing from coverage of class sizes are statewide trends, largely because states simply do not report year-to-year levels. Instead, statewide class-size data are reported every four years by the National Center for Education Statistics (NCES) via a large-scale staff survey, with the most recent data reported for 2007–08. This analysis attempts to fill that gap in current class-size information by modifying the 2008 figures according to subsequent changes in student-to-teacher ratios by state. Student-to-teacher ratios data are available through 2011–12 via the National Education Association (NEA), and while student-to-teacher ratios are slightly different than average class-size figures, both track student enrollment and staffing, so the rate of change in one measurement is likely to mirror the change in the other measurement.[12] For each state, the rate of change in student-to-teacher ratios is computed using the NEA data and is used to adjust the 2008 NCES class-size data between 2007–08 and 2011–12. The results nationally are captured in Figure 1.

It is worth noting that, in contrast to the hype, the estimated national average for 2011–12 class sizes is actually slightly *smaller* than it was in 1999–2000. Over the last twelve years, elementary classes dipped and then began rising again (likely due to some states implementing class-size reduction in early elementary years, and then relaxing those requirements). Secondary classes, in contrast, rose by an average of one student before falling again to an estimated 22.7 students per class.

While at a national level budget cuts have not brought class sizes up to the norms of a decade ago, there are undoubtedly specific states, districts, and schools that buck the national trend. In fact, uneven class sizes are not a new phenomenon, and coverage of class size "swelling" regularly hits the headlines as budget gaps come and go.[13]

5. Sam Dillon, "Tight Budgets Mean Squeeze in Classrooms," *New York Times*, March 6, 2011.

6. http://www.spotlightnews.net/features/story.php?story_id=131664094638217300

7. "Will Education Become a Causality of the Recession?" Randi Weingarten interviewed on *The Ed Show, MSBNC* May 25, 2010.

8. Nicholas D. Kristof, "Our Broken Escalator," *New York Times*, July 16, 2011.

9. "Class Size Fight: Debate Looms During a Year of Overcrowding," *Huffington Post*, October 5, 2011.

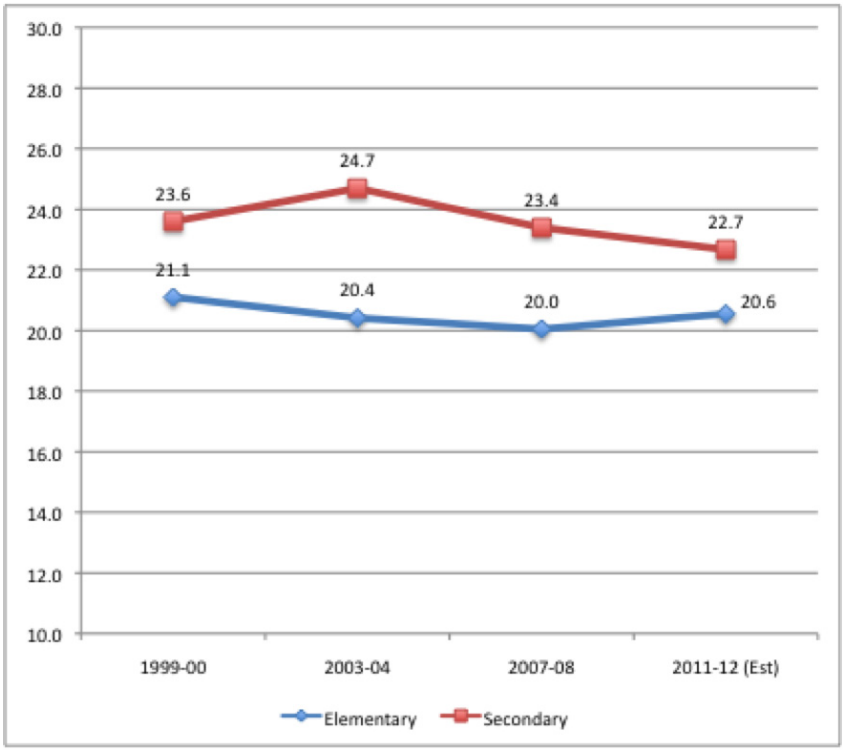
10. Anna Phillips, "Class Sizes Grew Again, New Figures Show," *School Book, WNYC*, November 15, 2011.

11. *National Journal Education Poll: Overview of Results*, (National Journal Group and Gates Foundation, 2010) http://www.gatesfoundation.org/college-ready-education/Documents/national-education-journal-survey-results.pdf

12. *Rankings and Estimates: Rankings of the States 2011 and Estimates of School Statistics 2012*, (National Education Association, 2011).

13. See for example: "Class Sizes Grow as States Confront Budget Woes" *Los Angeles Times*, May 21, 2002.

Figure 1. National average class sizes have shifted only slightly over the last decade



Class sizes vary substantially from state to state

Table 1 displays each state's average class size for the last three survey years, as well as estimated class sizes for 2011–12. Of interest is the fact that average class sizes vary considerably between states and among elementary and secondary levels. In 2011–12, Oregon had the largest estimated elementary classes at 24.6 students, whereas New York had the smallest at 15.5. At the secondary level, California's classes average the largest at 32.3 students, in contrast to North Dakota's classes, which are the smallest at 17.0.

Table 1. In most states, class sizes are smaller now than they were in 1999–2000[14]

State	Elementary Average Class Size				Secondary Average Class Size			
	1999-00	2003-04	2007-08	2011-12 (Est)	1999-00	2003-04	2007-08	2011-12 (Est)
Alabama	18.6	18.4	18.9	19.9	22.2	23.8	25.3	26.6
Alaska	20.4	20.5	19.0	17.8	22.2	23.3	21.6	20.3
Arizona*	24.3	23.0	23.5	*	25.9	27.0	25.6	*
Arkansas*	19.7	18.2	19.8	*	21.1	22.4	20.3	*
California	22.4	21.7	21.5	23.2	28.5	30.5	30.0	32.3
Colorado	23.1	22.1	21.2	21.6	24.6	24.5	23.9	24.3
Connecticut*	19.9	19.5	19.4	*	20.4	22.3	21.3	*
Delaware	19.6	20.1	21.4	20.4	24	23.6	22.0	21.1
D.C.*	21.6	19.0	19.0	*	21.3	22.8	19.1	*
Florida	23.3	21.2	18.3	18.1	26.6	27.6	24.2	23.9
Georgia	19.8	17.8	17.6	18.9	24.4	25.6	22.6	24.3
Hawaii	23.2	22.3	20.6	20.8	24.3	27.4	23.6	23.8
Idaho	22.0	23.2	23.7	23.8	22.7	24.1	23.0	23.1
Illinois	22.2	22.9	21.4	21.8	23.8	24.1	23.2	23.6
Indiana*	21.2	21.3	21.3	*	23.1	25.3	25.5	*
Iowa	19.9	20.9	20.0	20.7	21.9	23.9	21.3	22.1
Kansas	18.3	19.2	19.5	20.0	20.9	22.2	21.0	21.6
Kentucky	20.7	21.6	22.1	22.6	23.6	25.2	24.3	24.9
Louisiana	18.8	18.7	18.1	18.1	22.6	23.1	20.9	20.9
Maine*	17.9	17.1	16.9	*	18.5	19.8	19.9	*
Maryland	22.1	20.7	20.2	20.1	25.7	25.9	23.1	23.0
Massachusetts	20.8	19.4	18.7	19.1	21.4	21.9	20.6	20.9
Michigan	21.9	21.9	24.5	24.0	25.2	26.5	26.7	26.2
Minnesota	21.7	22.3	23.3	23.0	25.3	26.0	25.8	25.5
Mississippi	20.3	20.4	19.3	19.1	22.3	22.4	19.9	19.8
Missouri	20.7	19.1	19.4	18.9	21	22.9	20.6	20.2
Montana	17.9	18.1	18.2	17.8	20.1	19.4	18.5	18.0
Nebraska*	17.2	18.1	18.8	*	21.4	21.7	18.7	*
Nevada*	20.6	22.6	21.5	*	27.4	29.9	26.5	*
New Hampshire	19.9	19.5	19.0	18.1	21.9	22.0	21.7	20.7
New Jersey	20.2	19.3	19.8	19.3	21.4	24.1	23.0	22.4
New Mexico	19.8	18.2	18.8	18.9	23.3	24.3	22.5	22.6
New York	21.8	19.8	18.0	15.5	22.9	23.6	22.0	19.0
North Carolina	20.8	20.3	19.4	20.3	22.4	24.3	21.0	21.9
North Dakota	17.4	17.2	16.4	15.5	18.7	19.5	18.0	17.0
Ohio*	22.8	20.3	21.2	*	23.9	23.6	23.4	*
Oklahoma*	18.7	19.9	19.7	*	22.2	23.2	20.7	*
Oregon	23.7	24.7	23.3	24.6	25.6	28.9	25.2	26.7
Pennsylvania	22.2	20.6	20.8	19.6	23.2	24.9	22.4	21.1
Rhode Island*	19.8	19.6	20.7	*	21	22.4	22.9	*
South Carolina	17.8	18.5	18.5	19.4	22.4	23.8	21.4	22.4
South Dakota	18.6	17.8	17.9	16.9	19.6	22.3	20.2	19.1
Tennessee	19.6	19.0	17.7	18.4	24.1	24.5	23.0	23.8
Texas	18.3	18.7	17.7	18.1	22.3	22.3	21.7	22.3
Utah	23.6	24.3	24.0	24.3	27.3	29.0	29.2	29.6
Vermont*	17.8	16.0	16.8	*	19.1	18.9	17.9	*
Virginia	19.4	19.1	18.2	18.4	21.9	22.7	20.8	21.0
Washington	23.7	21.9	22.8	23.1	26.2	26.5	24.9	25.1
West Virginia	19.0	18.8	18.6	18.7	21.1	22.1	21.4	21.5
Wisconsin	20.8	19.5	19.6	19.8	23.6	25.1	23.0	23.3
Wyoming	17.7	18.4	18.7	18.5	20.4	21.5	18.8	18.6
United States	21.1	20.4	20.0	20.1	23.6	24.7	23.4	23.4

14. Sources: Authors' calculations based on class sizes from NCES Schools and Staffing Survey (1999–2000, 2003–04, and 2007–08), and application of the rate of change in pupil-teacher ratios from NEA Rankings of the States 2011 and Estimates of School Statistics 2012.

* Both NEA and NCES reported pupil-teacher ratios through 2011, but only NEA produced them for 2012, so NEA data were used here. Where NEA data for 2009–11 diverged from NCES pupil-teacher data for the same time period, the analysis was deemed unreliable and not included.

State-by-state analysis identifies current spending on marginal class sizes at $15.7 billion

Class-size reduction efforts are found at the district, state, and even federal levels. Determining the price tag for a specific policy initiative requires some determination as to where the costs are born (e.g., federal or state level versus locally),[15] how the policy is structured (e.g., a hard cap on class size versus targets for average class size),[16] and to which classes the policy applies.[17]

Yet at a more practical level, we can understand the level of public funds tied up in smaller classes by examining the cost implications of having more classes with fewer students. At the very least, smaller classes require more teachers, yielding higher salary and benefits costs. There may be facilities implications as well, but these are harder to monetize in the short run as class sizes change one way or the other.

Using average teacher salary[18] and average class-size data[19] by state, this brief estimates the funds expended on teacher salaries (without benefits) to enable 2008 class sizes and compares them to salary costs for class sizes with two more students.[20] This study is a departure from other recent studies in that it computes cost implications by modeling a change to class-size data in contrast to other analyses that model changes in pupil-teacher ratios as those numbers are more readily accessible. State-by-state estimates of current class sizes acknowledge the fact that class-size discussions are more relevant in the context of state discussions. For a detailed explanation of the methodology, see Appendix A.

As is summarized in Table 2, a total of $15.7 billion in public funds is tied up in marginally smaller classes—class sizes that, if raised by two students, would conceivably free up the $15.7 billion for other uses. Applying a national average benefit load of 33 percent,[21] the sum rises to over $20 billion nationally, suggesting that the figures reported by state serve as the lower bound of funds attributed to the current marginal class sizes.

Clearly, in most districts, simply shifting policy to larger classes wouldn't immediately free up the funds listed here, as such shifts are complicated. Part of the challenge is the "integer problem"—the reality that schools are unable to divide teachers, and so within the constraints of a school's current enrollment it may not be possible to raise class size by two students, especially in a smaller school. Cost savings would more likely take place over several years as districts work to manage their school enrollments around the larger class-size targets (much in the manner that they manage school enrollments today).

15. http://www2.ed.gov/offices/OESE/ClassSize/index.html.

16. http://www.rand.org/pubs/rgs_dissertations/RGSD156/RGSD156.ch3.pdf.

17. "A Descriptive Evaluation of the Federal Class-Size Reduction Program," (United States Department of Education),http://www2.ed.gov/rschstat/eval/other/class-size/index.html (accessed December, 2012).

18. The data rely on average teacher salaries by state. Although teacher compensation varies widely within states, the use of average salaries provides a good starting point for analysis. For a more accurate projection, states could use regional salary averages or ranges.

19. We distinguish class size from pupil-teacher ratio in this study as: the latter includes auxiliary teaching staff (i.e., librarians, music teachers, etc.) and does not reflect the actual number of students in a classroom. For a detailed explanation of the difference between these two reporting methods, see Appendix A.

20. The analysis does not include fringe benefits and reduced facilities usage, which would only increase projected savings.

21. Computed from Common Core of Data on "Expenditures for Instructional Salaries and Benefits," (National Center for Education Statistics, 2008).

Table 2. Current cost of marginally smaller class sizes

(Comparison is to a class size that is 2 students larger than 2008 level).

State	Avg Teacher Salary[1]	Elem Avg Class Size[2]	Second Avg Class Size	Projected Funds Elementary ($1,000s)	Projected Funds Secondary ($1,000s)	Combined % of K-12 Expenses[4]	Per Student
Alabama	$48,003	18.9	25.3	$112,250,315	$73,875,072	2.8%	$253
Alaska	$62,425	19.0	21.6	$25,464,032	$20,750,618	2.3%	$362
Arizona	$48,691	23.5	25.6	$161,290,896	$61,715,298	2.6%	$208
Arkansas	$46,959	19.8	20.3	$65,821,732	$67,561,752	3.1%	$290
California	$69,496	21.5	30.0	$1,123,406,127	$372,588,468	2.5%	$241
Colorado	$50,407	21.2	23.9	$112,821,308	$93,016,279	2.9%	$240
Connecticut	$70,821	19.4	21.3	$188,630,543	$85,052,449	3.1%	$485
Delaware	$58,800	21.4	22.0	$22,261,455	$22,079,250	2.9%	$341
D.C.	$68,720	19.0	19.1	$26,381,380	$13,290,132	2.9%	$515
Florida	$46,232	18.3	24.2	$408,103,583	$293,299,918	3.0%	$267
Georgia	$52,938	17.6	22.6	$362,106,101	$188,313,142	3.4%	$327
Hawaii	$54,268	20.6	23.6	$28,764,331	$22,524,240	2.3%	$289
Idaho	$48,551	23.7	23.0	$31,564,260	$29,352,316	3.1%	$210
Illinois	$66,053	21.4	23.2	$554,655,020	$179,610,211	3.1%	$349
Indiana	$51,629	21.3	25.5	$151,531,015	$110,934,315	2.7%	$270
Iowa	$51,037	20.0	21.3	$109,998,439	$51,019,913	3.4%	$324
Kansas	$46,718	19.5	21.0	$73,925,827	$69,233,026	3.0%	$297
Kentucky	$49,730	22.1	24.3	$120,255,371	$45,529,415	2.8%	$252
Louisiana	$50,179	18.1	20.9	$171,837,408	$67,076,301	3.3%	$340
Maine	$48,283	16.9	19.9	$58,944,412	$24,894,115	3.6%	$452
Maryland	$63,634	20.2	23.1	$204,359,970	$127,296,431	2.9%	$388
Massachusetts	$72,000	18.7	20.6	$317,563,162	$149,895,356	3.4%	$491
Michigan	$64,879	24.5	26.7	$239,960,942	$213,032,892	2.6%	$275
Minnesota	$54,959	23.3	25.8	$115,579,171	$101,912,352	2.3%	$270
Mississippi	$41,646	19.3	19.9	$76,932,569	$52,422,282	3.3%	$264
Missouri	$46,406	19.4	20.6	$151,337,379	$138,668,253	3.3%	$320
Montana	$48,546	18.2	18.5	$34,501,085	$16,403,269	3.5%	$365
Nebraska	$48,718	18.8	18.7	$91,312,205	$40,430,811	4.3%	$438
Nevada	$54,559	21.5	26.5	$69,178,140	$41,477,010	3.1%	$235
New Hampshire	$54,177	19.0	21.7	$54,874,687	$22,794,175	3.1%	$407
New Jersey	$68,207	19.8	23.0	$275,307,059	$378,716,387	2.8%	$480
New Mexico	$48,011	18.8	22.5	$68,412,586	$26,151,199	3.0%	$290
New York	$74,449	18.0	22.0	$765,173,177	$797,479,849	3.2%	$597
North Carolina	$46,605	19.4	21.0	$291,737,008	$110,496,392	3.2%	$281
North Dakota	$46,058	16.4	18.0	$27,433,653	$10,906,018	4.1%	$419
Ohio	$57,528	21.2	23.4	$342,700,785	$172,389,229	2.7%	$275
Oklahoma	$44,156	19.7	20.7	$116,894,922	$48,667,715	3.3%	$249
Oregon	$57,348	23.3	25.2	$81,226,702	$41,770,743	2.2%	$219
Pennsylvania	$62,215	20.8	22.4	$348,120,430	$325,766,092	3.1%	$385
Rhode Island	$62,186	20.7	22.9	$37,475,979	$20,929,696	2.7%	$426
South Carolina	$48,176	18.5	21.4	$157,890,279	$60,479,792	3.3%	$303
South Dakota	$39,850	17.9	20.2	$25,902,162	$9,949,115	3.3%	$287
Tennessee	$46,613	17.7	23.0	$218,469,020	$75,252,649	3.8%	$295
Texas	$49,017	17.7	21.7	$851,256,871	$687,563,732	3.8%	$308
Utah	$48,159	24.0	29.2	$56,722,446	$36,843,692	2.6%	$157
Vermont	$51,306	16.8	17.9	$25,474,862	$22,174,955	3.4%	$567
Virginia	$49,560	18.2	20.8	$307,183,711	$189,677,669	3.7%	$394
Washington	$54,193	22.8	24.9	$130,989,578	$97,676,983	2.3%	$219
West Virginia	$45,320	18.6	21.4	$63,089,590	$21,169,539	2.8%	$298
Wisconsin	$55,492	19.6	23.0	$209,882,281	$76,675,914	3.0%	$329
Wyoming	$57,222	18.7	18.8	$20,842,933	$19,016,761	3.1%	$448
United States	$56,643	20.0	23.4	$9,687,798,900	$6,025,803,183	3.0%	$319

Sources

[1]Table G: Estimated average annual salaries of total instructional staff and classroom teachers, 2010-11 (revised) and 2011-12, Rankings and Estimates: Rankings of the States 2011 and Estimates of School Statistics 2012, National Education Association, December 2011.

[2]Table 71. Highest degree earned, years of full-time teaching experience, and average class size for teachers in public elementary and secondary schools by state: 2007-08 Schools and Staffing Survey (SASS), "Public Teacher Questionnaire," 2007-08 (This tab was prepared September 2009), Department of Education, National Center for Education Statistics.

[3]Based on authors' calculations - see Appendix A for methodology.

[4]Based on authors' calculations of current expenditures for 2008-09 as reported by the Common Core of Data (CCD), "National Public Education Financial Survey," 1989-90 through 2008-09. (This table was prepared August 2011), U.S. Department of Education, National Center for Education Statistics.

As would be expected, the opportunity costs would vary by state due to differences in average teacher salaries and current class sizes.[22] Yet in all states, the projected opportunity costs of the current marginally smaller class sizes are substantial, amounting to some two to four percent of total K–12 expenditures.

Class-size discussions should be informed by current class-size levels and real opportunity costs

Because of constrained budgets, class size is a high-profile topic among policymakers, education leaders, parents, and journalists. But frustratingly, the conversations appear woefully ill informed, as perceptions of current class sizes are out of sync with actual averages. Journalism that reports on class sizes as "skyrocketing" contradicts current trends that have today's class sizes at levels *below* their 1999–2000 levels in the majority of states. The debate on whether current class sizes are too high or too low should, at a minimum, capture real time levels.

But recognizing the current class-size level is not enough. Consideration of whether smaller classes are preferable to larger ones requires some recognition of the opportunity costs involved. This brief starts that conversation by computing the dollars at stake in marginally raising the number of students per class (by two in each state). To illustrate the magnitude of public funds involved, the brief shows that the fifty states currently spend $15.7 billion, or an average of $319 per pupil, per year to maintain their class sizes at current levels as compared with letting them increase by two. Adding benefits costs to the mix drives up the estimates to over $20 billion nationally.

More recently, new tools (including Education Resource Strategies' "Budget Hold 'Em" game) are enabling more informed discussion of tradeoffs.[23] Using these tools, or simple math with the figures above, we find that marginally smaller class sizes do come at the expense of reforms deemed desirable by some. For instance, for those who hope to raise teacher or principal salaries, a marginal increase in class size of two would enable a salary raise of over $5000 per teacher, or $20,000 to top quartile teachers. Similarly, the funds are more than sufficient to ensure a laptop for each student, or lengthen the school day in the poorest 20 percent of schools. Other studies have pointed out that reforming schooling by reducing class size often creates the least benefit for the cost, pointing out that other reforms—for example, increasing class size while letting go the lowest-performing teachers and paying high-quality teachers more—could have an even more positive effect on student learning and cost reduction.[24] While this brief doesn't assess the relative value of each of these investments, consideration of any investment makes most sense when set against thoughtful alternatives with the projected costs and savings of each.

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22. In the United States, the average teacher salary for the 2011–12 school year was $56,643; however the range is between $39,850 for South Dakota and $74,449 for New York. See Summary Table G, "Estimated Average Annual Salaries of Total Instructional Staff and of Classroom Teachers," 2010–11 (revised) and 2011–12.

23. "School Budget Hold 'Em Tradeoff Exercise" (Watertown, MA: Education Resource Strategies).

24. See for example, Chingos and Whitehurst, "Class Size: What Research Says;" S. Dynarski, J. Hyman, and D.W. Schanzenbach, "Experimental Evidence on the Effect of Childhood Investments on Postsecondary Attainment and Degree Completion," NBER Working Paper No. 17533 (Cambridge, MA: National Bureau of Economic Research, 2011); and D.N. Harris, "Toward Policy-Relevant Benchmarks for Interpreting Effect Sizes: Combining Effects with Costs," *Educational Evaluation and Policy Analysis*, 31, 3–29 (2009).

Appendix

Measuring Class Size

This analysis differs from other attempts at modeling the incremental spending of *class-size* changes because it uses changes in class size and not commonly used pupil-teacher ratios (while pupil-teacher ratios are by no means the equivalent of class sizes, they are, however, readily available and easy to manipulate). This analysis is derived by dividing the total number of students by the total number of teachers. In this case, teachers include all certificated staff (excluding administrators) whether they are primarily responsible for a classroom or teach pull-out classes such as gym, art, or music. Because pull-out staff are included in the total number of teachers, the pupil-teacher ratio is often lower than average class size.

Class size is determined by either direct observations of classrooms or surveys of the number of students in a classroom. Then, averages are tallied for the school, district, and state. Due to the fact that surveys and observations are more time-consuming and costly, average class-size data lags behind pupil-teacher data, which is another reason the latter is more widely used.

Methodology: Calculating Projected Funds Available

This analysis used data from two sources. The National Education Association's 2010–11 Rankings & Estimates provided data on the number of elementary and secondary teachers, the average salary for classroom teachers, and the fall enrollment of students.[25] The 2007–08 Schools and Staffing Survey from the National Center for Education Statistics provided state-by-state figures for average class size.[26] This analysis used the data to compute the number of teachers needed when increasing the average class size by two additional students. The difference in salary costs due to the decreased workforce was then found. As noted earlier, these calculations do not include fringe benefits and changes in facilities.

The following four-part calculation was used to determine the available funds for each state:

1. Average Class Size (ACS) x Number of Teachers (NT)/New Class Size = New Number of Teachers (NNT)

2. NNT x Average Teacher Salary (ATS) = New Salary Costs (NSC)

3. Old Salary Costs (OSC) – New Salary Costs (NSC) = Projected Funds Available (PFA)

25. Summary Table F: Estimated number of instructional staff members in public elementary and secondary schools by type of position, 2010–11, *Rankings and Estimates: Rankings of the States 2010* and *Estimates of School Statistics 2011* (National Education Association, 2011) and Summary Table G: Estimated average annual salaries of total instructional staff and classroom teachers, 2009–10 (revised) and 2010–11, Rankings and Estimates: Rankings of the States 2010 and Estimates of School Statistics 2011 (National Education Association, 2011).

26. Table 71. Highest degree earned, years of full-time teaching experience, and average class size for teachers in public elementary and secondary schools by state: 2007–08, "Public Teacher Questionnaire" *Schools and Staffing Survey* (SASS) 2007–08 (Department of Education, National Center for Education Statistics, 2009).

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