

INFORMATION PROVIDED TO: Senate Education Committee
FROM: Rebeca Holcombe, Secretary, Agency of Education
TOPIC: Research Brief on Optimal School District Sizes
DATE: March 10, 2015

In follow up to my testimony to your committee on Thursday, February 26, I offer the following response to your request for a brief summary of the research on optimal school district sizes:

Research on District Size & Consolidation

In one of the most comprehensive reviews of literature on economies of scale in education, Andrews, Duncombe, and Yinger (2002) concluded:

The best of the cost function studies suggest that sizeable potential cost savings in instructional and administrative costs may exist by moving from a very small district (500 or fewer pupils) to a district with ca 2,000 – 4,000 pupils. The findings from production function studies of schools are less consistent, but there is some evidence that moderately sized elementary schools (300–500 students) and high schools (600–900 students) may optimally balance economies of size with the potential negative effects of large schools.¹

That is, district level per-pupil costs tend to level off as district enrollments approach 2,000 pupils. Districts enrolling over 2,000 pupils are able to produce comparable outcomes to smaller districts at much lower per pupil costs. The authors also note that this finding is consistent with literature on student outcomes in schools of varied sizes, which finds that high schools of around 600 to 900 pupils seem to be optimal in terms of production of student outcomes. Lee and Smith (1997) note:

Results suggest that the ideal high school, defined in terms of effectiveness (i.e., learning), enrolls between 600 and 900 students. In schools smaller than this, students learn less; those in large high schools (especially over 2,100) learn considerably less.²

In many states and metropolitan areas around the country, a school district enrolling 2,000 pupils is small and a high school with fewer than 900 pupils in grades 9 to 12 is small. Thus, we

¹ Andrews, M., Duncombe, W., & Yinger, J. (2002). Revisiting economies of size in American education: are we any closer to a consensus?. *Economics of Education Review*, 21(3), 245-262.

² Lee, V. E., & Smith, J. B. (1997). High school size: Which works best and for whom?. *Educational Evaluation and Policy Analysis*, 19(3), 205-227.

often see these studies used as a basis for arguing that smaller is better. In Vermont, however, these would be among the largest schools and districts in the state.

Building on this work, Duncombe and Yinger (2007) estimate models of the potential cost savings of consolidating very small school districts in rural upstate New York. Their work is particularly important to this discussion because many of the conditions in the rural areas they studied are comparable to the contexts found in Vermont. Duncombe and Yinger (2007) found that:

We find economies of size in operating spending: all else equal, **doubling enrollment cuts operating costs per pupil by 61.7 percent for a 300-pupil district and by 49.6 percent for a 1,500-pupil district.** Consolidation also involves large adjustment costs, however. These adjustment costs, which are particularly large for capital spending, lower net cost savings to 31.5 percent and 14.4 percent for a 300-pupil and a 1,500-pupil district, respectively. Overall, consolidation makes fiscal sense, particularly for very small districts, but states should avoid subsidizing unwarranted capital projects.³

In other words, substantial cost savings can be achieved by consolidating districts as small as 300 pupils into districts with around 1,500 pupils. Smaller cost reductions are achieved for consolidations above those levels, but at a decreasing rate. Again, the authors are referring to consolidations of very small districts, smaller than exist in many states, but dominant across the Vermont landscape. Much of the elevated cost of very small districts in other states is not in centralized and overhead costs.

In Vermont, however, there may be more savings to be found here due to the complexity of the governance structures present across the state, and the sheer number of districts requiring administration. Duncombe and Yinger's (2007) work explains that elevated costs in many very small districts are linked to the staffing ratios at the classroom level, such that cost savings are maximized when individual schools can be reorganized and consolidated as well as overhead costs. In many states, combining schools themselves (different from consolidating districts) comes with up front capital investment, which may or may not be the case in Vermont due to the persistent declines in enrollment leaving many school buildings sparsely populated across certain areas. On balance, any capital investment should be approached strategically.⁴

Much other literature has commented on this topic, using the works noted above as the generally accepted gold standard. These pieces have been included in the bibliography attached to this document for further reading if so inclined.

³ Duncombe, W., & Yinger, J. (2007). Does school district consolidation cut costs?. *Education Finance & Policy*, 2(4), 341-375.

⁴ This is an excerpt from Baker, Bruce D. and Wendy I. Geller, March 2, 2015. Policy Brief: "When is Small Too Small?: Efficiency, Equity, and the Organization of Vermont Public Schools." Department of Educational Theory, Policy & Administration, Rutgers, The State University of New Jersey.

Additional Resources in this Area of Research

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- Duncombe, William D., and John M. Yinger. "School District Consolidation: The Benefits and Costs." *School Administrator* 67, no. 5 (May 2010): 10–17.
- . "Does School District Consolidation Cut Costs?" *Education Finance and Policy* 2, no. 4 (January 2007): 341–75. doi:10.1162/edfp.2007.2.4.341.
- . "Financing Higher Student Performance Standards: The Case of New York State." *Economics of Education Review* 19, no. 4 (October 2000): 363–86. doi:10.1016/S0272-7757(00)00004-2.
- . "How Much More Does a Disadvantaged Student Cost?" *Economics of Education Review* 24, no. 5 (October 2005): 513–32. doi:10.1016/j.econedurev.2004.07.015.
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- Reardon, Sean F., Nicole Arshan, Allison Atteberry, and Michal Kurlaender. "Effects of Failing a High School Exit Exam on Course Taking, Achievement, Persistence, and Graduation." *Educational Evaluation and Policy Analysis* 32, no. 4 (December 1, 2010): 498–520. doi:10.3102/0162373710382655.

Robertson, Frank W. "Economies of Scale for Large School Districts: A National Study with Local Implications." *The Social Science Journal* 44, no. 4 (2007): 620–29. doi:10.1016/j.soscij.2007.10.005.

Schlotter, M., Schwerdt, G. & Woessmann, L., 2011. Econometric methods for causal evaluation of education policies and practices: a non-technical guide. *Education Economics*, 19(2), pp.109–137.