
TESTIMONY

Testimony To: House Committee on Education

Respectfully Submitted by: Dr. Anne Bordonaro, Interim Deputy Director
Josh Souliere, Division Director, Education Quality Division
Dr. Danielle Dupuis, Director of Assessment and Accountability

Subject: **Research on Class Sizes**

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Thank you for the opportunity to provide follow up testimony on the question of class sizes in Vermont and nationally.

Key Takeaways

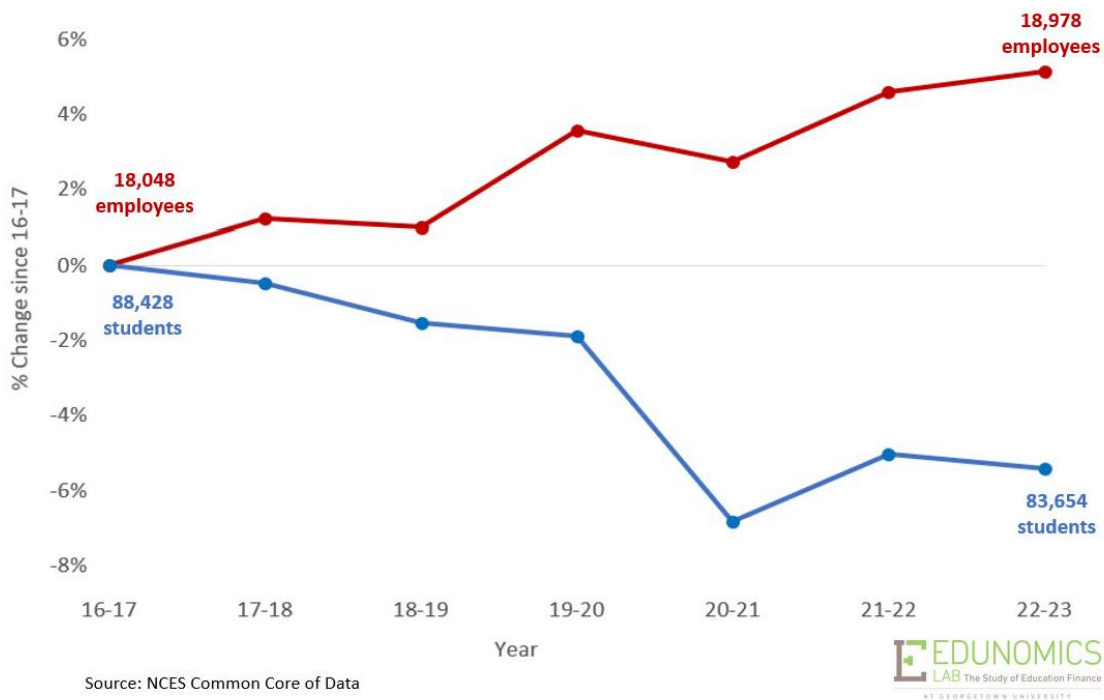
- VT has very small class sizes (relative to other states and to our own maximums in SB rule which are 20 for K-3 and 25 for 4-12).
- Per the research on class size, there is room for class size increases without harming student achievement.
- Our very small class sizes may have negative impacts beyond cost.
- If the Leg wishes to contain personnel-related educational costs, they may wish to look at staff: student ratios, not just teacher: student ratios.

Data on Staffing and Enrollment, Including Class Size

As reported recently in a comparative study of states, Vermont experienced a 5.15% increase in staff (not just teachers) between the 2016-2017 and 2022-2023 school years and a similar decrease (5.40%) in students during this same period. This mirrors national patterns.



Vermont: Staffing vs Enrollment Trends (Cumulative % change since 16-17)



This pattern is not surprising since schools have been asked to take on much more during and since COVID (academic intervention programs to address learning loss, management of complex behavioral issues, increased outreach to parents of chronically absent students, provision of mental health services, etc.). This gap *may* close somewhat as the COVID-era funds recede and some newly created positions are eliminated.

Narrowing our look at bit, Vermont’s *student-teacher* ratios (which include all types of licensed teachers except PK teachers, student support educators like school nurses and school counselors, and those teachers employed directly by SUs) have remained relatively constant over the past 12 years (because both teacher numbers and student numbers have declined roughly in tandem) from a low of 10.3 in 2014 to a high of 11.5 in 2020. The ratio dropped back to 10.7 for 2024.

These ratios are well below [national averages](#). They also are well below the maximums specified in [EQS 2121.2](#) of 20 in grades K-3 and 25 in grades 4-12.

Returning to the broader look at staffing in more detail, Vermont’s *student-staff* ratios (which include all types of professional and non-professional staff, not just teachers) have consistently decreased since 2019. These ratios ranged from a high of 4.4 in 2012 to a low of 3.63 in 2024. The recent decreases are most likely due to increases in hiring of various types of staff other than licensed classroom teachers to meet behavioral, academic recovery, mental health, and other COVID-related needs. Again, we may see a moderation of this trend as the COVID-era funds recede and some newly created positions are eliminated.

Research on the Impact of Class Size on Student Achievement

Most research on class size has concentrated on the impact on student achievement of *reducing* class sizes. There is very little research regarding the impact on achievement of *increasing* class sizes or of “too small” classes.

Small class sizes have some distinct advantages, namely the possibility (though not the guarantee) of more individualized attention from teachers. However, despite the dearth of experimental research on this subject, anecdotally in Vermont, there have been some identified disadvantages of very small classes, most especially restrictions on the possible social configurations and relationships that may occur in the classroom (for ex. one boy amongst 7 girls in a kindergarten class)

Regarding the research on class size writ large, the authors of a 2011 Brookings Institution review of research on class size state that "despite there being a large literature on class-size effects on academic achievement, only a few studies are of high enough quality and sufficiently relevant to be given credence as a basis for legislative action."

More recent studies consistently have found greater impact on student outcomes for teacher quality (teacher experience, full licensure/credentialing, high ratings of “effectiveness” in increasing student achievement or working with specific populations) than for class size.

Please see the summary of research below for much greater detail regarding the class size research.

Legislative Considerations Regarding Class Size Mandates

1. Most of the national research that found advantages to smaller class sizes showed positive effects for class sizes that are well within Vermont’s existing maximums for K-3 and 4-12.
2. If VT created minimum class size mandates, such as 10-15 students, these would still fall well within the “small class sizes” as defined by most studies reviewed.
3. Class sizes in certain cases may need to be exempted from class size minimums, if such are implemented. These cases may include:
 - Newcomer or Level I EL classes
 - Preschool classes
 - Specialized advanced seminars or science labs in high school
 - Certain technical classes in CTE centers
 - Specialized programs for students with disabilities

In addition, class size minimums and maximums should continue to pertain to averages across a whole school because small shifts in student population year-to-

year in specific grades often require schools to be flexible in constituting classes to avoid short-term hiring, reassignment, or RIFing decisions. For example, in a small school, an anticipated dip in the number of incoming 3rd graders in one school year might result in a smaller than normal class size for that one year. Some schools use mixed-grade groupings in part to address these fluctuations. Having larger, more populous schools would also reduce the impact of these fluctuations.

Like in EQS 2121.2, both objectives could be accomplished by using language such as “when taken together” and specifying possible exceptions.

4. If the Leg wishes to contain personnel-related educational costs, they may wish to look at staff: student ratios, not just teacher: student ratios.

Class Size and Achievement: Summary of Research

Summary of Results

Pros and Cons

Class-size reduction has been shown to work for some students in some grades in some states and countries, but its impact has been found to be mixed or not discernable in other settings and circumstances that seem similar, and it is very expensive to implement (from comprehensive analysis by [Chingos & Whitehurst, 2011](#)).

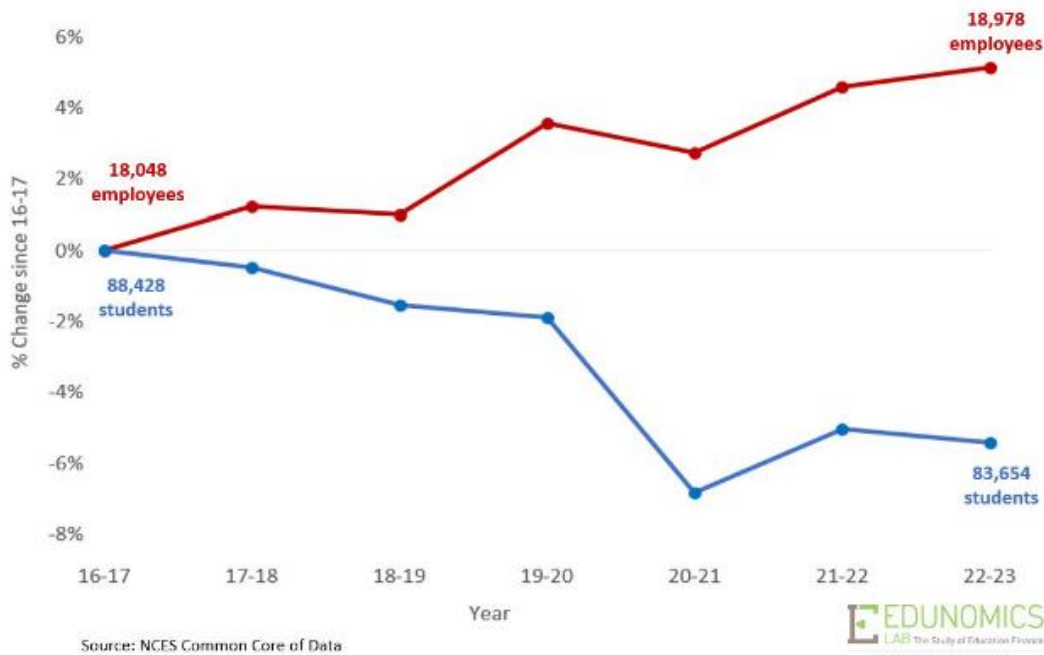
Impacts

- There are **minimal original studies that show strong effects** of class size on achievement (e.g., Mosteller, W., 1995; Jepsen, C., & Rivkin, S., 2009). The definitive study to do so was the 1995 experimental Tennessee STAR study.
- Several of the studies with positive results show **small effects** (e.g., Filges, T., Sonne-Schmidt, C. S., Nielsen, B. C. V., 2018; Bosworth, R., 2014).
- Several studies show **no discernable effects, or are inconclusive** (e.g., Glass Smith, 1979; Hoxby, 2000; Chingos, 2010; Li, W., & Konstantopoulos, S., 2017; Miles, C., & Gamoran, A., 2006; Cho & Whittler, 2012; Chingos, 2013).
- A review of class-size effects from 59 studies and found that **only 11 percent of these indicated positive effects of smaller classes**. A similar number, **9 percent, were negative**, with the **remaining 80 percent not statistically distinguishable** from zero (Hanushek, 2023, as cited in Chingos, 2013)
- One meta-analysis reported class-size differences at the extreme low end of the scale (e.g., individual instruction) have quite important effects on achievement, while **differences between class sizes of 10/20/30 compared to 40 have little impact** (Glass & Smith, 1979)

How small is “small”:

- Related to positive results, on average, **small class sizes ranged from 13-20 students**, which already falls within our current parameters in VT EQS.
- In Vermont, [typical class sizes](#) are below national average (Primary: self-contained 16.4; departmentalized 20.1; Middle Departmentalized 19.1; High School self-contained 17.0, Departmentalized 14.7), and enrollment is declining while staffing is increasing—see image below from [Edunomics](#).

Vermont: Staffing vs Enrollment Trends (Cumulative % change since 16-17)



- If VT created **minimum mandates**, such as 10-15 students, this would still fall well within the “small class size” as defined by most studies reviewed.

Limitations and Confounding Variables

- Evidence is often inconclusive and **confounding/other variables may misconstrue attribution** of increase in achievement to class-size for example (e.g., Chingos, M.M. & Whitehurst, G.J., 2011):
 - Estimating the impact of class size on learning is complicated, since children in small and large classes differ in many observed and unobserved ways
 - Instructional activities offer significant boosts to achievement, but the effects of instruction do not differ between small and large classes.
 - Simple correlation could be due to families with higher levels of education living in more affluent school districts that can afford smaller classes.
- The vast majority of class-size studies are **not rigorous** (exception Tennessee STAR), so their results are not very useful as a guide to policy (e.g., Chingos, 2011)
- Studies of class size effects may suffer from omitted variables’ bias if the researcher fails to control for class composition as composition is related to class size. Further, experimental class size **results may not generalize** to nonexperimental (e.g., Bosworth, 2011)
- **Other alternatives may have a greater impact on student achievement** (e.g., teacher assignment, including assignment of inexperienced or not fully licensed teachers; improving curriculum, instruction and data use; capacity building, program/professional development; compensation/incentives; training mandates, etc.)

- Effects on student achievement related to differences in **teacher quality** are very large (Chingos & Whitehurst, 2011)
 - Hanushek (2003) notes that American class sizes have reduced while teacher qualifications have risen
 - It could be the case that increased quality of educators plays a role in any positive impacts that may have been attributed to class size
 - Gains in student achievement from class size reductions are sometimes counteracted by teacher quality (e.g., Gilraine, M. 2020; Chingos & Whitehurst, 2011; Jepsen & Rivkin, 2009)

Studies showing positive results

Source	Grades Examined	Class Size	Results
Mosteller, W. (1995)	K-3	13-17 small 22-25 large	Smaller classes did produce substantial improvement in early learning and cognitive studies and that the effect of small class size on the achievement of minority children was initially about double that observed for majority children, but in later years, it was about the same. Lasting effects
Filges, T., Sonne-Schmidt, C. S., Nielsen, B. C. V. (2018)	K-3	10-19 small 20-25 large	Small effect on reading achievement –no effect on math
Carro & Galladaro (2023)	5-6	Reduction from 25-30 to 16-20 students	Positive effects .11 SD
Bosworth, R. (2014).	4-5	Average 23	Small effects
Shin, Y. & Raudenbush, S. W. (2011).	K-3	13-17 small 22-25 large	improves reading, mathematics, listening, and word recognition test scores from kindergarten to third grade,

Source	Grades Examined	Class Size	Results
Jepsen, C., & Rivkin, S. (2009).	2-4	Average 22	Raised achievement for all demographic groups
Konstantopoulos, S. (2008).	K-3	13-17 small 22-25 large	Higher achievers benefited more

Studies showing minimal or no impact

Source	Grades Examined	Class Size	Results
Gene V. Glass and Mary Lee Smith. “Meta-Analysis of Research on Class Size and Achievement.” <i>Educational Evaluation and Policy Analysis</i> 1(1): 2–16 (1979).	Meta-analysis of 77 studies, spanning 70 years and 12 countries	1-40	The difference between class-size 20 and class-size 40 is only about five hundredths standard deviation. Class-size differences at the low end of the scale have quite important effects on achievement; differences at the high end have little effect.
Caroline M. Hoxby, “The Effects of Class Size on Student Achievement: New Evidence from Population Variation,” <i>Quarterly Journal of Economics</i> , 115(4): 1239–1285 (2000).	4-6	Average 21 (range 10-30)	Hoxby finds no relationship between class size and achievement
Chingos, 2010	3-8	maximum number of students in each core class would be: 18 students	No evidence of impact

Source	Grades Examined	Class Size	Results
		through grade 3; 22 students in grades 4 through 8; and 25 students in grades 9 through 12.	
Cho, H., Glewwe, P., & Whitley, M. (2012).	3-5	Mean 22-24	A decrease of ten students would increase test scores by only 0.04-0.05 standard deviations (of the distribution of test scores). Thus, class size reductions are unlikely to lead to sizeable increases in student learning
Konstantopoulos, S. (2008).	K-3	13-17 small 22-25 large	No reduction in achievement gaps
Li, W., & Konstantopoulos, S. (2017).	4 and 8	?	no systematic patterns of class-size effects across quantiles.
Milesi, C., & Gamoran, A. (2006).	K	17 small 18-23 regular 18-24 large	no evidence of class-size effects on student achievement in either reading or mathematics, and results indicate that class size is equally insignificant for students from different race/ethnic, economic, and academic backgrounds.
Filges, T., Sonne-Schmidt, C. S., Nielsen, B. C. V. (2018)	K-3	10-19 small	Negative impact and not statistically significant for math achievement)

Source	Grades Examined	Class Size	Results
		20-25 large	
Dee & West, 2011; Rivkin, Hanuchek & Kain, 2005, as cited in Chingos, 2013	6-8	Mean 25 (2011 study) Mean 22-23 (2005 study)	two high-quality studies that include students in grades 6 to 8 pointing to small or nil overall effects