

*Preliminary Analysis*

**Average Four-Year Cost Per Graduate for Maine  
Public High Schools: Class of 2004**

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What does it cost to graduate a Maine high school student? And is there any clear relationship between the cost of graduating students and school size? Calculating a cost per graduate for a district allows for one type of evaluation of the relationship of costs, outputs (in this case graduates) and size of the student body. It is important to note that how well students do in a school (i.e. do they graduate on time?) not just the size of the student body may effect the costs educating students. It is clear that for an accurate comparison of education cost both outcomes and size must be considered.

The relationship between cost and size is grounded in the concept of economies of scale where by proportionally increasing all inputs should lead to lower per graduate costs up to a certain point of maximal effective size, beyond which cost

may begin to rise again. To examine this relationship an analysis was conducted on the cost per graduate for Maine high school students. Attendance and yearly secondary per-pupil cost data were obtained from the Maine Department of Education. The class of 2004 cohort was defined by taking all the 2004 graduates and adding in those students who dropped out in the previous four years who would have graduated in 2004, (i.e., the 12th grade dropouts from 2003-04, the 11th grade dropouts from 2002-03, and so on). For each of the four years, the number of students in the cohort was multiplied by the secondary per-pupil cost in that year. (Secondary per-pupil cost excludes transportation, leases, major capital outlay and debt service.) This four-year total was divided by the number of 2004 graduates to yield the four-year cost per graduate.

The results of this analysis appear in the tables titled “Average Four-Year Cost Per Graduate For Maine High Schools By School Size (Class of 2004)”. (The first table and graph represent school size breakdowns every 200 students with the exception of an additional breakout of schools with less than 100 students. The second table and chart represent school size breakdowns for every 100 students.) As the cohort shows, Maine high schools followed the economies of scale model with the lowest average cost per graduate being found in high schools with enrollments of 800-1000 students. Small high schools (especially those with enrollments of less than 200 students) had the highest average cost per graduate and those high schools with enrollments higher than 1000 students

also showed increases in the average cost per graduate. Three island schools that had unusually high average cost per graduate compared to mainland schools were considered outliers and removed from the data set. However, even with these outliers removed the economies of scale model was clear. As may be seen from this data set, that while the economy of scale model declines appropriately for the state-wide data, there are exceptions in each enrollment category. That is, some high schools are more costly than others within each school size category. Consequently, further analysis is needed to determine why some high schools are more costly than others for graduating students.

**Average 4-Year Cost per Graduate for Maine High Schools by School Size- Three  
Island Schools Excluded (Class of 2004)**

<b>School Size Enrollment</b>	<b>Number of SAUs</b>	<b>Average Graduation Rate</b>	<b>Range of Cost per Graduate</b>	<b>Average Four-Year Cost per Graduate</b>	<b>Standard Deviation</b>
< 100	8	91%	\$29,471 - \$49,927	\$37,356	\$7,691
100-200	15	90%	\$24,276 - \$37,282	\$31,242	\$3,596
200-400	33	85%	\$23,134 - \$42,807	\$31,132	\$5,145
400-600	20	90%	\$22,775 - \$34,996	\$29,411	\$3,652
600-800	17	88%	\$24,410 - \$32,323	\$27,630	\$2,506
800-1000	10	91%	\$22,134 - \$29,682	\$25,956	\$2,827
1000-1200	9	86%	\$20,786 - \$33,579	\$26,349	\$4,038
1200-1400	3	85%	\$26,205 - \$32,776	\$29,259	\$3,310
State Average (Average of SAUs)					
500	115	88%	\$20,786 - \$49,927	\$29,889	\$5,048

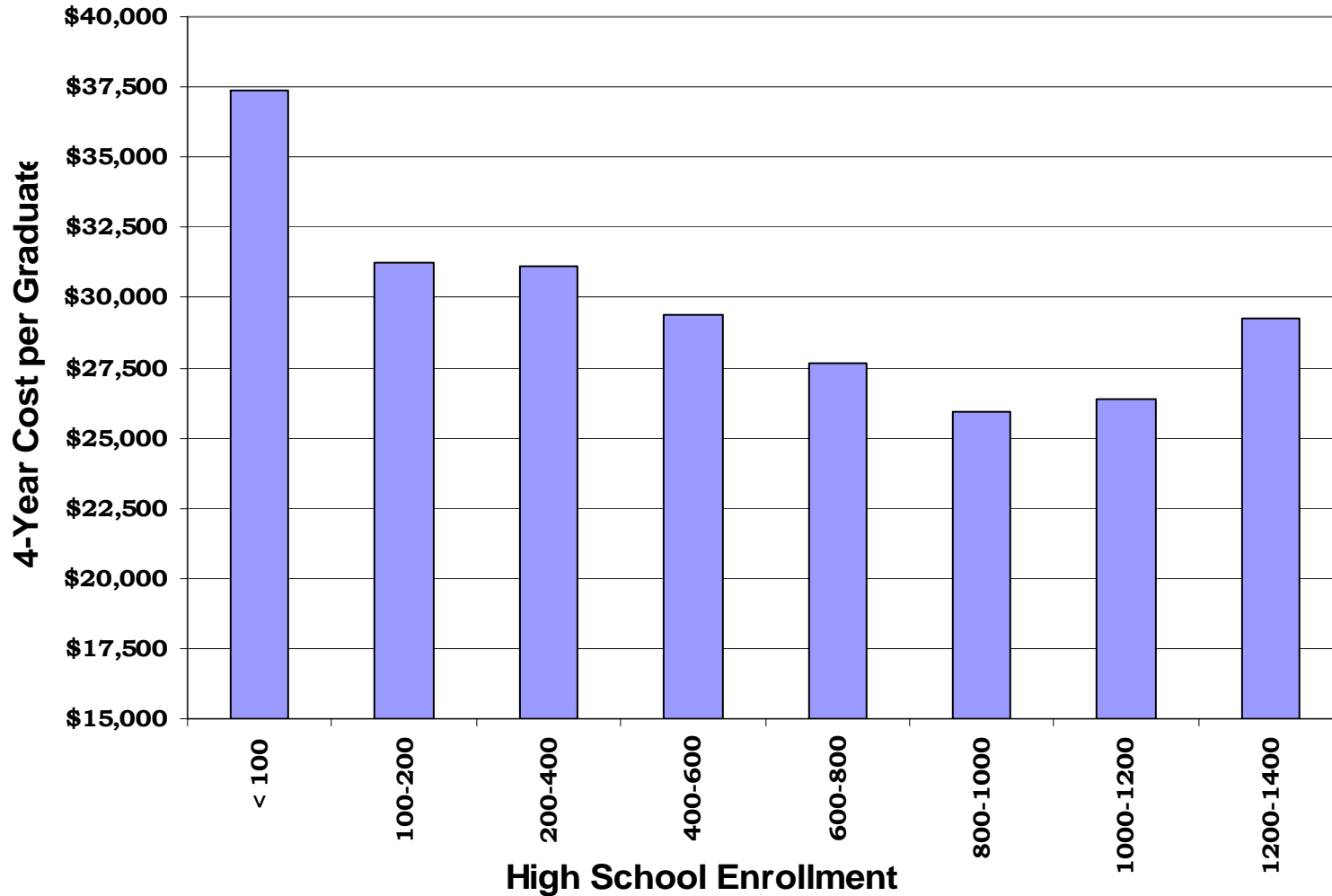
\* The excluded islands are Islesboro, Vinalhaven and North Haven. These Island High Schools all have unusually high per graduate costs compared to mainland high schools.

Calculation: The class of 2004 cohort was defined by taking all the 2004 graduates and adding in those students who dropped out in the previous four years who would have graduated in 2004, (i.e., the 12<sup>th</sup> grade dropouts from 2003-04, the 11<sup>th</sup> grade dropouts from 2002-03, and so on). For each of the four years, the number of students in the cohort was multiplied by the secondary per-pupil operating cost in that year. This four-year total was divided by the number of 2004 graduates to yield the four-year cost per graduate.

Secondary per-pupil cost excludes transportation, leases, major capital outlay and debt service.

**Average Four-Year Cost Per Graduate For Maine High Schools by School Size  
(Class of 2004)**

**Excluding Three Islands (Islesboro, North Haven and Vinalhaven)**



**Average 4-Year Cost per Graduate for Maine High Schools by School Size- Three Island Schools Excluded (Class of 2004)**

<b>School Size Enrollment</b>	<b>Number of SAUs</b>	<b>Average Graduation Rate</b>	<b>Range of Cost per Graduate</b>	<b>Average Four-Year Cost per Graduate</b>	<b>Standard Deviation</b>
< 100	8	91%	\$29,471 - \$49,927	\$37,356	\$7,691
100-200	15	90%	\$24,276 - \$37,282	\$31,242	\$3,596
200-300	17	85%	\$23,134 - \$42,807	\$32,091	\$5,919
300-400	16	85%	\$24,194 - \$36,479	\$30,112	\$4,118
400-500	11	90%	\$25,145 - \$34,861	\$29,847	\$3,255
500-600	9	90%	\$22,775 - \$34,996	\$28,878	\$4,224
600-700	9	88%	\$24,410 - \$32,323	\$28,815	\$2,739
700-800	8	88%	\$24,480 - \$28,740	\$26,296	\$1,394
800-900	8	91%	\$22,905 - \$29,682	\$25,996	\$2,538
900-1000	2	92%	\$22,134 - \$29,450	\$25,792	\$5,173
1000-1100	4	90%	\$20,786 - \$28,937	\$25,000	\$3,393
1100-1200	5	83%	\$22,986 - \$33,579	\$27,429	\$4,549
1200-1300	1	86%	\$26,205 - \$26,205	\$26,205	.
1300-1400	2	84%	\$28,796 - \$32,776	\$30,786	\$2,815
State Average (Average of SAUs)					
500	115	88%	\$20,786 - \$49,927	\$29,889	\$5,048

\* The excluded islands are Islesboro, Vinalhaven and North Haven. These Island High Schools all have unusually high per graduate costs compared to mainland high schools.

Calculation: The class of 2004 cohort was defined by taking all the 2004 graduates and adding in those students who dropped out in the previous four years who would have graduated in 2004, (i.e., the 12th grade dropouts from 2003-04, the 11th grade dropouts from 2002-03, and so on). For each of the four years, the number of students in the cohort was multiplied by the secondary per-pupil operating cost in that year. This four-year total was divided by the number of 2004 graduates to yield the four-year cost per graduate.

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**Average Four-Year Cost Per Graduate For Maine High Schools by School Size (Class of 2004)**  
**Excluding Three Islands (Islesboro, North Haven and Vinalhaven)**

