

Analysis of Ohio Education Matters Benchmarking Report

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Introduction

Ohio Education Matters, a subsidiary of KnowledgeWorks, published a study earlier in 2011 in which it boasted that schools could save \$1.37 billion if they replicated the experience of “best practice” districts in several areas of non-instructional expenditure (*Benchmarking Ohio’s School Districts: Identifying districts that get more for their money in Non-instructional spending.*) This analysis of the Ohio Education Matters study contains three parts. The first part shows by analogy and through the study’s own words how the study fails to follow correct procedures for a valid benchmarking study. This part of the analysis shows that the benchmark study is incomplete, and that its conclusions about potential savings for school districts rely upon premature conclusions unsupported by a proper data analysis.

The second part of this analysis highlights questionable assumptions and other choices made in the implementation of the Ohio Education Matters study.

The third part of this analysis shows a concrete example of the problems with the Ohio Education Matters research by focusing on its treatment of transportation issues.

Part I: The Ohio Education Matters Study Provides an Incomplete Analysis

While the study expounds at great length about the benefits that benchmarking can provide, it never explains with detail or accuracy how the benchmarking process should work. This omission occurred with good reason. A careful explanation of the proper construction and use of a benchmarking analysis would reveal the extent to which Ohio Education Matters makes misleading and unsupported claims about the savings available through the identification of “benchmark” school districts, which leads to the overstatement of such savings.

A benchmark study should have three parts:

- 1) Identification of targets — the targets might involve the achievement of lower cost production, or better speed of performance, or better quality of performance.
- 2) Inquiry about why the benchmark performer can achieve better, faster, or less expensive results.
- 3) Determination of whether the user of the benchmark can replicate the benchmark performer’s experience. In other words, to what extent can the person who uses the benchmark as a reference point realistically match the level of performance obtained by the benchmarked person.

The Ohio Education Matters study completed only the first of those three steps. It identified benchmarks, and it computed the dollar difference between each subject and the benchmark goal. The total equaled \$1.37 billion, but its computation failed to account for the two additional steps required to complete a valid benchmark study.

A Benchmark Study Analogy

In order to remove the concept of benchmarking from the politically contentious details of Ohio school funding, the following analogy provides an example about how benchmarking might work with the political connotations removed. This analogy offers a somewhat down-to-earth example of how the principles of benchmarking analysis might apply to a hypothetical situation.

How many times do individuals look around their neighborhood or town and wonder about their neighbors in terms somewhat like this. “How can the Joneses afford a house like that, or a car like that, or tuition at an expensive private school like that, when I know that they have jobs with salaries comparable to my own?” In this analogy, the Smiths take that curiosity one step further and commission a benchmarking study to find out the answer to that common question.

Step 1 - Identify the targets

The Smiths live in a three bedroom and two bath home of 2,300 square feet and a market value around \$200,000. They drive two five year old cars of the family sedan class with average prices about pegged to the overall average price of a car. Mr. and Mrs. Smith have a combined salary of \$100,000. The benchmark study uses surveys and interviews (with appropriate confidentiality guidelines) to identify the Jones families with better houses and cars but similar salaries. The study benchmarks the following Joneses:

— Jones #1 - Five bedroom, four bath home, 3,000 square feet, market value \$350,000, and a couple of Mercedes in the three car garage.

— Jones #2 - Four bedroom, three bath home, 2,700 square feet, market value \$290,000, and one new luxury car and one new family van.

— Jones #3 - Three bedroom, three bath home, 2,500 square feet, market value \$250,000 and two new family sedans.

— Jones #4 - Similar to #3

Jones #1, #2, #3 and #4 earn annual salaries within a few hundred dollars of the Smiths’ annual salary.

A comparison between the Smiths’ living and transportation arrangements to the Joneses’ would suggest that the Smiths should be able to live in a house worth around \$285,000 and have at least one new car, and probably at least one car of greater luxury than a mid-price family sedan.

Step 2 - Identify the Reasons for the Targets' Better Performance

Step 1 showed a significant gap between the living arrangements of the Smiths and the three Joneses. Why can the Joneses afford the greater luxury of their homes and autos?

— Jones #1 - Mr. Jones received a modest inheritance from the death of a family member. This inheritance enabled him to purchase his expensive home outright with some money left over to cover car payments with interest earnings from investments.

— Jones #2 - This Jones family has only one child compared to the Smiths' three children. These Joneses started a family relatively late in life and had 10 or 15 years of savings to invest in their current living arrangements.

— Jones #3 - This Jones family invests a lot of time in do-it-yourself repairs; they clip coupons; they never take vacations; and they spend very little on entertainment.

— Jones #4 - This Jones family buys aggressively on credit. They juggle cash flow issues constantly. They are one financial emergency away from a crash.

The second step of the benchmark analysis shows why the Joneses can afford a bigger house and/or more expensive cars. The importance of this step is that it begins to show the true comparability of the Smiths' situation to the Joneses' circumstances. It goes beyond the superficial identity of salary and home value to obtain a deeper understanding about how differences in expenditure patterns among the families can exist.

Step 3 - Identify the Extent to Which the Targets' Results Are Replicable

Step 2 looked at the situation of the Joneses to get an understanding of the reasons for their performance. Step 3 looks at the situation of the Smiths to obtain some understanding about whether the Smiths can repeat the experience of the various Jones families.

— Mr. and Mrs. Smith have no inheritance. Jones #1 benefits from a special circumstance not available to the Smiths.

— The Smiths started a family relatively early in life before they could accumulate savings like Jones #2. It is too late to change that now.

— The Smiths make choices. A list of alternative kinds of choices follows:

a. The Smiths make bad choices — Mr. and Mrs. Smith both smoke three packs of cigarettes per day and wash away the tobacco taste with copious amounts of alcoholic beverages. If they changed these behaviors, they would have more money to invest in a house or cars.

b. The Smiths make good choices — the Smith family takes an educational but expensive vacation every summer. Rather than spend their time at home clipping coupons to cut costs, the family supports the children’s participation in extracurricular or community activities.

c. The Smiths have a different philosophy about credit and take fewer risks than the Jones #4 family.

Step 3 looks at *why* the Smiths fall short of the benchmark. Sometimes the reason results from circumstances outside of the Smiths’ control. For example, if Mr. Smith does not have an inheritance like Mr. Jones #1, he cannot reproduce the Jones #1 results. Sometimes the reason results from the Smiths’ own bad behaviors as would occur if the Smiths’ spend large sums on tobacco and alcohol. To some extent, at least, a change in behavior would enable the Smiths to put aside more income for a house or car payment. On the other hand, if the Smiths must give up a positive behavior to achieve the benchmark target, the result may prove a poor investment. Such a result would occur if they replicate the penny-pinching style of Jones #3 at a cost to their children’s well being. Finally, it is possible that the Smiths could imitate the Jones #4 family and live closer to a cash flow disaster, but the wisdom of such a decision depends on more than the computation of the different levels of lifestyle between themselves and the Joneses.

Benefits of Benchmarking the Joneses

The benefits of benchmarking lie in the details rather than in the computation of maximum and unrealistic savings. Partial replication of good techniques is possible. For example, the Smiths might learn something about better cash flow management from the example of the Jones #4 family without playing a high risk game and without reaching the standard of living currently enjoyed by Jones #4. Similarly, the Smiths might learn some useful ways to cut corners from the Jones #3 household without saving as much and without choosing the whole Jones #3 lifestyle.

Thus, the benefits are not measured by the entire distance from the Smiths’ current situation to the benchmark numbers. The Smiths cannot reach the standard set by Jones #1 or #2. They may not want to achieve the standards set by Jones #3 and #4. That does not mean that they cannot improve through careful study of the practices in the benchmarked households. It does mean that the difference between themselves and the Joneses does not provide an accurate measurement of what they could or should achieve.

Back to the Ohio Education Matters Study

As the extensive analogy above shows, benchmarking requires the interactive application of three different analytical steps. The first stage looks at what participants in an activity might achieve. It uses quantification of different activities to find the most successful participants. The second stage examines the reasons for superior performance among those who achieve it. The third stage examines how possible it might be for one participant to reproduce the results of the most successful participants, as

defined in the first stage.

The Ohio Education Matters benchmarking study performed only the first step. It stopped after stage one quantified the distance between the best performers and all others. What makes the Ohio Education Matters report so misleading is that the report highlights the maximum amount of savings possible and stops. Ohio Education Matters makes the claim for enormous savings even as it admits that it bases those claims on an incomplete analysis.

To get these kinds of savings will first take examination of best practices that these districts follow, an examination that will come in a separate study. (This study offers some general industry best practices as a start, however.) Then, state leaders and Ohio's public school districts must work together to share these practices and implement them across the state. Of course, not all districts may be able to reach the spending levels of the best-in-class peer districts in one year, two years, and perhaps at all. Benchmarking Ohio's School Districts p. 4 (Emphasis added).

On page four, after the Study has prominently touted over a billion dollars in potential savings, Ohio Education Matters admits that it presents that total as part of an unfinished piece of work. Ohio Education Matters admits that the savings cannot come without the step two examination of why benchmark districts have lower costs. However it still published the amount of those potential savings without the additional analysis that it recognized (along with every other practitioner of benchmarking studies) as essential.

Ohio Education Matters further admits that the completion of its benchmarking study will not support savings at the level quantified in step 1 of its analysis.

Of course, not all districts may be able to reach the spending levels of the best-in-class peer districts in one year, two years, and perhaps at all. Benchmarking Ohio's School Districts p. 4 (Emphasis added).

The analysis of school districts' ability to achieve the "benchmarked" spending levels depends upon step 3 of a benchmarking analysis, and, not only has Ohio Education Matters failed to include that step in its publication, it does not even promise to provide such an analysis.

Thus, Ohio Education Matters condemns its own study as incomplete in its own words.

Part II: The Ohio Education Matters Study Relies Upon Questionable Assumptions

Several assumptions of dubious validity undermine claims in the Ohio Education Matters study that savings in such large amounts as it projects ever could or should occur.

First, the Report uses minimal quality measures. Here is how the Report itself characterizes its treatment of quality:

First, the quality indicators used in this study represent a reasonably acceptable threshold, not

the highest level of quality. Schools that exceed these thresholds certainly deserve credit for doing so, but our view is that in a time of budget pressure, spending on non-instructional areas should not be excessive, even if it brings a much higher level of quality. Schools are in the business of ensuring high academic achievement of students, and spending more than is necessary for food services, transportation, administration, and maintenance and operations may be wasteful in that it inevitably takes funding away from instructional areas. Benchmarking Ohio's School Districts p. 10.

From a quality perspective, the Study would enforce a kind of lowest common denominator approach. Ohio Education Matters states that in their view, expenditures above the minimal standards that Ohio Education Matters established are “excessive.” The Study’s casual dismissal of higher standards of quality as “wasteful” in the absence of any actual analysis of the benefits of such higher quality services goes far beyond the data presented in the study.

Second, the Report implicitly treats preferences of school districts as irrelevant in its analysis. As the quotation above indicates, Ohio Education Matters has decided that schools should not continue to spend at current levels on non-instructional expenses regardless of the higher level of quality in the services provided. As with Ohio Education Matters Governance Report, the Benchmarking Report discounts the value of local control of schools. Ohio Education Matters will set the priorities not school boards, not local school officials, and not parents.

Third, the Report assumes that a zero sum game exists between the classroom expenditures and non-instructional expenditures. It assumes that expenditures for transportation, food service, maintenance and operations, and administration do not connect directly to academic performance. However, delivery of students to school on-time, preparation of school meals of sufficient quality that students actually want to eat them, and the maintenance of a wholesome building environment may have important effects on classroom performance.

Fourth, the study perpetuates the false assumption that expenditures for school administration at best represent a necessary evil. This assumption ignores the role of expenditures for administrative support for teachers, curriculum development, program evaluation and assessment, and planning.

Part III: The Ohio Education Matters Study Omits Important Data and Reaches Unsupportable Conclusions

The first part of this paper demonstrates how the Ohio Education Matters study omits important steps required for a valid benchmarking study and dismisses the Ohio Education Matters material on theoretical grounds. The second part of this analysis identifies broad errors in assumptions about quality upon which the study bases its conclusions. This third part of the analysis focuses on a specific example of the inadequate research and unsupportable assumptions evidenced in the Ohio Education Matters study.

At the outset of Part III, it is important to emphasize that Ohio Education Matters had six months to a year to prepare its study. This process of analyzing the study had at best a few weeks. In that amount

of time, this paper could not redo a proper benchmarking study and compare its results back to the Ohio Education Matters study to identify all of that study’s omissions of data, errors in logic, or erroneous assumptions. However, the following discussion about the transportation section of the Ohio Education Matters study provides an indication of that study’s failure to use data appropriately and to connect its conclusions to all of the data rather than selected measures.

In its discussion of Transportation costs, Ohio Education Matters’ study calls attention to data collected by the Department of Education relating to pupil transportation.

The data captured by ODE covers a wide array of quality indicators that can be offered as ways to measure performance in a specific area or highlight descriptive differences between districts. For the purposes of this report, in some cases the ODE benchmark data was one of the quality indicators. In others the data was seen as not relevant as a quality indicator. For example, in the case of transportation, the indicators in the report help describe the district, capturing square miles in the district, riders per square mile, or percent of non-traditional riders. One indicator, the ridership ratio, captures the efficiency of each district. Benchmarking Ohio's School Districts p. 4.

The Ohio Department of Education website does report extensive data about transportation variables on a district-by-district basis. Comparisons of that data to the conclusions of the Ohio Education Matters study show that the study excluded measures of efficiency without any justification and without any attempt to relate such measures to its own findings. In addition, the Ohio Education Matters study omitted other important measures of transportation quality without any explanation.

The Ohio Education Matters estimates of potential transportation savings divided school districts according to the Department of Education district typology. Within each typology, subcategories distinguished between districts with high density distributions of student population versus low density distributions. The average cost of the 5% of the districts in each category with the lowest cost of performance identified the benchmark for that category. The difference between the actual costs in all districts in that category and the benchmark defined the potential savings for that group. The identification of benchmark districts excluded school districts that failed to meet certain screens for quality. Those excluded districts were included in the determination of potential savings.

The study chose “cost of operation per bus” as the variable most indicative of the cost of performance. Therefore, benchmark districts became those districts with the lowest average annual cost of transportation operations per bus.

Table 1: Comparison of Fairfield City School District to Three Benchmark Districts (Type 6 High Density School Districts) in Operational Transportation Costs

	Fairfield City S.D.	Lake LSD Stark County	Springfield LSD Lucas County	Mariemont CSD
Total Miles Driven*	1,064,000	355,000	320,000	64,000

Number of Buses	94	38	38	10
Miles/Bus	11,319	9,342	8,421	6,400
Cost/Mile	\$4.36	\$4.26	\$5.02	\$7.96
ODE Efficiency Score	99.00%	93.00%	112.00%	66.00%
EM Savings Estimate*	\$5,483,000	\$0	\$0	\$66,000
Cost Per Bus	\$69,007**	\$39,795	\$42,243	\$50,881

Source: Ohio Department of Education; Ohio Education Matters

*Miles Driven were rounded to the nearest thousand, and the Ohio Education Matters savings estimate was rounded to the nearest thousand dollars.

**Does not agree with ODE data

The table shows the district with the highest potential savings as identified by Ohio Education Matters - Fairfield City. The last three columns of the table show the three “benchmark” districts used to compute the average operational cost per bus applied to Type 6 high density school districts to determine the potential savings on transportation operations.

The first problem with the Ohio Education Matters analysis is that it used the wrong data for Fairfield CSD. Ohio Education Matters listed the Fairfield district's per bus cost as \$69,007 (as shown on Table 1). However, the Department of Education website shows that Fairfield’s per bus cost equaled about \$49,318 rather than \$69,007. The cost savings is computed as the number of buses times the difference between the cost per bus in the “high cost” district minus the average cost per bus in the “benchmark” districts. The computation for Fairfield shows the wrong savings amount for two reasons:

1) The cost per bus equals \$49,318 rather than \$69,007. Ohio Education Matters mis-stated the per bus cost by \$19,689 ($\$69,007 - \$49,318 = \$19,689$).

2) Ohio Education Matters computed the savings incorrectly. The benchmark amount for Type 6 High Density districts equaled \$44,306. Therefore, even if the per bus cost had equaled \$69,007, the savings computation would take the form of: $(\$69,007 - \$44,306) \times 94 \text{ buses} = \$2,321,894$ and not the \$5.5 million estimate as shown on the table.

Using the estimated “savings” based on the data on the Department of Education website yields a computation of 94 buses times \$5,012 or about \$471,128 and *not* almost \$5.5 million.

Analysis of other school districts in this subcategory of Type 6 did not reveal similar data mistakes. The analysis does, however, show that the Ohio Education Matters methodology ignores important variables such as costs per mile, the ODE efficiency score, and the miles accumulated by each bus.

For example, the buses within Type 6 high density districts have ranges in miles driven per year from

4,158 miles per bus in South Euclid to 15,994 miles per bus in Fairview Park. The Ohio Education Matters study ranked Fairview Park as relatively high in terms of cost per bus (\$61,447). However, each bus traveled 15,994 miles. In comparison, the buses in the three benchmark districts averaged 8,048 miles per bus as an unweighted mean and 8,588 as a weighted mean. Fairview Park extracted almost twice as much mileage per bus as the benchmark districts, but the Ohio Education Matters methodology makes the district look like a high cost district because it treats every bus as equal whether it traveled 16,000 miles or 8,000 miles.

A simple example shows how absurd the Ohio Education Matters approach is.

Table 2 shows a practical example of two commuters who drive a car to work. The table estimates weekly costs.

Table 2: Example of a Weekly Comparison of Two Drivers and Driving Efficiency

		Driver A	Driver B
1	Mile Per Gallon Rating	20	30
2	Miles Driven	100	300
3	Gallons of Gasoline Consumed	5	10
4	Cost per Gallon of Gasoline	\$4.00	\$4.00
5	Total Cost	\$20.00	\$40.00
6	Total cost/Mile	\$0.20	\$0.13

Driver A uses a car with a rating of 20 miles per gallon of gas. Driver B’s car has a 30 m.p.g. rating. Assume that these ratings are accurate for purposes of the example. Driver A drives only 100 miles per week, but Driver B drives 300. Driver A needs five gallons of gas with a total cost of \$20 per week. Driver B needs ten gallons of gas with a total cost of \$40 per week. The per car cost stops at this point on row 5 of the table. This is the measure used by Ohio Education Matters in its study — cost per vehicle. Obviously, the additional consideration of row 6 shows that Driver B has a significantly lower cost per mile driven. The Ohio Education Matters ignores that step.

Actual analysis of school district transportation costs involves numerous other variables such as road quality, traffic levels, student ridership per mile, and so on.

Some patterns appear to arise in the data about Type 6 high density districts. For example, the three districts with the lowest per mile cost averaged about 12,200 miles per bus per year. The remainder of the districts in this subtype, which passed the Ohio Education Matters quality screens, averaged about 9,300 miles per year. Thus, more miles per bus may tend to translate into lower costs, but the ability of school districts to transport pupils effectively may require lower mileage per bus depending on the topography of the district, the amount of traffic in the district, and the best schedule for bus replacement. While more miles per bus tends to lower the per mile cost, it also wears out the buses

more quickly.

The simplistic spreadsheet analysis upon which Ohio Education Matters relied to produce estimates of cost savings does not take such factors into account. In addition, the great discrepancies in the district profiles, even within the Typology subcategories, raises a question about the applicability of results in one district to another even within the typology categories. For example, the Type 6 high density districts range from Mariemont, an Ohio Education Matters benchmark district, with 405 bus riders to West Clermont with 7,072 bus riders. The Mariemont bus fleet of 10 travels less than 64,000 miles in a year. West Clermont's 90 buses travel about 1,163,000 miles in a year. By comparison, West Clermont has a transportation operation about 10 times greater than Mariemont. Such differences in size hardly would count as meaningless for purposes of understanding relative efficiencies. Apparently, Ohio Education Matters relied upon the Department of Education Typology without regard to the results obtained when it organized data on this basis. In other words, the Department's typology consistently offers a useful and valid *starting point* for an analysis. However, when the study sorted data according to the typology, the outcome reflected serious anomalies in the transportation context because it matched very unlike school districts and treated them as similar. A thoughtful analysis would question such results.

Finally, the Department of Education has devised a method for assigning an efficiency score to each school district's transportation operation. The Department's methodology may not offer a perfect measure of efficiency. However, its ridership ratio does represent an official attempt to grapple with the issue of transportation efficiency. As another measure of the incompleteness of the Ohio Education Matters report, its analysis makes no attempt to reconcile its "benchmark" results with the Department of Education's efficiency targets. While the Ohio Education Matters study refers to the Department's efficiency targets, it explicitly declined to use them as an indicator of efficiency. Instead, it offered them as an example of "best practices." According to the study, it is noteworthy that 17 of 39 "benchmark districts" meet the Department's ridership targets. But wait. Does that not mean that 22 of the 39 "benchmark districts" rated as benchmarks even though they did not meet the Department's targets? Here is how Ohio Education Matters addresses that obvious discrepancy:

It is worth noting that, of the 39 benchmark districts selected, 17 met or exceeded ODE's ridership ratio. Further research into the best practices of the benchmark districts would be needed to understand and interpret the effect of this measure. Benchmarking Ohio's School Districts pp. 22-23.

Exactly. Further research was needed to understand and interpret the transportation data. Ohio Education Matters did not do that additional research, but they proclaimed the existence of millions of dollars of potential transportation savings anyway.

Conclusion

The Ohio Education Matters "Benchmarking" study ignored the fundamental principles of the benchmarking process by delivering a simplistic cost savings computation without completion of the other two analytical steps required by benchmarking theory.

The study rests upon assumptions about quality of education services and about the interaction of different aspects of education expenditures without any data or analysis to support it.

The study itself contains at least one five million dollar error in its transportation analysis. In conceptual terms, the transportation analysis fails to account either for great discrepancies in the size of districts' transportation operations within the classic district Typology. The superficial compilation of data shows no attempt to understand the results of the analysis or to adjust the conceptual basis of the study based upon preliminary findings. The use of per bus costs as the benchmark standard lacks any justification in light of the great differences in the average number of miles traveled per bus in different school districts. In short, the quality of the research appears fully consistent with the tabloid style of its presentation.

A benchmarking study should provide a tool with which participants in an activity can identify opportunities for improvement in their own operations with reference to other target participants who may have found better or cheaper practices. However, the presentation of the Ohio Education Matters benchmarking study has turned it into a political bludgeon with which opponents of expenditures for education can justify reductions in funding for school districts. Such a use of a benchmarking study cannot help but cause a counter-productive outcome. Rather than involving school districts in a process by which a thoughtful measurement of costs and benefits can occur in the context of examples from target districts, the study has politicized the benchmarking process.

Whatever merit a genuine benchmarking effort might provide, Ohio Education Matters has so perverted the benchmarking concept that it has transformed a benchmarking study from a tool into a weapon.