Effect of Location Cost Metric on Distribution of Funding

Under the Pennsylvania School Funding Formula

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Pennsylvania recently enacted substantial changes in its school funding formula including a factor that adjusts a district's state aid based on estimates of the relative cost of hiring teachers in that particular district compared to the cost of hiring equally qualified teachers in other districts. This "location cost metric" (LCM) takes into account both the estimated cost of hiring comparably educated and trained non-teaching professionals in the same location, and the cost of living there, especially the cost of renting a house. The purpose is to provide funding that allows a school district to compete with other employers in the area who hire college-educated persons, and to provide teachers with the income necessary to meet their needs for housing and other goods and services in that area.

The LCM does not take into account any differences that affect the "attractiveness" of a location as a place to live and work. It does not consider whether housing or other goods and services in a district are comparable to other districts, or whether certain services are even available.

The LCM is an index. It assigns the district with average costs an LCM of 1.00 (Allegheny County) and then assigns an index value to every other district based on how far above or below that average it is. A district whose costs are estimated to be 10% higher than Allegheny County receives an LCM of 1.10 (and more state aid so it can pay teachers more); one with estimated costs 10 percent below Allegheny County receives a 0.90 LCM (and less aid, because it presumably does not need to pay teachers as much). A district either gains or loses aid based on how its costs shape up against Allegheny County.

Expensive living and wealth tend to run in the same circles, while poverty cheapens life in many ways. Factors that take location costs into account can therefore be expected to increase funding for wealthier districts and reduce funding for poorer districts. To test that idea, we analyzed the data provided by the school finance consultants who advised Pennsylvania officials on the development of the new formula.[1]

[1] Augenblick, Palaich, and Associates. "Costing Out the Resources Needed to Meet Pennsylvania's Public Education Goals," presented to Pennsylvania State Board of Education, December 2007, downloaded at: http://www.apaconsulting.net/uploads/reports/6.pdf. The spread sheet used in this report was posted on the same website as an Excel file: Revised_PA-Cost-Out-Data-Base.xls. Downloaded September 24, 2008, no longer available on website.

Location

We compared state aid per pupil (the funding system is based on student counts as measured by Average Daily Membership, or ADM) for urban, suburban, town, and rural districts. These classifications are based on locale codes assigned each district by the National Center for Education Statistics.[i] The rural districts were subdivided into "high poverty" and "low poverty" districts on the basis of whether their federally subsidized meal rate exceeded or fell short of the state average of 33.8 percent.

The LCM adds most state aid per ADM to urban schools (+7.4%) and takes away most state aid per ADM from high poverty rural schools (-4.5%). Suburban schools, with half the poverty rate of high poverty rural schools, gain 5.2% from LCM. Town schools lose also (-2.6%) and overall rural schools lose 1.4%, with high poverty rural schools' -4.5% loss partially offset by low poverty rural schools' 1.3% gain.

Among low poverty rural districts, 39 lost aid due to LCM, 23 gained aid, and 17 neither gained nor lost (i.e., had an LCM equal to the state average. Among high poverty rural districts, 76 lost aid, 10 were neutral, and one gained aid.

Table 1. The LCM Favors Urban, Suburban, and Low Poverty Rural Districts and Disfavors Town and High Poverty Rural Districts

Locale[ii]	Poverty Rate	Adequacy Amount Per ADM w/o LCM	LCM/ADM	Adequacy with LCM	Percent Change due to LCM
Urban	65%	12,650	930	13,581	+7.4
Suburban	20%	11,041	579	11,621	+5.2
Town	31%	11,512	-296	11,216	-2.6
Rural	28%	11,488	-158	11,330	-1.4
Higher Poverty	39%	12,043	-545	11,498	-4.5
Lower Poverty	19%	11,052	146	11,199	+1.3
All	33%	11,533	401	11934	+3.5

District Enrollment Size

The new formula includes a size adjustment factor that provides added funding to districts with fewer than 16,000 students, with the additional state aid per ADM increasing as district size decreases. This adjustment recognizes the reality that there are economies of scale in schools and districts. Only 5 districts in the state have enrollments high enough to disqualify them from some adjustment due to size. But rural districts, which tend to be much smaller than districts in other locales, benefit substantially from this adjustment.

We analyzed how much the gain rural districts realized from the size adjustment was offset by the losses they experienced from the LCM.

The size adjustment increases aid to all locales, but especially to high poverty rural districts. But when the LCM adjustment is added, urban and suburban districts gain significant aid, and low poverty rural districts gain some as well. However, town districts lose 45% and high poverty rural districts lose 69% of what they gain from the size adjustment. Overall, high and low poverty rural districts together lose 21% of what they gain from the size adjustment.

Of the 76 high poverty rural districts that lose some of their size adjustment due to LCM, 11 the amount of aid per ADM lost to the LCM exceeds the amount of aid per ADM the receive from the size adjustment.

Table 2. The LCM Offsets Much of What Rural Districts Gain from the Size Adjustment, Especially Among High Poverty Rural Districts.

Locale	Poverty Rate	Size Adjustment Per ADM	Size Adjustment Plus LCM Adjustment	Percent Change in Size Adjustment due to LCM
Urban	65%	69	1,000	+1,346
Suburban	20%	476	1,056	+122
Town	31%	664	368	-45
Rural	28%	740	582	-21
Higher Poverty	39%	793	248	-69
Lower Poverty	19%	698	845	+21
All	33%	462	863	+87

Student Poverty

The new formula contains a poverty adjustment of that provides 43 percent additional aid for each student who lives in poverty (defined as eligibility for federally subsidized meals, which is actually 185% of the poverty income level). The poverty adjustment adds state aid per ADM to all districts in proportion to their poverty rate.

When the LCM adjustment is added to the poverty adjustment, urban, suburban, and low poverty rural districts all receive additional aid, because on average, the districts in these locales have LCMs above 1.00.

But high poverty rural districts end up with 41 percent less aid per pupil than they received for the poverty adjustment. That's because on average, they have LCMs below 1.00. It's cheap to live in poor communities. In effect, these high poverty districts have to "give back" some of their poverty adjustment aid because they serve communities that don't command high prices.

Town districts also have 28 percent of their poverty adjustment taken back by LCM. Overall, all rural districts, high and low poverty together, lose 17% of their poverty adjustment to the LCM.

Table 3. The LCM Offsets Much of What Rural Districts Gain from the Poverty Adjustment, Especially Among High Poverty Rural Districts.

Locale	Poverty Rate	Poverty Adjustment	Poverty Adjustment Plus LCM Adjustment	Change in Poverty Adjustment Due to LCM
Urban	65%	2,245	3,175	+41
Suburban	20%	702	1,281	+83
Town	31%	1,051	755	-28
Rural	28%	953	795	-17
Higher Poverty	39%	1,341	796	-41
Lower Poverty	19%	648	795	+23
All	33%	1,127	1,528	+36

LCM Effect on Combined Size and Poverty Adjustments

We next looked at how the LCM factor affected funding when it is added to (or subtracted from) the combination of poverty and size adjustments.

About one-fourth of the funding gained by high poverty rural districts from size and poverty adjustments combined is offset by losses they incur due to the LCM. About one-sixth of gains for size and poverty adjustments for town districts is offset by losses due to LCM.

On the other hand, since LCM increases funding on average for urban, suburban, and low poverty rural districts, they augment, not offset the size and poverty adjustments received by these districts. LCM adjustments boost suburban district funding by an amount equal to 49 percent of their size and poverty adjustment; urban district funding by 40 percent, and low poverty rural districts by 11 percent.

Without LCM, high poverty rural districts would on average receive a size and poverty adjustment in per pupil aid equal to 92% of that received on average by urban districts ($2,134 vs. $2314). With the LCM, the average urban district aid per ADM jumps to $3,244 while the average high poverty rural district's per pupil aid falls to $1,589, less than half.

Table 4. The LCM Significantly Boosts Size and Poverty Adjustments for Urban and Suburban, Reduces Them for Town and Rural, Especially High Poverty Rural Districts

Locale	Poverty Rate	Size and Poverty Adjustment Combined	Size and Poverty Adjustment Plus LCM	Change in Size and Poverty Adjustment Due to LCM
Urban	65%	2,314	3,244	+40
Suburban	20%	1,178	1,757	+49
Town	31%	1,715	1,419	-17
Rural	28%	1,693	1,535	-9
Higher Poverty	39%	2,134	1,589	-26
Lower Poverty	19%	1,346	1,493	+11
All	33%	1,589	1,990	+25

Conclusions

The idea that the cost of providing educational services varies by location is surely valid, but there are both theoretical and technical challenges in calculating how those costs really vary. Most of the data that is available is not very local, especially with respect to rural places. Are salaries paid to nurses in a regional growth center with competing hospitals in any way a basis for estimating what it costs to hire a chemistry teacher to move to a small town in a depressed economy suffering outmigration – to teach chemistry, biology, and general science? In many cases, a rural teacher finds herself the highest educated person in the community. On the other hand, are local costs of living relevant at all if teachers choose to live outside the district and commute to work? And does cheap housing make up for the fact that a young, single teacher wants a social life, too?

In pointing out the regressive effect of the location cost metric, we do not imply that the changes made in Pennsylvania's school funding formula are, on the whole, regressive. School funding formulas are always a bundle of competing provisions that strike political compromises. Nor do we suggest that there is no disparity between low poverty urban districts and other, better off districts, whether rural or urban. The LCM certainly disadvantages high poverty urban districts.

Consider the Greater Johnstown district, an urban district in remote western Pennsylvania. It has a student poverty rate of 72% and would have gained over $2,500 per ADM based on the poverty adjustment provision in the new formula, but loses over one-third of that because it has a very low LCM (0.93, tied for lowest in the state with many rural districts). Johnstown, once a burgeoning steel manufacturing center, has lost so many jobs and so much population that U.S. Census data revealed it to be the least likely place in the United States to attract newcomers in 2003. Johnstown is doing a lot to rebuild itself as a high tech manufacturing center, but depressed housing and other low-cost factors associated with its long decline make it a big LCM loser. The school finance policy issue is simply this: Does it cost the Greater Johnstown school district less than it does a Philadelphia suburb to attract and retain a qualified teacher to teach, say calculus, just because Johnstown's depressed economy makes it a cheaper place to buy or rent a house? The same question applies to the 45 high poverty rural districts in smaller, even more remote places that also have an LCM of 0.93.

To appreciate the extent to which the LCM neutralizes the competitive position of remote, high poverty districts, compare the Northern Tioga district, in Pennsylvania's dairy region on the New York state border, with the Lower Moreland district in suburban Philadelphia.

With a poverty rate of 45.7 percent, Northern Tioga receives a poverty adjustment under the new funding formula of $1,572 for each of its roughly 2,500 students. But because Northern Tioga's location isn't expensive, its LCM is tied for lowest in the state, and it's funding is reduced by $822 per student.

Lower Moreland, with a poverty rate of only 1.6%, receives a poverty adjustment of only $55 for each of its 1,900 students. But its expensive neighborhood gives it a tie for the highest LCM at 1.13, and a boost in per pupil aid of $1,435.

The combined effects of the poverty adjustment and the LCM adjustment is to give Lower Moreland $1,490 ($1,435 plus $55) and Northern Tioga only $750 ($1,572 minus $822). And overall, the funding

formula's adequacy calculation says that Lower Moreland, with a 1.6 percent poverty rate, needs $12,003 to educate each student, while Northern Tioga, with a 46.7 percent poverty rate, only needs $11,117.

If the challenge of recruiting and retaining teachers to teach in high poverty districts like Northern Tioga were acknowledged by assigning every district with at least a minimum LCM of 1.00 (thereby preventing the LCM from offsetting poverty adjustments), Northern Tioga's adequacy calculation would rise to $11,939, probably not enough money to allow it to bid teachers away from suburban Philadelphia, but enough to compete more generally in the market for qualified teachers.

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[i] The terms "urban," "suburban," "town," and "rural" are based on locale codes used by the National Center for Education Statistics. Urban districts are those located in codes 11, 12, and 13; suburban in 21 22, and 23; town in 31, 32, and 33; and rural in 41, 42, and 43. The definitions are set out below.

11 - City, Large:
Territory inside an urbanized area and inside a principal city with population of 250,000 or more.

12 - City, Midsize:
Territory inside an urbanized area and inside a principal city with population less than 250,000 and greater than or equal to 100,000.

13 - City, Small:
Territory inside an urbanized area and inside a principal city with population less than 100,000.

21 - Suburb, Large:
Territory outside a principal city and inside an urbanized area with population of 250,000 or more.

22 - Suburb, Midsize:
Territory outside a principal city and inside an urbanized area with population less than 250,000 and greater than or equal to 100,000.

23 - Suburb, Small:
Territory outside a principal city and inside an urbanized area with population less than 100,000.

31 - Town, Fringe:
Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area.

32 - Town, Distant:
Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area.

33 - Town, Remote:
Territory inside an urban cluster that is more than 35 miles from an urbanized area.

41 - Rural, Fringe:
Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster.

42 - Rural, Distant:
Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster.

43 - Rural, Remote:
Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster.