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NEW YORK STATE CENTER *for*
RURAL SCHOOLS
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Are Rural Schools More Productive Than Those in Other Locales?

Background

In recent years, small rural and poor school districts have faced pressure to raise taxes, consolidate, or alter business as usual, due to changing financial climates and reported inefficiencies. More recent changes imposed by NY State, such as Gap Elimination Adjustments, or cuts in state aid, as well as the new property tax cap, further put pressure on districts to yield the best student outcomes with constrained financial expenditures and investments. Despite accusations of inefficiency, rural schools and their advocates often argue that they are the most efficient in the state with their high graduation rates and relatively low spending. This brief summarizes the results of a study, which analyzes student outcomes and expenditures by district locale. The research brief is driven by this research question: *Are rural schools more or less productive than those in other locales?*

Definitions of District Locale

Locale codes are derived from a classification system developed by National Center for Education Statistics (NCES) in the 1980's to describe a school's location ranging from "large city" to "rural," using a geographic database maintained by the Census Bureau. In 2005 and 2006, NCES supported work by the Census Bureau to redesign the original locale codes, now referred to as "urban-centric locale codes." The urban-centric locale code system classifies territory into four major types: City, Suburban, Town, and Rural. Each type has three subcategories for a total of twelve codes. For City and Suburb, these are gradations of size: Large, Midsize, and Small. Towns and rural areas are further distinguished by their distance from an urbanized area: Fringe, Distant, or Remote[1].

NYS classifies the district locale codes differently from the federal codes. The NYS Education Department defines Needs to Resource Capacity (N/RC) Categories. N/RC Index is a measure of a district's ability to meet the needs of its students with local resources. This measure is calculated by dividing a district's estimated poverty by its Combined Wealth Ratio. The N/RC district categories are: *New York City (NYC)*; *Large City (Big Four)* – Buffalo, Rochester, Syracuse, and Yonkers; *High Need Urban-Suburban (HN Urb/Sub)*; *High Need Rural (HN Rural)*; *Average Need (Ave. Need)*; and *Low Need*[2]. By using both codes, N/RC categories can be broken done geographically, and it becomes clear that federal rural districts can also be classified as Ave. or Low Need districts. The data in this brief utilizes both federal and state locale codes.

Overall Per-Pupil Expenditures by Locale

As Table 2 shows, per-pupil expenditures by locale codes vary considerably, from a low of $14,371 in a HN Urb/Sub and Remote Town district, to a high of $45,636 in a Low Need and Remote Rural district. When examining the four major federal locale codes, the rural codes experience the largest amount of variability in per-pupil expenditure, ranging from $14,403 - $45,636. However, the opposite is true when the NY locale codes are examined; out of the five major categories (excluding NYC), the HN Rural per-pupil expenditures have the least amount of variability, ranging from $16,170 - $20,394. The fact that the federal locale codes do not take economic status into account in defining districts yields greater variability in regard to financial circumstances.

Cost per Graduate

Table-3 (Per Graduate Expenditures for Four Year 2006 Cohort) shows a great amount of variation among all rural school districts. The highest cost per graduate is seen in Low-Need and Remote Rural districts at $141,893, and the lowest cost per graduate is seen in a HN Rural and Mid-Size suburban district at $52,849. HN Rural districts' cost per graduate is fairly consistent, ranging from $78,430 - $87,265, with the exception of one district at $52,849. The range of rural districts' cost per graduate by federal locale is broader, ranging from $69,494 - $141,893. Table 3 also demonstrates that the Low Need and Remote Rural districts spending $141,893 per graduate are similar with the Big Four districts' cost per graduate.

Figure 1 - Per-Pupil Expenditures by Locale Codes, 2010-2011

Federal (NCES)	NYSED Need-to-Resource Capacity Categories (NRC)					
Locale Codes	Big 4	HN Urb/Sub	HN Rural	Ave. Need	Low Need	Total
11 - City: Large	$ 25,891	.	.	.	.	$ 25,891
12 - City: Mid-size	$ 21,986	.	.	.	.	$ 21,986
13 - City: Small	.	$ 17,556	.	$ 18,844	.	$ 18,098
21 - Suburb: Large	$ 20,528	$ 27,963	.	$ 19,692	$ 24,059	$ 22,530
22 - Suburb: Mid-size	.	$ 17,188	$ 16,170	$ 17,454	$ 17,703	$ 17,346
23 - Suburb: Small	.	$ 18,449	$ 17,932	$ 16,481	.	$ 16,823
31 - Town: Fringe	.	$ 16,676	$ 17,486	$ 17,806	$ 25,195	$ 18,494
32 - Town: Distant	.	$ 16,320	$ 19,192	$ 17,753	.	$ 18,509
33 - Town: Remote	.	$ 14,371	$ 17,660	$ 18,851	.	$ 17,530
41 - Rural: Fringe	.	$ 14,403	$ 19,270	$ 18,006	$ 30,555	$ 20,101
42 - Rural: Distant	.	.	$ 20,073	$ 20,027	$ 26,630	$ 20,129
43 - Rural: Remote	.	.	$ 20,394	$ 26,311	$ 45,636	$ 26,322
Total	$ 22,598	$ 22,162	$ 19,613	$ 19,380	$ 25,580	$ 20,772

Figure 2 - Per Graduate Expenditures for Four Year 2006 Cohort

| Federal (NCES)	NYSED Need-to-Resource Capacity Categories (NRC)					
Locale Codes	Big 4	HN Urb/Sub	HN Rural	Ave. Need	Low Need	Total
11 - City: Large	$ 145,622	.	.	.	.	$ 145,622
12 - City: Mid-size	$ 166,389	.	.	.	.	$ 166,389
13 - City: Small	.	$ 103,738	.	$ 77,486	.	$ 92,685
21 - Suburb: Large	$ 137,714	$ 123,240	.	$ 74,533	$ 86,778	$ 85,392
22 - Suburb: Mid-size	.	$ 74,110	$ 52,849	$ 68,696	$ 61,512	$ 67,228
23 - Suburb: Small	.	$ 99,723	$ 82,008	$ 72,071	.	$ 75,830
31 - Town: Fringe	.	$ 73,837	$ 78,430	$ 71,189	$ 83,614	$ 73,802
32 - Town: Distant	.	$ 74,268	$ 82,495	$ 67,340	.	$ 76,400
33 - Town: Remote	.	$ 76,879	$ 81,365	$ 70,955	.	$ 77,750
41 - Rural: Fringe	.	$ 69,495	$ 84,979	$ 67,357	$ 86,005	$ 72,839
42 - Rural: Distant	.	.	$ 82,225	$ 74,671	$ 73,428	$ 78,500
43 - Rural: Remote	.	.	$ 87,265	$ 95,562	$ 141,893	$ 97,840
Total	$ 154,029	$ 105,133	$ 82,516	$ 73,511	$ 87,997	$ 80,941

Student Outcomes

Figure 3 shows student outcomes for a cohort followed grades 9-12 (2006-2010). As figure 3 shows, Big Four and HN Rural drop out rates differed by approximately 15 percentage points. The difference is more pronounced when looking at raw numbers; Big Four districts reported 619 dropouts while HN Rural districts reported 9. In that same 4-year cohort, regression models predicting graduation rates were examined. Controlling for cohort size, for any locale, an increase of $1,000 in per-pupil expenditure is associated with a decrease in graduation rates by 0.1%. HN Rural districts had graduation rates 19.2 and 9.2 percentage points higher than the Big Four districts and HN Urb/Sub districts respectively (See Figure 2). When only considering the graduation rates of economically disadvantaged student cohorts, HN Rural poor student cohorts graduated at a rate almost 6 percentage points higher than HN Urb/Sub poor student cohorts. However, the rate at which HN Rural poor student cohorts graduated was essentially no different than their counterparts at the Big Four and Ave. Need districts. Cohorts of poor students in Low Need districts graduated at a rate 11 percentage points higher than cohorts at HN Rural districts.

For non-poor students, the differences in graduation rates between locales were more evident. The Big Four districts' non-poor cohorts graduated at a rate nearly 40 percentage points less than the cohorts of non-poor students in HN Rural districts, and HN Urb/Sub districts graduated nearly 12 percentage points less non-poor students than HN Rural districts. Ave. Need and Low Need districts graduated 4.6 and 13.7 percentage points more non-poor students than HN Rural districts respectively. The category of non-poor students allows for great variation in economic status, as only those students officially eligible for the Free-Reduced Priced Lunch program are considered poor. Adding to the variance of non-poor students is the fact that it includes students ranging from just above the poverty line to the wealthiest in the district.

From this data, it is clear that non-poor and poor student cohort graduation rates vary dramatically. When it comes to poor students, their performance is relatively consistent across N/RC categories. This indicates that there is room for improvement across all locales in educating economically disadvantaged students. It should be noted that the models predicting graduation rates are more robust for non-poor than poor student cohorts. This suggests other factors beyond those included here (cohort enrollment, per pupil expenditures, and location) are needed to more completely predict the graduation rates of poor students.

Figure 3: Student Outcomes of a 4-Year Cohort

Figure 4: Graduation Rates Relative to High Need Rural Districts

"Find the inefficiency, like every other family in this state that has found the inefficiency. Find the inefficiency, like every other business in this has state has found the inefficiency...I know there is waste and abuse in the school districts..." -Gov. Andrew Cuomo[3]
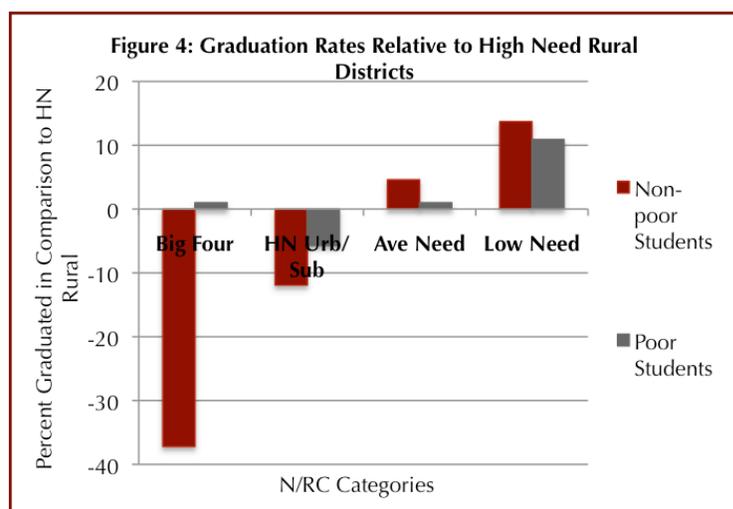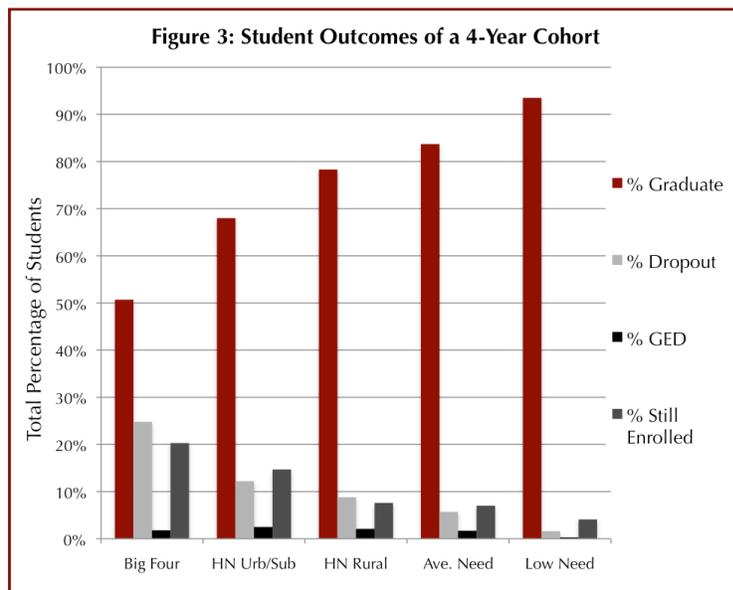
Conclusion

Here we offer, albeit brief and simplistic, a more thorough examination of New York States rural district productivity than is typically available. We use both federal locale and state N/RC categories to enhance understanding of the scope and productivity of rural districts in NYS. Analyzing per-pupil expenditures and expenditures per graduate, federally-defined Rural locales exhibit the largest amount of variability amongst the locales, while NY State-defined HN Rural locales exhibit minimal variability. The results from an analysis of 4-year cohorts of students demonstrate student outcomes for poor, non-poor, and all students. The graduation rates relative to HN Rural districts were fairly constant for poor students in other N/RC categories, but the graduation rates for non-poor students varied across N/RC categories; Big Four and HN Urb/Sub districts graduated non-poor students at rates less than those in HN Rural, Ave. Need and Low Need districts graduated more non-poor students than HN Rural districts. It is our hope that this brief (and the data behind the analyses) can be used to inform conversations and decisions regarding school productivity.

Sources
1. National Center for Education Statistics (NCES). *Identification of Rural Locales*. Retrieved July 18th, 2011 from: http://nces.ed.gov.ccd.rural_locales.asp.
2. New York State Education Department. New York State Board of Regents Proposal on State Aid to School Districts For School Year 2010-2011. Retrieved July 18th, 2011 from: http://www.p12.nysed.gov/stateaidworkgroup/2010-11RSAP/RSAP1011final.pdf.
3. http://polhudson.lohudblogs.com/2011/03/17/cuomo-decries-education-groups-threats/