# Paying for Schooling in Virginia:

## An Analysis of the Distributional Implications of State Aid in Fiscal Year 1992-1993

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# EXECUTIVE SUMMARY



This publication presents an analysis of the total per pupil expenditures disparity issue that exists across Virginia's 134 school divisions, which collectively provide K-12 education to over one million pupils. The analysis concentrates upon the disparity of total per pupil expenditures and the distribution of total per pupil state aid. Data used in the analysis were estimated for the General Assembly of Virginia and made available by the Virginia Department of Education.

The objective was to determine if the budget adopted on March 7, 1992, by the General Assembly of Virginia for the biennium covering fiscal year (FY) 1992-1993 and FY 1993-1994 reduced the disparity in total per pupil expenditures across school divisions within the Commonwealth.

The analysis covers the period from FY 1988-1989, the base year, through FY 1992-1993. The degree of disparity was determined using four indicators that measure *dispersion*, and by evaluating two methods of measuring disparity.

The analysis produced these findings:

* For the FY 1992-1993 school year, there is gaining and losing among both low-spending and high-spending school divisions.
* Application of customary statistical indicators to total per pupil expenditures and total per pupil state aid, for the years of analysis, showed mixed results, with some improvement in disparity reduction, albeit extremely slight.
* Without an increase in expenditures by local governments, 91.67 percent of all pupils in FY 1992-1993 will lose ground relatively to FY 1988-1989 in their access to school financial resources.
* School resources available for K-12 education of children in Virginia are not wealth-neutral, but rather they are wealth- biased.

The conclusion is that state aid for FY 1992-1993 is slightly better distributed than that for FY 1991-1992, because the number of pupils receiving less aid than previously has been reduced. Still, many pupils in low-spending school divisions, some 200,000, will receive less state aid in FY 1992-1993 than they did in FY 1988-1989. How the school expenditure disparity issue may be at least partially resolved is also given a bit of attention.

# INTRODUCTION

On March 7, 1992, the General Assembly of Virginia adopted the budget for K-12 education for the biennium covering fiscal year (FY) 1992-1993 and FY 1993-1994. This budget provides for additional state aid to Virginia's public schools with the intent of correcting the disparity in per pupil spending across the state's 134 school divisions, which collectively serve over one million pupils.

This paper analyzes the impact that the new state budget has on expenditures for K-12 education. The objective is to determine if the state budget adopted on March 7, 1992, reduces disparity in total per pupil expenditures across school divisions in Virginia in FY 1992-1993, the first fiscal year to which it applies.

For this paper, "reduced disparity" means that the distribution across school divisions of

expenditures on K-12 education move toward providing more equality of total per pupil expenditures. The concept of reduced disparity used in this study applies to two per pupil distributions: total per pupil expenditures and total per pupil state aid.

We find that a slight overall reduction of disparity will occur with the distribution of state aid for FY 1992-1993, when compared with FY 1991-1992 This improvement, however, does not imply that all previously low-spending school divisions are better off; indeed, some are worse off.

This paper is organized as follows: Section II gives a general background for the analysis including the methods of estimating future spending levels; Section III analyzes the distribution of total per pupil expenditures and state aid; Section IV contains the conclusions; Section V offers some further considerations relevant to the disparity issue; and the appendices include all relevant data used in the analysis.

## BACKGROUND

To assess the impact of the March 1992 budget actions on schools in FY 1992-1993, we compared expenditures on K-12 education over a five-year period: FY 1988-1989 (Virginia Department of Education, *Facing Up-24*), FY 1989-1990 (Virginia Department of Education, *A New Vision for Education*), FY 1991-1992 (revised entitlement), and FY 1992-1993 (proposed allocations by the General Assembly for the biennium 1992-1994).[1] Data for FY 1990-1991 were not available; so that year is not included. The analysis encompassed the 134 school divisions that serve the Commonwealth's 95 counties, 41 cities, and 189 towns. To make the data compatible across the years used in this analysis, three cities and one county had to be combined into other cities and counties. The cities combined into counties follow: Clifton Forge is included in Alleghany County, Bedford City in Bedford County, and Emporia City in Greensville County. James City County is included in Williamsburg City. Two school divisions serve individual towns—Colonial Beach and Westpoint.

The analysis focuses on two indicators of disparity: total per pupil expenditures and total per pupil state aid. Both of these indicators are relevant when this question is asked: Will there be a reduction in disparity across expenditures by school divisions in Virginia as a result of the March 1992 legislation?

Total per pupil state aid represents general funds and categorical grants, both Standards of Quality (SOQ) and non-SOQ funds. Not included as state aid in this analysis is the 1-percent sales tax revenues earmarked to K-12 education. These revenues account for about 10 percent of total school funding.[2] The 1-percent sales tax is not included as state aid in the analysis because its distribution to school divisions is based on school age population, not on any measure of ability to pay. Allocating these funds based on ability to pay is worth consideration.

Total per pupil expenditures represent all operating expenditures from all sources spent on K-12 education. These sources can be categorized by their origin as local, state, federal, and

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[1] Data for FY 1991-1992 and FY 1992-1993 were especially provided by the Virginia Department of Education.

[2] Ten percent in FY 1988-1989, 9.5 percent in FY 1989-1990.

the 1- percent sales tax earmarked to K-12 education. On average, local sources bear the largest share of school funding, accounting for about 50 percent of total school funds.[3] State aid is the second largest source of revenues for K-12 education contributing about 35 percent of total school funding.[4] Total expenditures does not include capital or debt-service expenditures.

Table 1 shows total state aid in billions of dollars. Total state aid increased 12.18 percent between FY 1988-1989 and FY 1991-1992, a period when inflation is estimated to have been 14.67 percent. Between FY 1988-1989 and FY 1992-1993, however, state aid grew faster than estimated inflation: 21.15 percent state aid and 19.26 percent inflation.[5]

**TABLE 1. Total State Aid to Schools, in Billions of Dollars.**

| Fiscal Year | State Aid | |
|---|---|---|
| | Current dollars | Dollars of 1988-1989 |
| 1988-1989 | 1.56 | 1.56 |
| 1989-1990 | 1.68 | 1.60 |
| 1991-1992 | 1.75 | 1.53 |
| 1992-1993 | 1.89 | 1.58 |

Source: Virginia Department of Education (*Facing Up-24, A New Vision for Education*, and data especially provided for FY 1991-1992 and FY 1992-1993).

Even though state aid is more than a third of total expenditures on K-12 education, the dominance of local expenditures and their disparity makes it difficult to alter the distribution of funds with state aid alone. In a previous REAP report, McDowell and Elías showed that, under the current scheme of distributing state aid, only a very sizable increase of state funding would significantly reduce disparity. The main obstacle to alleviating the disparity problem is in using the local composite index (LCI) as a basis for distributing state aid.

Because there is no actual information on future local spending, or future federal assistance to K-12 education, those values had to be determined. Estimates of total per pupil expenditures for FY 1991-1992 and FY 1992-1993 were constructed using this assumption: Each school division will spend, in real terms, at least as much local money and receive at least as much federal aid as it did in FY 1988-1989.

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[3] Forty-eight percent in FY 1988-1989, 49.9 percent in FY 1989-1990.

[4] In FY 1988-1989, 36.4 percent, and in FY 1989-1990, 35.2 percent.

[5] Assuming 4-percent inflation for 1992 and 1993, the deflators for those years would be 141.65 and 147.32. For FY 1988-1989, the deflator is 121.15. For FY 1991-1992 and FY 1992-1993, the deflators would be 138.93 and 144.49. Deflators are Consumer Price Indices for all urban consumers, U.S. Department of Labor, Bureau of Labor Statistics.

Total expenditures on K-12 education for FY 1991-1992 were determined using the following formula:

$$TotExp91\text{-}92 = StAid91\text{-}92 + 1\%SALES91\text{-}92 + REST91\text{-}92 \quad [1]$$

where:

* TotExp91-92 = estimated total per pupil expenditures in FY 1991- 1992,
* StAid91-92 = total per pupil state aid in FY 1991-1992,
* 1%SALES91-92 = estimated 1-percent sales tax in FY 1991-1992, and
* REST91-92 = local and federal funds of FY 1988-1989 inflated to FY 1991-1992 dollars (nominal dollars of 1991-1992).

Similarly, total expenditures on K-12 education for FY 1992-1993 were determined using the following formula:

$$TotExp92\text{-}93 = StAid92\text{-}93 + 1\%SALES92\text{-}93 + REST92\text{-}93 \quad [2]$$

where:

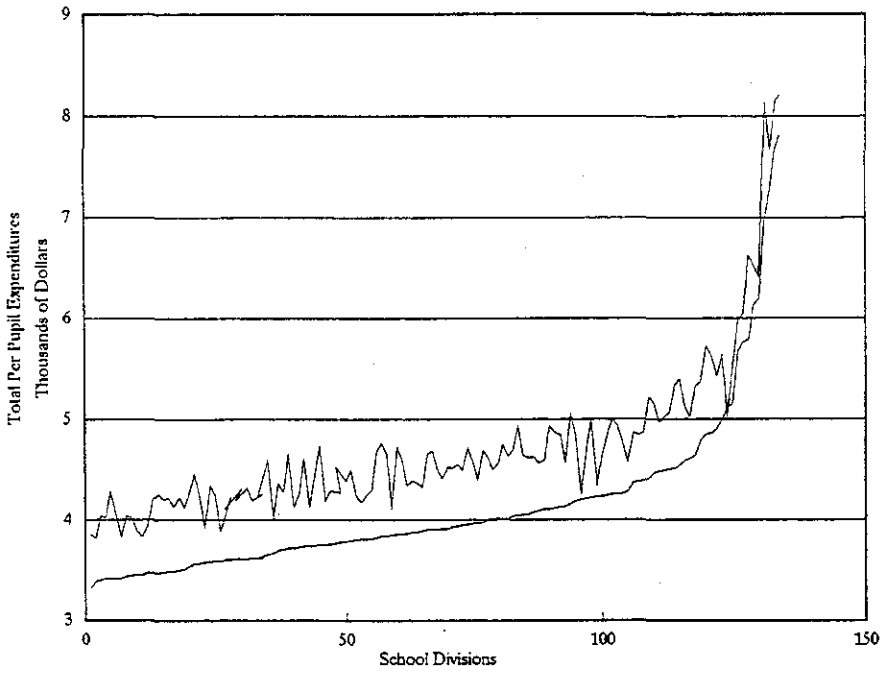
* TotExp92-93 = estimated total per pupil expenditures in FY 1992- 1993,
* StAid92-93 = total per pupil state aid in FY 1992-1993,
* 1%SALES92-93 = estimated 1-percent sales tax in FY 1992-1993, and
* REST92-93 = local and federal funds of FY 1988-1989 inflated to FY 1992-1993 dollars (nominal dollars of 1992-1993).

To simplify the discussion, the following acronyms appear in the rest of this paper: TotExp and StAid = total per pupil expenditures and total per pupil state aid, respectively, for each fiscal year indicated (1988-1989, 1989-1990, 1991-1992, and 1992-1993).

## THE DISTRIBUTION of STATE AID and ITS IMPACT

Figure 1 illustrates the character of the disparity problem, allowing a rapid appraisal of the impact of state aid on spending by school divisions. The lines shown compare total per pupil expenditure by school division in FY 1988-1989 and in FY 1992-1993. The school divisions are entered in the same sequence along each line. Compare the smooth line with the jagged line. The smooth line starts with the school division with the lowest total per pupil expenditure in FY 1988-1989 and continues to the division with the highest total per pupil expenditure. That's why the lower line is relatively smooth.

**FIGURE 1. Total per pupil expenditures on K-12 education by school divisions for FY 1988-1989 and FY 1992-1993, sequenced from lower-spending to higher-spending divisions with respect to FY 1988-1989.**




Source: Virginia Department of Education (*Facing Up-24* and data especially provided for FY 1992-1993).

The jagged line is the estimated total per pupil expenditures for the same school divisions for FY 1992-1993. Because more dollars, in nominal terms, will be spent in total in 1992-1993, the jagged line is always above the smooth line. The jagged nature of the 1992-1993 line suggests, however, that some school divisions will be clearly better off, and some others will not be much better off. It follows that if we were to rank the school divisions in terms of their 1992-1993 per pupil spending, the school divisions would be in a different sequence than was the case in 1988-1989. Thus, determining whether there has been a real reduction in disparity is difficult because some gaining and some losing is occurring across low-spending school divisions, and some across high-spending school divisions. To determine the degree of disparity across school divisions, we chose to measure the *dispersion* in state aid.

## ANALYZING DISPARITY BY MEASURING DISPERSION

The distribution of total per pupil state aid could be studied by measuring the dispersion of total state aid, that is, the differences between aid to low-spending school divisions and aid to high-spending school divisions. Dispersion in state aid should increase over time if state aid is attempting to reduce disparity by sending more aid to school divisions with lower total per pupil expenditures.

To evaluate the distribution of state aid and its impact on total per pupil spending, we use

four descriptive statistical indicators of dispersion: the standard deviation, the correlation coefficient, the Spearman's coefficient of rank correlation, and the Gini coefficient.

## The Standard Deviation

The standard deviation is an indicator of the dispersion of the data around its average. In this analysis, greater dispersion in the distribution of total per pupil *state aid* is consistent with providing greater assistance to the school divisions with greater need and less assistance to the ones with less need. Similarly, a *reduction* in the dispersion of *total per pupil spending* is consistent with a reduction in disparity.

**TABLE 2. Standard deviations of total per pupil state aid and total per pupil expenditures, FY 1988-1989 - FY 1992-1993, (1988- 1989 dollars).**

| Item | Fiscal Years | | | |
|---|---|---|---|---|
| | 1988-1989 | 1989-1990 | 1991-1992 | 1992-1993 |
| StAid | 336 | 362 | 426 | 438 |
| TotExp | 793 | 837 | 739 | 735 |

Source: Virginia Department of Education (*Facing Up-24, A New Vision for Education*, and data especially provided for FY 1991-1992 and FY 1992-1993).

Table 2 shows the standard deviations for the respective distributions for FY 1988-1989 through FY 1992-1993. The standard deviation of the distribution of total per pupil state aid increases in each succeeding year. In contrast, the standard deviation of the distributions of total per pupil expenditure decreases over the same period. These results suggest that there may be a reduction in disparity by distributing state aid over the years being studied. This evidence, however, is not conclusive. To verify or refute this initial assessment, additional analysis is required.

## The Correlation Coefficient

The correlation coefficient measures the degree of association between two variables. When the variables are highly positively associated, the correlation coefficient gets closer to +1.0. When the variables are highly negatively associated, the correlation coefficient gets closer to - 1.0.

The correlations between total per pupil state aid and total per pupil expenditures are useful in assessing changes in the state aid distribution. If state aid distribution is being distributed purposefully to reduce disparity, dispersion of state aid increases and the correlation between total per pupil state aid and total per pupil expenditures will be negative. If over the period of the five years being analyzed movement toward that purpose has been achieved, the correlation coefficients should become even more negative over the period.

Table 3 displays the correlations between total per pupil expenditures in the base year, FY1988-1989, and in each succeeding year. The correlation between total per pupil

state aid and total per pupil expenditures has become slightly more negative over the period. This suggests that there has been a slight improvement in distribution of state aid over the period. Again, however, the evidence is hardly conclusive, so additional analysis is required.

**TABLE 3. Correlations between total per pupil state aid in FY 1988-1989 - FY 1992-1993 and total per pupil expenditures in FY 1988-1989.**

| Item | State aid by fiscal year | | | |
|---|---|---|---|---|
| | 1988-1989 | 1989-1990 | 1991-1992 | 1992-1993 |
| TotExp88-89 | -0.58 | -0.57 | -0.60 | -0.60 |

Source: Virginia Department of Education (*Facing Up-24, A New Vision for Education*, and data especially provided for FY 1991-1992 and FY 1992-1993).

## The Spearman's Coefficient of Rank Correlation

This indicator measures the correlation coefficient between the ranking of two indicators. Our interest in the Spearman's measurement is in comparing the rankings of total per pupil state aid and the rankings of total per pupil expenditures in the respective years. When dispersion of state aid increases, low-spending school divisions would receive more aid and therefore would be ranked prior to high spending school divisions. Ideally, if state aid completely corrects spending disparity, the respective distributions would be ranked in exactly opposite directions and the Spearman's coefficient will be -1.0. Conversely, if the base year's distributions continue, the respective distribution will be ranked in the same sequence as the base year, and the Spearman's coefficient will be +1.0.

Table 4 shows the Spearman's rank correlation coefficients between total per pupil expenditures in FY 1988-1989, the base year, and total per pupil state aid in that and subsequent years. This indicator shows that across the years in the analysis the coefficients are getting slightly closer to zero (0), instead of toward -1.0. Contrary to the evidence obtained from the examination of the standard deviation, the Spearman's coefficient indicates that the distribution of school aid is not improving over time, and may be worsening.

**TABLE 4. Spearman's Rank Correlations Between Total Per Pupil State Aid in FY 1988-1989-FY 1992-1993 and Total Per Pupil Expenditures in FY 1988-1989.**

| Item | Spearman's coefficients by fiscal year | | | |
|---|---|---|---|---|
| | 1988-1989 | 1989-1990 | 1991-1992 | 1992-1993 |
| TotExp88-89 | -0.44 | -0.42 | -0.43 | -0.42 |

Source: Virginia Department of Education (*Facing Up-24, A New Vision for Education*, data especially provided for FY 1991-1992 and FY 1992-1993).

The Spearman's indicator, however, offers no conclusive evidence whether the distribution is worsening or not. It may be the case that the changes in rankings mostly occur in one end of the distribution, i.e., either at the end with low-spending school divisions or at the end with high-spending school divisions. In this situation the Spearman's coefficient could increase in such a way that does not harm the "fairness" of the distribution.

## The Gini Coefficient

The Gini coefficient is an indicator that summarizes in one number the "fairness" of the distribution of state aid. The indicator takes into account the changes in rank and magnitude of the distribution of state aid. In essence, the Gini coefficient evaluates the difference between a perfectly equal distribution and the actual distribution being examined. A perfectly equal distribution is one where 1 percent of the population obtain 1 percent of the resources, and so on at each percentage level. The line that relates this kind of distribution is called a Lorenz curve, and the Gini coefficient compares the distribution of interest with the perfect distribution.[6]

For the comparisons made in this analysis, a Gini that indicates inequality (i.e., a Gini that approaches 1.0) is desirable for total per pupil state aid, and one that indicates greater equality (i.e., a Gini that approaches zero) is desirable for total per pupil expenditures. A Gini for total per pupil state aid that moves toward 0.5 over time is considered a change for the better.

Figure 2-A shows the Lorenz curve for total per pupil state aid in FY 1991-1992, and the arrow indicates the desired direction of the change. On the other hand, a Gini for total per pupil expenditures that moves toward zero (0) over time indicates an improvement, that is, a reduction in disparity. Figure 2-B shows the Lorenz curve for total per pupil expenditures in FY 1992-1993, with the arrow showing the direction where the distribution becomes more equal.

**FIGURE 2. Lorenz Curves for Total Per Pupil State Aid in FY 1992- 1993 and Total Per Pupil Expenditures in FY 1992-1993.**

**Figure 2-A**

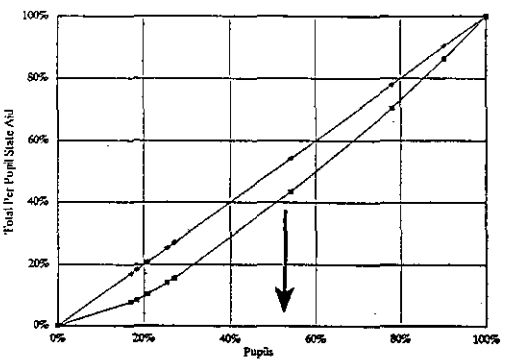
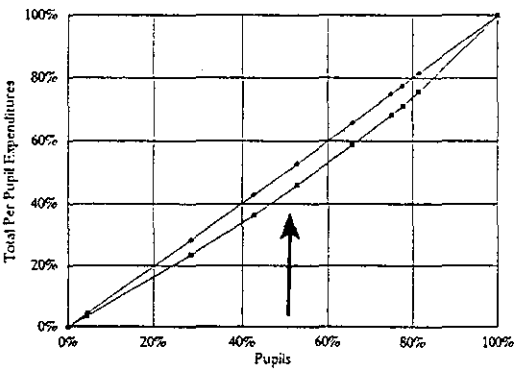



**Figure 2-B**




Source: Virginia Department of Education (data especially provided for FY 1992-1993).

Table 5 shows the Gini coefficients for the variables of interest. The coefficients of total per pupil state aid are increasing indicating that the distribution of state aid is improving. Notice, however, that the improvement is so small that four decimal digits are required to define the indicator. The coefficients for total per pupil expenditures demonstrate that the

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[6] The Gini coefficient is the quotient of the area between the 45° line and the line of total state aid in a Lorenz curve, and the area of the triangle below the 45° line across a square.

effect of the state aid on total per pupil expenditures is very small, although in the desirable direction.

**TABLE 5. Gini Coefficients for Total Per Pupil State Aid and Total Per Pupil Expenditures for FY 1988-1989 - FY 1992-1993.**

| Item | Gini coefficients by fiscal year | | | |
|---|---|---|---|---|
| | 1988-1989 | 1989-1990 | 1991-1992 | 1992-1993 |
| StAid | 0.1138 | 0.1230 | 0.1602 | 0.1593 |
| TotExp | 0.1096 | 0.1072 | 0.0994 | 0.0930 |

Source: Virginia Department of Education (*Facing Up-24, A New Vision for Education*, and data especially provided for FY 1991-1992 and FY 1992-1993).

## First Conclusion: Mixed Results

Overall the results obtained from the measures of dispersion are mixed. The standard deviation analysis indicates some improvement in reducing disparity. The correlation coefficient analysis indicates that there may be some, but not much, improvement in the distribution of state aid to reduce disparity. The Spearman's coefficient suggests that the distribution of state aid may be worsening rather than improving over time. The Gini coefficient analysis suggests that state aid is improving and that there is a reduction in disparity, albeit very small, over the period.

The results from these statistical indicators leave some ambiguity about the impact of state aid distributions in years since FY 1988- 1989 on school expenditure disparity as reflected in the distribution of total per pupil expenditures for FY 1992-1993. If there is an improvement, it is very slight indeed.

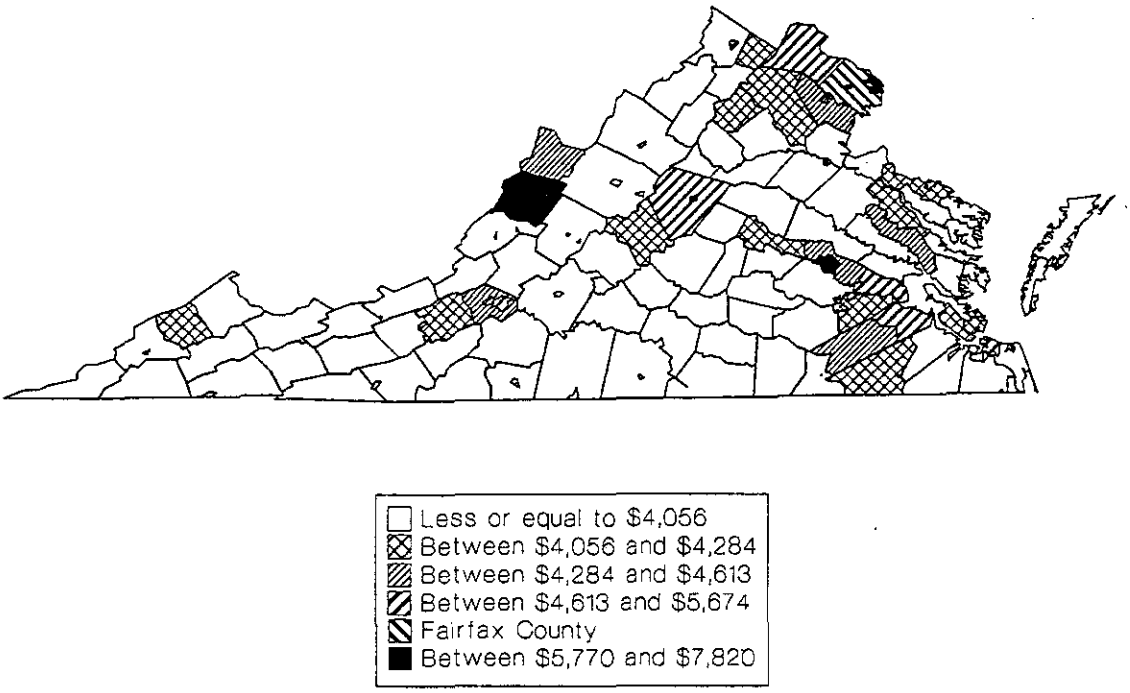
# GAINERS and LOSERS

We now go into the details of who has gained and who has lost. Our purpose here is to determine if those school divisions with lower total per pupil expenditures are receiving more state aid than in FY 1988-1989.

## Counting Heads

The school divisions are subdivided by expenditure groups as of the base year, FY 1988-1989. Within each group, the divisions were further categorized by whether they exhibited growth or decline in total per pupil state aid received or in total per pupil expenditures made in the years of analysis compared to the base year. By making these subdivisions, it is possible to identify different expenditure groups (from lower to higher spending), and within each of these expenditure groups, how they are being affected by efforts to reduce disparity as compared to FY 1988-1989. Figure 3 shows the map of Virginia with the respective school divisions identified by the expenditure groups used in the analysis.

**FIGURE 3. School Divisions Subdivided by Total Per Pupil Expenditures, Six Groups, in FY 1988-1989.**




**Note:** Map not drawn to scale.

Source: Virginia Department of Education (*Facing Up-24*).

Tables A-8 and A-9 in Appendix A show the percentage changes in total per pupil state aid for the respective expenditure groups, between FY 1988-1989 and the last two years in this study, FY 1991- 1992 and FY 1992-1993. The comparison is in 1988-1989 dollars. A summary of this information is shown in Table 6. As Table 6 shows, 34.84 percent of the pupils in FY 1991-1992 received less than $4,284 per year[7] in FY 1988-1989 *and* also received less state aid (in 1988-1989 dollars) than they did in FY 1988-1989.

Table 6 also shows that 21.79 percent of the pupils in FY 1992-1993 received less than $4,284 per year in FY 1988-1989 *and* also received less state aid than they did FY 1988-1989. From this perspective, FY 1992-1993 is better than the preceding year. However, among all pupils in the low-spending school divisions, about 200,000 are receiving less state aid than they did in FY 1988-1989.

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[7] The statewide average of total per pupil expenditures in FY 1988- 1989 was 4,119 dollars per pupil.

**TABLE 6. Cumulative Percentages of Pupils in School Divisions Showing Negative Growth in Total Per Pupil State Aid in FY 1991- 1992 and FY 1992-1993 Compared to Total Per Pupil State Aid in FY 1988-1989 (in 1988-1989 Dollars).**

| TotExp88-89 | Negative growth in state aid | | | |
|---|---|---|---|---|
| | FY 1991-1992 | | FY 1992-1993 | |
| | Cumulative percentages (percent of state total) | Cumulative pupils (pupils) | Cumulative percentages (percent of state total) | Cumulative pupils (pupils) |
| less than $3,451 | 8.29% | 83,158 | 1.18% | 11,935 |
| $3,451 — $3,615 | 12.29% | 123,315 | 5.07% | 51,410 |
| $3,615 — $3,754 | 18.89% | 189,514 | 12.01% | 121,769 |
| $3,754 — $3,934 | 26.02% | 261,015 | 18.03% | 182,782 |
| $3,934 — $4,056 | 29.83% | 299,231 | 18.54% | 187,928 |
| $4,056 — $4,284 | 34.84% | 349,447 | 21.79% | 220,878 |
| $4,284 — $4,613 | 45.43% | 455,703 | 32.52% | 329,668 |
| $4,613 — $5,674 | 48.60% | 487,466 | 35.56% | 360,526 |
| $5,770 (Fairfax County) | 61.30% | 614,818 | 48.07% | 487,445 |
| more than $5,770 | 64.15% | 643,510 | 50.93% | 516,633 |
| **Total** | **64.15%** | **643,510** | **50.93%** | **516,633** |

Source: Virginia Department of Education (*Facing Up-24* and data especially provided for FY 1991-1992 and FY 1992-1993).

Tables A-10 and A-11 in Appendix A show the percentage change of total per pupil expenditures in FY 1991-1992 and FY 1992-1993 in comparison to FY 1988-1989. A summary of this information is shown in Table 7. As Table 7 shows, almost all pupils in both FY 1991- 1992 (91.27 percent) and FY 1992-1993 (91.67 percent) will get fewer total funds than in FY 1988-1989 when the comparison is made in 1988-1989 dollars. This means that, given the modest increases in state aid, most pupils will lose ground in their access to school financial resources, unless local governments increase their participation in paying for schooling beyond inflation rates.

**TABLE 7. Cumulative Percentages of Pupils in School Divisions Showing Negative Growth in Total Per Pupil Expenditures in FY 1991- 1992 and FY 1992-1993 Compared to Total Per Pupil Expenditures in FY 1988-1989 (in 1988-1989 Dollars).**

| TotExp88-89 | Negative growth in total per pupil expenditures | | | |
|---|---|---|---|---|
| | FY 1991-1992 | | FY 1992-1993 | |
| | Cumulative percentages (percent of state total) | Cumulative pupils (pupils) | Cumulative percentages (percent of state total) | Cumulative pupils (pupils) |
| less than $3,451 | 9.39% | 94,209 | 10.32% | 104,694 |
| $3,451 — $3,615 | 16.29% | 163,431 | 15.95% | 161,814 |
| $3,615 — $3,754 | 26.64% | 267,224 | 26.50% | 268,805 |
| $3,754 — $3,934 | 35.63% | 357,384 | 35.76% | 362,739 |
| $3,934 — $4,056 | 43.04% | 431,692 | 43.72% | 443,454 |
| $4,056 — $4,284 | 53.38% | 535,381 | 53.79% | 545,600 |
| $4,284 — $4,613 | 64.75% | 649,397 | 65.28% | 662,172 |
| $4,613 — $5,674 | 72.70% | 729,163 | 73.33% | 743,835 |
| $5,770 (Fairfax County) | 85.40% | 856,515 | 85.84% | 870,754 |
| more than $5,770 | 91.27% | 915,519 | 91.67% | 929,807 |
| **Total** | **91.27%** | **915,519** | **91.67%** | **929,807** |

Source: Virginia Department of Education (*Facing Up-24* and data especially provided for FY 1991-1992 and FY 1992-1993).

The main reason why estimated total per pupil expenditures on K-12 education are dramatically falling is because the revenues collected with the 1-percent sales tax have fallen in the period of analysis, undoubtedly due to the downturn of the state's economy. Table 8 shows the expected sales-tax revenue collections for FY 92- 93 to be only 88 percent of what they were in FY 1988-1989. This outcome is yet another issue in the financing of schooling in Virginia, in addition to the disparity question.

**TABLE 8. Actual and Expected 1-percent Sales Tax Collections Per Pupil for FY 1988-1989, FY 1991-1992, and FY 1992-1993.**

| Fiscal Year | Per Pupil 1-percent Sales Tax | |
|---|---|---|
| | Current Dollars | Dollars of 1988-1989 |
| 1988-1989* | 441 | 441 |
| 1991-1992** | 447 | 390 |
| 1992-1993** | 466 | 391 |

* Actual ** Expected

**Note:** Expected collections considered by the General Assembly of Virginia for the budget approved on March 1992.

Source: Virginia Department of Education (*Facing Up-24* and data especially provided for FY 1991-1992 and FY 1992-1993).

## Wealth Neutrality

The preceding section indicated that the distribution of state aid for FY 1992-1993 is slightly better than for FY 1991-1992. Still, many lower-spending school divisions, providing collectively for more than 200,000 pupils, will receive less state aid (in dollars of FY 1988-1989) in FY 1992-1993 than they did in FY 1988-1989. The state's current method of distributing state aid is not ensuring that lower-spending school divisions are consistently receiving proportionally more state aid than higher-spending ones. To show that this situation exists, we use the concept of wealth neutrality.

Wealth neutrality exists when there is no relationship between ability to pay and total per pupil expenditures on K-12 education. It is not in the state's interest that pupils in localities with low ability to pay receive fewer funds than those in wealthier localities. If the distribution of state aid corrects the negative effects of the diverse ability to pay for schools across school divisions throughout the state, then state aid distribution is wealth neutral.

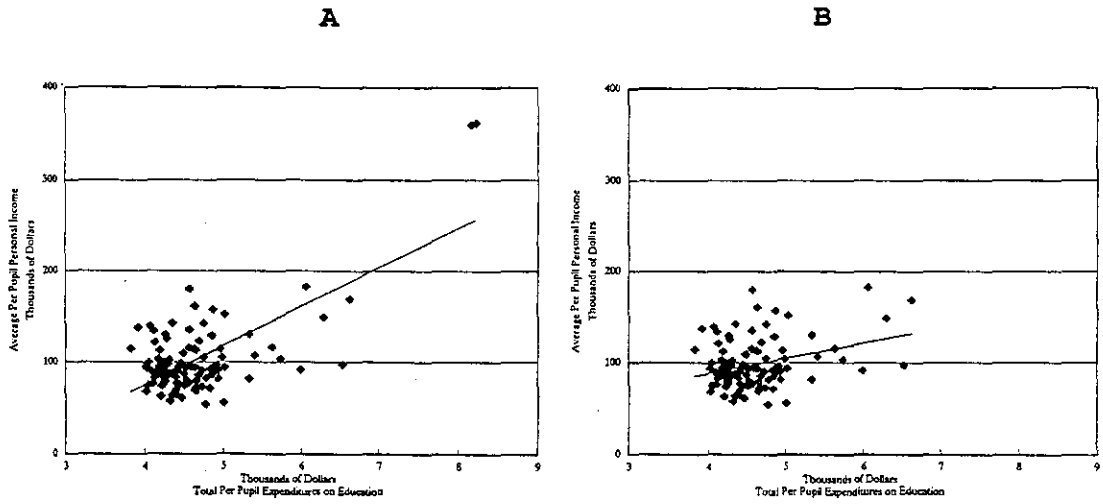
An indicator of wealth neutrality can be estimated by determining the relationship (as shown by a regression line) between average per pupil personal income and total per pupil expenditures on K-12 education, across school divisions. If expenditures are wealth-neutral, the resulting estimate of the slope of the regression line will be zero (there will be no slope, i.e., the regression line will be flat), indicating that no relationship exists between the two indicators. If expenditures are not wealth-neutral, the estimate will be positive (the line will have an upward slope, i.e., as wealth increases, total per pupil expenditures on K-12 education increase).

Table A-12 in Appendix A displays the results of regressing personal income on all the variables of interest. All the slopes of state aid are negative, as expected, indicating that more state aid is being distributed to school divisions with less average per pupil personal income. All the slopes of the regressions between average per pupil personal income and total per pupil expenditures are positive. This indicates a positive relationship between wealth, measured by average per pupil personal income, and total per pupil expenditures on K-12 education.

Figure 4-A shows average per pupil personal income in relation to total per pupil expenditures on K-12 education by each school division for FY 1992-1993. The straight line

is the fitted line for points by each school division, and the slope is positive, 43.07. The points in Figure 4-A that are highest and on the extreme right represent the school divisions for Arlington and Alexandria. It is possible that these two points are driving the regression (have high leverage). Without these two points, the slope of the line is 16.62, compared to 43.07 with those observations included. Figure 4-B shows the regression line without the school divisions of Arlington and Alexandria. With or without the inclusion of these two divisions in the analysis, the relationship between average per pupil personal income and educational resources is positive, indicating that school resources available for K-12 education of children in Virginia are not wealth neutral, but rather are wealth-biased.

**FIGURE 4. Regression Line of Average Per Pupil Personal Income in 1989 and Total Per Pupil Expenditures on K-12 Education for FY 1992-1993: A = with Alexandria and Arlington; B = without Alexandria and Arlington.**




**Note:** Political divisions for data on personal income does not coincide with school divisions. All school divisions are considered, however, some were combined to make the data sets consistent.

Sources: a) Virginia Department of Education (data especially provided for FY 1991-1992 and FY 1992-1993); b) U.S. Department of Commerce.

## CONCLUSION

There has been some modest progress in the distribution of state aid for FY 1992-1993 as compared to previous years. The rate of progress, however, is so small that its detection defied normal statistical tests and literally required the counting of heads of pupils that were better off. State aid for FY 1992-1993 is slightly better distributed than that for FY 1991-1992 in terms of leaving fewer pupils in low-spending school divisions receiving less aid than they had previously received. Still, many pupils in low-spending school divisions will receive less state aid in FY 1992-1993 than they did in FY 1988-1989.

The current approach for distributing state aid will not significantly reduce the gap between low- and high-spending school divisions. The reason for this situation is in the method used to allocate the distribution of state aid. The problem lies particularly in the indicator used as a measure of ability to pay: the Local Composite Index (LCI). This indicator, the LCI, is designed to discriminate across school divisions by allocating more aid to those divisions less able to pay for schools. The LCI, however, is not reflecting the degree of disparity in ability to pay; therefore, state aid is not effectively reducing the spending gap. The problem with the LCI is not that the weights are outdated, although that may contribute to the confusion, but that the weights and the indicators of ability to pay for schools are inconsistent (McDowell et al). Even if constructed consistently, the LCI fails the test for being an effective allocator of state aid because of the weak relationship that exists between property values and ability to pay for schooling (McDowell et al.). Because the LCI is an inappropriate indicator of ability to pay, the state should consider a new measure for distributing state aid to K-12 education. The limited distributional capabilities of the LCI were implicitly acknowledged by the 1992 General Assembly when the key component for the disparity initiative, "students at risk," was allocated based on the number of pupils enrolled in the Free Lunch Program and not on the basis of the LCI.

It is important that we highlight here the possible effect of including the 1-percent sales tax in the distribution of state funds in a disparity-reducing form. The degree of impact of the changes accomplished over the past five years, including the 1992 legislative action, has been very small. Most of the pupils that benefitted from the changes received small increases, less than 5 percent, over a period of five fiscal years. Within this context, any extra funds distributed would make a difference to those school divisions in greater need. The inclusion of the 1-percent sales tax has the potential of increasing the funds available for distribution in a more equitable way. In FY 1988-1989, the 1- percent sales tax represented $430 million (10 percent of total expenditures in that year); in FY 1989-1990, it represented $452 million (9.5 percent of total expenditures).

Two other issues deserve attention in the analysis of disparity in K-12 educational expenditures in Virginia. The first relates to the analysis of indicators of ability to pay that improve the performance of the LCI in distributing state funds to reduce disparity. The second relates to the recognition of differences across school divisions in the state in terms of revenue and expenditure structures (i.e., between urban and rural school divisions). Future research on these issues may be appropriate given the current distribution of state aid.

# 16 REFERENCES

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# APPENDICES

Table A-1. Summary Statistics of State Aid (StAid) and Total Expenditures (TotExp) for FYs 1988-1989, 1989-1990, 1991-1992, and 1992-1993.

| | StAid88-89 | StAid89-90 | StAid91-92 | StAid92-93 | TotExp88-89 | TotExp89-90 | TotExp91-92 | TotExp92-93 |
|---|---|---|---|---|---|---|---|---|
| Average | 1,729 | 1,878 | 1,985 | 2,107 | 4,119 | 4,568 | 4,661 | 4,895 |
| Minimum | 910 | 921 | 678 | 674 | 3,326 | 3,701 | 3,694 | 3,910 |
| Maximum | 2,743 | 2,965 | 3,167 | 3,500 | 7,820 | 8,371 | 8,485 | 8,805 |
| Standard Deviation | 336 | 381 | 489 | 523 | 793 | 879 | 847 | 877 |

Table A-2. Percentage Changes of State Aid (StAid) and Total Expenditures (TotExp) With Respect to StAid88-89 and TotExp88-89.

| | StAid89-90 | StAid91-92 | StAid92-93 | TotExp89-90 | TotExp91-92 | TotExp92-93 |
|---|---|---|---|---|---|---|
| Average | 8.57% | 14.80% | 21.84% | 10.89% | 13.15% | 18.83% |
| Minimum | 1.18% | -25.50% | -25.91% | 11.28% | 11.06% | 17.55% |
| Maximum | 8.09% | 15.44% | 27.58% | 7.05% | 8.50% | 12.59% |
| Standard Deviation | 13.28% | 45.32% | 55.35% | 10.84% | 6.74% | 10.47% |

Table A-3. Summary Statistics of State Aid (StAid) and Total Expenditures (TotExp) for FYs 1988-1989, 1989-1990, 1991-1992, and 1992-1993, all in dollars of 1988-1989.

| (dollars of 1988-1989) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | StAid88-89 | StAid89-90 | StAid91-92 | StAid92-93 | TotExp88-89 | TotExp89-90 | TotExp91-92 | TotExp92-93 |
| Average | 1,729 | 1,786 | 1,731 | 1,767 | 4,119 | 4,345 | 4,064 | 4,104 |
| Minimum | 910 | 876 | 591 | 565 | 3,326 | 3,521 | 3,221 | 3,278 |
| Maximum | 2,743 | 2,821 | 2,761 | 2,934 | 7,820 | 7,964 | 7,399 | 7,383 |
| Standard Deviation | 336 | 362 | 426 | 438 | 793 | 837 | 739 | 735 |

**Table A-4.** Percentage Changes of State Aid (StAid) and Total Expenditures (TotExp) With Respect to StAid88-89 and TotExp88-89, real changes.

| (dollars of 1988-1989) | | | | | | |
|---|---|---|---|---|---|---|
| | StAid89-90 | StAid91-92 | StAid92-93 | TotExp89-90 | TotExp91-92 | TotExp92-93 |
| Average | 3.29% | 0.11% | 2.16% | 5.49% | -1.33% | -0.37% |
| Minimum | -3.75% | -35.04% | -37.88% | 5.86% | -3.15% | -1.44% |
| Maximum | 2.83% | 0.67% | 6.97% | 1.84% | -5.39% | -5.59% |
| Standard Deviation | 7.77% | 26.72% | 30.26% | 5.44% | -6.92% | -7.37% |

Table A-5. Spearman's Rank Correlation Coefficients of State Aid (StAid) and Total Expenditures (TotExp).

| | rStAid88-89 | rTotExp88-89 | rStAid89-90 | rTotExp89-90 | rStAid91-92 | rTotExp91-92 | rStAid92-93 | rTotExp92-93 |
|---|---|---|---|---|---|---|---|---|
| rStAid88-89 | 1.00 | -0.44 | 0.99 | -0.43 | 0.94 | -0.34 | 0.92 | -0.29 |
| rTotExp88-89 | -0.44 | 1.00 | -0.42 | 0.95 | -0.43 | 0.94 | -0.42 | 0.90 |
| rStAid89-90 | 0.99 | -0.42 | 1.00 | -0.41 | 0.96 | -0.30 | 0.94 | -0.25 |
| rTotExp89-90 | -0.43 | 0.95 | -0.41 | 1.00 | -0.43 | 0.90 | -0.42 | 0.86 |
| rStAid91-92 | 0.94 | -0.43 | 0.96 | -0.43 | 1.00 | -0.26 | 0.98 | -0.20 |
| rTotExp91-92 | -0.34 | 0.94 | -0.30 | 0.90 | -0.26 | 1.00 | -0.25 | 0.97 |
| rStAid92-93 | 0.92 | -0.42 | 0.94 | -0.42 | 0.98 | -0.25 | 1.00 | -0.16 |
| rTotExp92-93 | -0.29 | 0.90 | -0.25 | 0.86 | -0.20 | 0.97 | -0.16 | 1.00 |

Table A-6. Gini Coefficients of State Aid (StAid) and Total Expenditures (TotExp).

| | StAid88-89 | StAid89-90 | StAid91-92 | StAid92-93 | TotExp88-89 | TotExp89-90 | TotExp91-92 | TotExp92-93 |
|---|---|---|---|---|---|---|---|---|
| Gini Coefficients | 0.1138 | 0.1230 | 0.1602 | 0.1593 | 0.1096 | 0.1072 | 0.0994 | 0.0930 |

Table A-7. Correlation Coefficients of State Aid (StAid) and Total Expenditures (TotExp).

| | StAid88-89 | TotExp88-89 | StAid89-90 | TotExp89-90 | StAid91-92 | TotExp91-92 | StAid92-93 | TotExp92-93 |
|---|---|---|---|---|---|---|---|---|
| StAid88-89 | 1.00 | -0.58 | 0.99 | -0.59 | 0.95 | -0.51 | 0.94 | -0.48 |
| TotExp88-89 | -0.58 | 1.00 | -0.57 | 0.99 | -0.60 | 0.98 | -0.60 | 0.97 |
| StAid89-90 | 0.99 | -0.57 | 1.00 | -0.58 | 0.96 | -0.49 | 0.95 | -0.46 |
| TotExp89-90 | -0.59 | 0.99 | -0.58 | 1.00 | -0.61 | 0.97 | -0.61 | 0.96 |
| StAid91-92 | 0.95 | -0.60 | 0.96 | -0.61 | 1.00 | -0.48 | 0.99 | -0.45 |
| TotExp91-92 | -0.51 | 0.98 | -0.49 | 0.97 | -0.48 | 1.00 | -0.48 | 0.99 |
| StAid92-93 | 0.94 | -0.60 | 0.95 | -0.61 | 0.99 | -0.48 | 1.00 | -0.44 |
| TotExp92-93 | -0.48 | 0.97 | -0.46 | 0.96 | -0.45 | 0.99 | -0.44 | 1.00 |

Table A-8. Percent Change by Expenditure Groups for State Aid in FY 1991-1992 (StAid91-92) Compared to State Aid in FY 1988-1989 (StAid88-89), dollars of 1988-1989.

| TotExp88-89 | less than 0% | 0 – 1% | 1 – 2% | 2 – 3% | 3 – 4% | 4 – 5% | more than 5% | Total |
|---|---|---|---|---|---|---|---|---|
| less than $3,451 | 8.29% | 0.87% | 0.00% | 0.23% | 0.00% | 0.54% | 0.41% | 10.33% |
| $3,451 – $3,615 | 4.00% | 0.00% | 1.35% | 0.00% | 1.12% | 0.42% | 2.69% | 9.58% |
| $3,615 – $3,754 | 6.60% | 0.83% | 0.00% | 0.86% | 0.07% | 0.72% | 2.07% | 11.14% |
| $3,754 – $3,934 | 7.13% | 0.10% | 0.43% | 0.26% | 0.59% | 0.00% | 2.00% | 10.51% |
| $3,934 – $4,056 | 3.81% | 0.48% | 1.72% | 0.00% | 0.93% | 1.82% | 1.08% | 9.84% |
| $4,056 – $4,284 | 5.01% | 3.45% | 0.00% | 0.54% | 0.74% | 0.00% | 0.87% | 10.60% |
| $4,284 – $4,613 | 10.59% | 0.14% | 0.00% | 0.04% | 0.00% | 0.00% | 0.59% | 11.37% |
| $4,613 – $5,674 | 3.17% | 0.00% | 0.00% | 3.52% | 1.26% | 0.00% | 0.10% | 8.05% |
| $5,770 (Fairfax County) | 12.70% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 12.70% |
| more than $5,770 | 2.86% | 0.00% | 0.00% | 0.00% | 2.58% | 0.00% | 0.44% | 5.88% |
| Total | 64.15% | 5.88% | 3.50% | 5.44% | 7.28% | 3.49% | 10.25% | 100.00% |

Table A-9. Percent Change by Expenditure Groups for State Aid in FY 1992-1993 (StAid92-93) Compared to State Aid in FY 1988-1989 (StAid88-89), dollars of 1988-1989.

| TotExp88-89 | less than 0% | 0 – 1% | 1 – 2% | 2 – 3% | 3 – 4% | 4 – 5% | more than 5% | Total |
|---|---|---|---|---|---|---|---|---|
| less than $3,451 | 1.18% | 0.00% | 0.00% | 0.82% | 0.53% | 0.35% | 7.51% | 10.38% |
| $3,451 – $3,615 | 3.89% | 0.00% | 0.72% | 0.00% | 0.19% | 0.00% | 4.66% | 9.46% |
| $3,615 – $3,754 | 6.94% | 0.00% | 0.83% | 0.00% | 1.28% | 0.26% | 2.00% | 11.31% |
| $3,754 – $3,934 | 6.02% | 0.88% | 0.74% | 0.00% | 0.00% | 0.00% | 2.82% | 10.46% |
| $3,934 – $4,056 | 0.51% | 3.59% | 0.49% | 0.00% | 0.51% | 0.00% | 4.83% | 9.92% |
| $4,056 – $4,284 | 3.25% | 0.19% | 0.00% | 2.41% | 0.00% | 0.00% | 4.74% | 10.59% |
| $4,284 – $4,613 | 10.73% | 0.00% | 0.15% | 0.00% | 0.00% | 0.00% | 0.62% | 11.49% |
| $4,613 – $5,674 | 3.04% | 0.00% | 0.00% | 0.00% | 0.21% | 0.00% | 4.80% | 8.05% |
| $5,770 (Fairfax County) | 12.51% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 12.51% |
| more than $5,770 | 2.88% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 2.94% | 5.82% |
| Total | 50.93% | 4.66% | 2.92% | 3.23% | 2.72% | 0.60% | 34.93% | 100.00% |

Table A-10. Percent Change by Expenditure Groups for Total Expenditures in FY 1991-1992 (TotExp91-92) Compared to Total Expenditures in FY 1988-1989 (TotExp88-89), dollars of 1988-1989.

| TotExp88-89 | less than 0% | 0 – 1% | 1 -- 2% | 2 – 3% | 3 -- 4% | 4 – 5% | more than 5% | Total |
|---|---|---|---|---|---|---|---|---|
| less than $3,451 | 9.39% | 0.88% | 0.06% | 0.00% | 0.00% | 0.00% | 0.00% | 10.33% |
| $3,451 – $3,615 | 6.90% | 1.55% | 0.00% | 0.72% | 0.00% | 0.00% | 0.40% | 9.58% |
| $3,615 -- $3,754 | 10.35% | 0.26% | 0.00% | 0.12% | 0.11% | 0.00% | 0.30% | 11.14% |
| $3,754 -- $3,934 | 8.99% | 0.73% | 0.35% | 0.00% | 0.00% | 0.45% | 0.00% | 10.51% |
| $3,934 -- $4,056 | 7.41% | 2.43% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 9.84% |
| $4,056 -- $4,284 | 10.34% | 0.00% | 0.26% | 0.00% | 0.00% | 0.00% | 0.00% | 10.60% |
| $4,284 -- $4,613 | 11.37% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 11.37% |
| $4,613 – $5,674 | 7.95% | 0.00% | 0.10% | 0.00% | 0.00% | 0.00% | 0.00% | 8.05% |
| $5,770 (Fairfax County) | 12.70% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 12.70% |
| more than $5,770 | 5.88% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 5.88% |
| Total | 91.27% | 5.85% | 0.78% | 0.85% | 0.11% | 0.45% | 0.70% | 100.00% |

Table A-11. Percent Change by Expenditure Groups for Total Expenditures in FY 1992-1993 (TotExp92-93) Compared to Total Expenditures in FY 1988-1989 (TotExp88-89), dollars of 1988-1989.

| TotExp88-89 | less than 0% | 0 -- 1% | 1 -- 2% | 2 -- 3% | 3 -- 4% | 4 -- 5% | more than 5% | Total |
|---|---|---|---|---|---|---|---|---|
| less than $3,451 | 10.32% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.06% | 10.38% |
| $3,451 -- $3,615 | 5.63% | 1.30% | 1.66% | 0.49% | 0.00% | 0.38% | 0.00% | 9.46% |
| $3,615 -- $3,754 | 10.55% | 0.00% | 0.00% | 0.00% | 0.10% | 0.25% | 0.41% | 11.31% |
| $3,754 -- $3,934 | 9.26% | 0.41% | 0.19% | 0.18% | 0.00% | 0.42% | 0.00% | 10.46% |
| $3,934 -- $4,056 | 7.96% | 0.19% | 0.00% | 1.77% | 0.00% | 0.00% | 0.00% | 9.92% |
| $4,056 -- $4,284 | 10.07% | 0.27% | 0.26% | 0.00% | 0.00% | 0.00% | 0.00% | 10.59% |
| $4,284 -- $4,613 | 11.49% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 11.49% |
| $4,613 -- $5,674 | 8.05% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 8.05% |
| $5,770 (Fairfax County) | 12.51% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 12.51% |
| more than $5,770 | 5.82% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 5.82% |
| Total | 91.67% | 2.17% | 2.10% | 2.44% | 0.10% | 1.05% | 0.47% | 100.00% |

Table A-12. Wealth Neutrality: Regressing Personal Income per Pupil Against State Aid per Pupil and Total per Pupil Expenditures.

| Table 12: Measures of Wealth Neutrality | | |
|---|---|---|
| | Intercept | Slope |
| StAid88-89 | 257,388 | -88.47 |
| StAid89-90 | 250,916 | -78.09 |
| StAid91-92 | 226,053 | -61.44 |
| StAid92-93 | 226,061 | -57.82 |
| TotExp88-89 | -88,095 | 47.04 |
| TotExp89-90 | -92,000 | 43.39 |
| TotExp91-92 | -97,010 | 44.42 |
| TotExp92-93 | -97,264 | 43.07 |

# Appendix B
# Total Per Pupil Expenditures: State Aid Data Used for the Analysis

Tables B-1 and B-2 on the following pages show the data on total per pupil expenditures and state aid, respectively, used in this paper.

**The following labels are used in Table B-1:**

1988-1989 = total per pupil expenditures on education in FY 1988- 1989
r,1988-1989 = rank of total per pupil expenditures on education in FY 1988-1989
1989-1990 = total per pupil expenditures on education in FY 1989- 1990
r,1989-1990 = rank of total per pupil expenditures on education in FY 1989-1990
1991-1992 = total per pupil expenditures on education in FY 1991- 1992
r,1991-1992 = rank of total per pupil expenditures on education in FY 1991-1992
1992-1993 = total per pupil expenditures on education in FY 1992- 1993
r,1992-1993 = rank of total per pupil expenditures on education in FY 1992-1993

**The following labels are used in Table B-2.**

1988-1989 = total state aid for K-12 education in FY 1988-1989
r,1988-1989 = rank of total state aid for education K-12 in FY 1988-1989
1989-1990 = total state aid for K-12 education in FY 1989-1990
r,1989-1990 = rank of total state aid for education K-12 in FY 1989- 1990
1991-1992 = total state aid for K-12 education in FY 1991-1992
r,1991-1992 = rank of total state aid for education K-12 in FY 1991-1992
1992-1993 = total state aid for K-12 education in FY 1992-1993
r,1992-1993 = rank of total state aid for education K-12 in FY 1992-1993

Table B-1 is arranged in order of 1992-1993 total expenditure ranking (far right-hand column), from lowest to highest lowest total expenditures. Table B-2 is arranged with the localities, not the rankings, in the same order as Table B-1.

| Table B-1 | 1988-1989 | r,1988-1989 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| South Boston City | 3390.00 | 2.00 | 3798.90 | 5.00 | 3644.87 | 1.00 | 3814.15 | 1.00 |
| Powhatan County | 3420.00 | 7.00 | 3838.61 | 11.00 | 3782.53 | 6.00 | 3824.29 | 2.00 |
| Spotsylvania County | 3456.00 | 11.00 | 3922.23 | 23.00 | 3663.99 | 2.00 | 3825.28 | 3.00 |
| Poquoson City | 3326.00 | 1.00 | 3712.18 | 2.00 | 3693.91 | 3.00 | 3853.17 | 4.00 |
| Pittsylvania County | 3591.00 | 26.00 | 4014.51 | 30.00 | 3706.30 | 4.00 | 3884.04 | 5.00 |
| Franklin County | 3451.00 | 10.00 | 3890.72 | 18.00 | 3801.29 | 7.00 | 3891.75 | 6.00 |
| Lancaster County | 3575.00 | 23.00 | 4019.91 | 31.00 | 3854.44 | 12.00 | 3913.79 | 7.00 |
| Campbell County | 3471.00 | 12.00 | 3889.36 | 17.00 | 3850.44 | 11.00 | 3947.51 | 8.00 |
| Frederick County | 3671.00 | 36.00 | 4035.06 | 32.00 | 4017.28 | 22.00 | 4005.29 | 9.00 |
| Tazewell County | 3415.00 | 4.00 | 3798.59 | 4.00 | 3840.64 | 10.00 | 4021.87 | 10.00 |
| Page County | 3447.00 | 9.00 | 3701.13 | 1.00 | 3963.96 | 15.00 | 4022.79 | 11.00 |
| Virginia Beach City | 3442.00 | 8.00 | 3867.77 | 14.00 | 3763.51 | 5.00 | 4039.96 | 12.00 |
| Smyth County | 3419.00 | 6.00 | 3835.51 | 10.00 | 3936.79 | 13.00 | 4042.99 | 13.00 |
| Appomattox County | 3406.00 | 3.00 | 3754.77 | 3.00 | 3840.48 | 9.00 | 4043.15 | 14.00 |
| Northumberland County | 3849.00 | 59.00 | 4319.96 | 64.00 | 4124.82 | 36.00 | 4105.66 | 15.00 |
| Pulaski County | 3602.00 | 27.00 | 4150.46 | 44.00 | 3999.26 | 19.00 | 4105.83 | 16.00 |
| Washington County | 3507.00 | 19.00 | 3819.37 | 7.00 | 3991.51 | 18.00 | 4117.83 | 17.00 |
| Lexington City | 3718.00 | 40.00 | 3999.31 | 29.00 | 4188.53 | 46.00 | 4121.35 | 18.00 |
| Amelia County | 3490.00 | 17.00 | 3880.79 | 15.00 | 3947.16 | 14.00 | 4122.54 | 19.00 |
| Hanover County | 3736.00 | 43.00 | 4108.74 | 39.00 | 4001.25 | 20.00 | 4130.63 | 20.00 |
| Stafford County | 3804.00 | 53.00 | 4334.25 | 66.00 | 4167.07 | 43.00 | 4174.18 | 21.00 |
| Chesterfield County | 3754.00 | 46.00 | 4192.55 | 52.00 | 3990.52 | 17.00 | 4177.37 | 22.00 |
| Bedford County | 3619.00 | 32.00 | 4231.94 | 56.00 | 4059.21 | 30.00 | 4186.62 | 23.00 |

| Table B-1 | 1988-1989 | r,1988-1989 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Floyd County | 3611.00 | 29.00 | 4063.25 | 36.00 | 4044.31 | 29.00 | 4193.44 | 24.00 |
| Russell County | 3479.00 | 15.00 | 3883.93 | 16.00 | 4028.15 | 28.00 | 4199.19 | 25.00 |
| Richmond County | 3471.00 | 13.00 | 3805.03 | 6.00 | 3839.13 | 8.00 | 4204.05 | 26.00 |
| Nottoway County | 3487.00 | 16.00 | 3945.31 | 25.00 | 4020.93 | 23.00 | 4217.84 | 27.00 |
| Gloucester County | 3502.00 | 18.00 | 3912.75 | 20.00 | 4021.61 | 24.00 | 4225.43 | 28.00 |
| Botetourt County | 3602.00 | 28.00 | 3989.81 | 28.00 | 4027.70 | 27.00 | 4226.08 | 29.00 |
| Warren County | 3800.00 | 52.00 | 4041.36 | 33.00 | 4167.23 | 44.00 | 4228.69 | 30.00 |
| Amherst County | 3622.00 | 33.00 | 4052.75 | 35.00 | 4145.99 | 40.00 | 4239.04 | 31.00 |
| York County | 3807.00 | 54.00 | 4230.17 | 55.00 | 4110.06 | 32.00 | 4246.92 | 32.00 |
| Fluvanna County | 3538.00 | 20.00 | 3841.61 | 12.00 | 4147.07 | 41.00 | 4248.88 | 33.00 |
| Cumberland County | 3563.00 | 22.00 | 4176.81 | 48.00 | 4021.93 | 25.00 | 4249.39 | 34.00 |
| Prince Edward County | 3590.00 | 25.00 | 3834.93 | 9.00 | 4023.37 | 26.00 | 4251.90 | 35.00 |
| Mecklenburg County | 3473.00 | 14.00 | 3823.35 | 8.00 | 4081.01 | 31.00 | 4255.53 | 36.00 |
| Rappahannock County | 4202.00 | 96.00 | 4650.48 | 97.00 | 4306.86 | 60.00 | 4255.63 | 37.00 |
| Patrick County | 3622.00 | 34.00 | 3963.61 | 26.00 | 4131.72 | 38.00 | 4259.09 | 38.00 |
| Craig County | 3725.00 | 41.00 | 3968.67 | 27.00 | 4113.19 | 34.00 | 4265.10 | 39.00 |
| Mathews County | 3774.00 | 49.00 | 4142.28 | 43.00 | 4209.24 | 48.00 | 4272.98 | 40.00 |
| Danville City | 3703.00 | 38.00 | 4087.71 | 38.00 | 4149.38 | 42.00 | 4274.15 | 41.00 |
| Colonial Beach | 3417.00 | 5.00 | 3912.23 | 19.00 | 3982.33 | 16.00 | 4290.90 | 42.00 |
| Henry County | 3759.00 | 47.00 | 4163.96 | 46.00 | 4119.91 | 35.00 | 4292.13 | 43.00 |
| Culpeper County | 3812.00 | 55.00 | 4440.05 | 78.00 | 4188.36 | 45.00 | 4295.14 | 44.00 |
| Buchanan County | 3611.00 | 30.00 | 4264.86 | 59.00 | 4112.35 | 33.00 | 4315.08 | 45.00 |
| Halifax County | 3615.00 | 31.00 | 3920.65 | 22.00 | 4143.51 | 39.00 | 4318.11 | 46.00 |

| Table B-1 | 1988-1989 | r,1988-1989 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Rockingham County | 3887.00 | 65.00 | 4622.12 | 95.00 | 4300.42 | 59.00 | 4325.83 | 47.00 |
| Caroline County | 3865.00 | 62.00 | 4229.54 | 54.00 | 4331.46 | 63.00 | 4337.28 | 48.00 |
| Lunenburg County | 3587.00 | 24.00 | 3940.22 | 24.00 | 4131.03 | 37.00 | 4339.79 | 49.00 |
| Fauquier County | 4232.00 | 99.00 | 4834.25 | 106.00 | 4388.01 | 69.00 | 4342.50 | 50.00 |
| Wise County | 3698.00 | 37.00 | 4141.21 | 42.00 | 4224.12 | 50.00 | 4358.63 | 51.00 |
| Augusta County | 3877.00 | 64.00 | 4156.18 | 45.00 | 4212.75 | 49.00 | 4367.05 | 52.00 |
| Carroll County | 3787.00 | 50.00 | 4129.38 | 40.00 | 4295.28 | 54.00 | 4386.89 | 53.00 |
| Louisa County | 3875.00 | 63.00 | 4261.90 | 58.00 | 4002.91 | 21.00 | 4392.41 | 54.00 |
| Northampton County | 3968.00 | 76.00 | 4318.47 | 63.00 | 4198.30 | 47.00 | 4395.77 | 55.00 |
| King George County | 3912.00 | 69.00 | 4360.90 | 71.00 | 4370.96 | 68.00 | 4405.98 | 56.00 |
| Wythe County | 3747.00 | 44.00 | 3918.74 | 21.00 | 4274.67 | 53.00 | 4407.33 | 57.00 |
| Scott County | 3562.00 | 21.00 | 4048.83 | 34.00 | 4296.25 | 56.00 | 4459.14 | 58.00 |
| Chesapeake City | 3947.00 | 73.00 | 4426.26 | 76.00 | 4351.14 | 64.00 | 4493.34 | 59.00 |
| Franklin City | 3790.00 | 51.00 | 4184.91 | 49.00 | 4321.99 | 62.00 | 4495.91 | 60.00 |
| Greensville County | 3906.00 | 68.00 | 4353.63 | 70.00 | 4310.80 | 61.00 | 4497.57 | 61.00 |
| Waynesboro City | 4008.00 | 79.00 | 4527.11 | 87.00 | 4353.72 | 65.00 | 4502.44 | 62.00 |
| Orange County | 3934.00 | 71.00 | 4327.96 | 65.00 | 4296.01 | 55.00 | 4514.05 | 63.00 |
| Grayson County | 3913.00 | 70.00 | 4279.56 | 61.00 | 4268.73 | 52.00 | 4525.30 | 64.00 |
| Giles County | 3774.00 | 48.00 | 4255.96 | 57.00 | 4402.12 | 70.00 | 4526.76 | 65.00 |
| New Kent County | 3936.00 | 72.00 | 4454.40 | 80.00 | 4448.00 | 74.00 | 4555.21 | 66.00 |
| Middlesex County | 3965.00 | 75.00 | 4345.42 | 69.00 | 4367.98 | 67.00 | 4559.04 | 67.00 |
| Greene County | 4011.00 | 80.00 | 4342.28 | 67.00 | 4464.94 | 76.00 | 4559.46 | 68.00 |
| Salem City | 4093.00 | 88.00 | 4664.18 | 100.00 | 4426.51 | 72.00 | 4563.39 | 69.00 |

| Table B-1 | 1988-1989 | r,1988-1989 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Prince George County | 4131.00 | 93.00 | 4455.52 | 82.00 | 4558.11 | 88.00 | 4566.30 | 70.00 |
| Goochland County | 4284.00 | 105.00 | 4806.10 | 104.00 | 4573.03 | 89.00 | 4567.77 | 71.00 |
| Manassas Park City | 4102.00 | 89.00 | 4531.78 | 88.00 | 4513.79 | 84.00 | 4586.64 | 72.00 |
| Galax City | 3652.00 | 35.00 | 3847.43 | 13.00 | 4299.79 | 58.00 | 4594.32 | 73.00 |
| Dinwiddie County | 3864.00 | 61.00 | 4268.84 | 60.00 | 4460.67 | 75.00 | 4606.52 | 74.00 |
| Buena Vista City | 3734.00 | 42.00 | 4191.87 | 51.00 | 4425.28 | 71.00 | 4607.00 | 75.00 |
| Shenandoah County | 4056.00 | 86.00 | 4486.78 | 84.00 | 4501.82 | 83.00 | 4619.58 | 76.00 |
| Montgomery County | 4078.00 | 87.00 | 4478.91 | 83.00 | 4466.08 | 77.00 | 4624.90 | 77.00 |
| Lynchburg City | 4002.00 | 78.00 | 4548.16 | 90.00 | 4468.53 | 78.00 | 4626.25 | 78.00 |
| Suffolk City | 4017.00 | 82.00 | 4421.64 | 75.00 | 4469.42 | 79.00 | 4632.63 | 79.00 |
| Alleghany County | 4051.00 | 85.00 | 4538.24 | 89.00 | 4477.85 | 81.00 | 4637.06 | 80.00 |
| Clarke County | 4234.00 | 100.00 | 4834.32 | 107.00 | 4615.43 | 92.00 | 4640.83 | 81.00 |
| Charlotte County | 3838.00 | 58.00 | 4174.28 | 47.00 | 4229.67 | 51.00 | 4641.51 | 82.00 |
| Brunswick County | 3713.00 | 39.00 | 4342.41 | 68.00 | 4298.54 | 57.00 | 4648.50 | 83.00 |
| Buckingham County | 3900.00 | 66.00 | 4076.37 | 37.00 | 4474.53 | 80.00 | 4649.06 | 84.00 |
| Norton City | 3823.00 | 56.00 | 4840.56 | 108.00 | 4434.18 | 73.00 | 4671.17 | 85.00 |
| Accomack County | 4037.00 | 83.00 | 4525.16 | 86.00 | 4539.13 | 85.00 | 4684.99 | 86.00 |
| King William County | 3900.00 | 67.00 | 4390.17 | 73.00 | 4499.79 | 82.00 | 4685.30 | 87.00 |
| Rockbridge County | 3972.00 | 77.00 | 4287.22 | 62.00 | 4547.97 | 87.00 | 4695.80 | 88.00 |
| Radford City | 4218.00 | 97.00 | 4658.22 | 99.00 | 4734.45 | 105.00 | 4715.55 | 89.00 |
| Madison County | 3955.00 | 74.00 | 4228.67 | 53.00 | 4543.39 | 86.00 | 4719.08 | 90.00 |
| Bland County | 3852.00 | 60.00 | 4455.07 | 81.00 | 4361.08 | 66.00 | 4726.45 | 91.00 |
| Staunton City | 3749.00 | 45.00 | 4137.00 | 41.00 | 4689.23 | 101.00 | 4735.78 | 92.00 |

| Table B-1 | 1988-1989 | r,1988-1989 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Westmoreland County | 4261.00 | 104.00 | 4652.80 | 98.00 | 4687.16 | 98.00 | 4740.29 | 93.00 |
| Isle of Wight County | 4015.00 | 81.00 | 4551.28 | 91.00 | 4648.23 | 96.00 | 4748.39 | 94.00 |
| Lee County | 3838.00 | 57.00 | 4428.08 | 77.00 | 4591.37 | 91.00 | 4767.23 | 95.00 |
| Hampton City | 4190.00 | 95.00 | 4186.20 | 50.00 | 4657.72 | 97.00 | 4835.90 | 96.00 |
| Martinsville City | 4245.00 | 101.00 | 4518.72 | 85.00 | 4690.56 | 102.00 | 4838.98 | 97.00 |
| Williamsburg City | 4381.00 | 107.00 | 4931.84 | 111.00 | 4714.81 | 103.00 | 4848.09 | 98.00 |
| Nelson County | 4122.00 | 92.00 | 4451.97 | 79.00 | 4633.93 | 93.00 | 4848.50 | 99.00 |
| Essex County | 4118.00 | 91.00 | 4386.03 | 72.00 | 4582.59 | 90.00 | 4868.24 | 100.00 |
| Manassas City | 4387.00 | 108.00 | 5007.02 | 114.00 | 4687.55 | 100.00 | 4869.21 | 101.00 |
| Henrico County | 4377.00 | 106.00 | 4872.98 | 110.00 | 4687.29 | 99.00 | 4869.41 | 102.00 |
| Newport News City | 4259.00 | 103.00 | 4643.93 | 96.00 | 4715.86 | 104.00 | 4931.24 | 103.00 |
| Portsmouth City | 4047.00 | 84.00 | 4578.19 | 93.00 | 4641.74 | 94.00 | 4934.96 | 104.00 |
| Southampton County | 4103.00 | 90.00 | 4420.51 | 74.00 | 4643.79 | 95.00 | 4935.44 | 105.00 |
| Harrisonburg City | 4488.00 | 111.00 | 5198.35 | 117.00 | 4758.18 | 107.00 | 4962.21 | 106.00 |
| Petersburg City | 4255.00 | 102.00 | 4608.32 | 94.00 | 4756.74 | 106.00 | 5002.52 | 107.00 |
| Dickenson County | 4223.00 | 98.00 | 4572.50 | 92.00 | 4808.22 | 108.00 | 5003.24 | 108.00 |
| Prince William County | 4613.00 | 117.00 | 5140.34 | 116.00 | 4880.48 | 111.00 | 5008.88 | 109.00 |
| Sussex County | 4492.00 | 112.00 | 4742.12 | 102.00 | 4900.59 | 112.00 | 5018.53 | 110.00 |
| Loudoun County | 5107.00 | 124.00 | 5568.00 | 124.00 | 5066.32 | 115.00 | 5023.21 | 111.00 |
| Bristol City | 4160.00 | 94.00 | 4700.44 | 101.00 | 4833.90 | 110.00 | 5055.37 | 112.00 |
| Roanoke County | 4508.00 | 113.00 | 4808.23 | 105.00 | 4825.25 | 109.00 | 5065.79 | 113.00 |
| Colonial Heights City | 4593.00 | 116.00 | 5207.43 | 118.00 | 5073.85 | 117.00 | 5108.93 | 114.00 |
| Hopewell City | 4468.00 | 110.00 | 4937.63 | 112.00 | 5046.69 | 114.00 | 5158.65 | 115.00 |

| Table B-1 | 1988-1989 | r,1988-1989 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Covington City | 4417.00 | 109.00 | 4870.77 | 109.00 | 5035.73 | 113.00 | 5218.21 | 116.00 |
| Roanoke City | 4642.00 | 118.00 | 5268.62 | 121.00 | 5072.06 | 116.00 | 5327.94 | 117.00 |
| Highland County | 4511.00 | 114.00 | 4984.27 | 113.00 | 5121.34 | 118.00 | 5335.17 | 118.00 |
| Fredericksburg City | 4787.00 | 119.00 | 5386.15 | 123.00 | 5228.98 | 120.00 | 5365.44 | 119.00 |
| King and Queen County | 4548.00 | 115.00 | 4793.06 | 103.00 | 5185.51 | 119.00 | 5403.26 | 120.00 |
| Albemarle County | 4911.00 | 122.00 | 5238.61 | 120.00 | 5276.83 | 121.00 | 5421.79 | 121.00 |
| Winchester City | 5158.00 | 125.00 | 5916.94 | 125.00 | 5539.09 | 123.00 | 5536.70 | 122.00 |
| Norfolk City | 4861.00 | 121.00 | 5225.88 | 119.00 | 5412.21 | 122.00 | 5627.06 | 123.00 |
| West Point | 4996.00 | 123.00 | 5353.29 | 122.00 | 5564.13 | 124.00 | 5640.72 | 124.00 |
| Charles City County | 4851.00 | 120.00 | 5078.74 | 115.00 | 5650.34 | 125.00 | 5731.95 | 125.00 |
| Surry County | 5674.00 | 126.00 | 6290.20 | 126.00 | 5925.38 | 126.00 | 5992.25 | 126.00 |
| Fairfax County | 5770.00 | 127.00 | 6364.68 | 127.00 | 6018.00 | 127.00 | 6040.88 | 127.00 |
| Fairfax City | 6190.00 | 130.00 | 6869.46 | 129.00 | 6397.80 | 128.00 | 6412.74 | 128.00 |
| Bath County | 6131.00 | 129.00 | 6935.80 | 130.00 | 6474.04 | 130.00 | 6530.68 | 129.00 |
| Richmond City | 5788.00 | 128.00 | 6649.16 | 128.00 | 6410.60 | 129.00 | 6624.47 | 130.00 |
| Falls Church City | 7241.00 | 132.00 | 8369.04 | 133.00 | 7623.72 | 131.00 | 7674.34 | 131.00 |
| Charlottesville City | 6961.00 | 131.00 | 7951.71 | 131.00 | 7938.50 | 132.00 | 8135.70 | 132.00 |
| Arlington County | 7668.00 | 133.00 | 8371.48 | 134.00 | 8090.20 | 133.00 | 8154.50 | 133.00 |
| Alexandria City | 7820.00 | 134.00 | 8160.49 | 132.00 | 8181.76 | 134.00 | 8214.79 | 134.00 |

| Table B-2 | 1988-1989 | r,1989-1990 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| South Boston City | 1976.00 | 103.00 | 2123.24 | 97.00 | 2143.90 | 76.00 | 2281.52 | 76.00 |
| Powhatan County | 1774.00 | 71.00 | 1903.45 | 68.00 | 2024.52 | 61.00 | 2043.75 | 51.00 |
| Spotsylvania County | 1654.00 | 47.00 | 1789.84 | 45.00 | 1754.99 | 30.00 | 1910.93 | 35.00 |
| Poquoson City | 1753.00 | 67.00 | 1849.85 | 60.00 | 1964.38 | 53.00 | 2085.86 | 57.00 |
| Pittsylvania County | 2315.00 | 130.00 | 2485.64 | 128.00 | 2288.83 | 95.00 | 2436.48 | 100.00 |
| Franklin County | 1851.00 | 82.00 | 1927.48 | 72.00 | 2059.71 | 66.00 | 2118.92 | 58.00 |
| Lancaster County | 1227.00 | 13.00 | 1315.70 | 13.00 | 1223.33 | 13.00 | 1262.03 | 12.00 |
| Campbell County | 1875.00 | 87.00 | 2052.87 | 90.00 | 2147.36 | 77.00 | 2218.23 | 69.00 |
| Frederick County | 1665.00 | 50.00 | 1790.92 | 46.00 | 1853.60 | 41.00 | 1838.05 | 28.00 |
| Tazewell County | 2001.00 | 109.00 | 2137.52 | 101.00 | 2302.95 | 99.00 | 2445.45 | 102.00 |
| Page County | 1890.00 | 90.00 | 2051.67 | 89.00 | 2305.67 | 101.00 | 2345.37 | 85.00 |
| Virginia Beach City | 1529.00 | 29.00 | 1632.45 | 29.00 | 1677.29 | 29.00 | 1941.09 | 38.00 |
| Smyth County | 2076.00 | 125.00 | 2251.56 | 120.00 | 2493.26 | 126.00 | 2572.75 | 114.00 |
| Appomattox County | 1952.00 | 97.00 | 2109.86 | 94.00 | 2289.88 | 97.00 | 2449.46 | 103.00 |
| Northumberland County | 1352.00 | 18.00 | 1484.20 | 22.00 | 1436.14 | 20.00 | 1373.23 | 15.00 |
| Pulaski County | 2000.00 | 108.00 | 2191.14 | 109.00 | 2257.51 | 91.00 | 2315.76 | 80.00 |
| Washington County | 1912.00 | 91.00 | 2000.89 | 80.00 | 2219.54 | 86.00 | 2309.73 | 78.00 |
| Lexington City | 1627.00 | 44.00 | 1764.21 | 41.00 | 1935.52 | 52.00 | 1871.41 | 32.00 |
| Amelia County | 1864.00 | 85.00 | 2048.12 | 87.00 | 2238.18 | 88.00 | 2404.49 | 98.00 |
| Hanover County | 1438.00 | 24.00 | 1539.47 | 26.00 | 1538.69 | 23.00 | 1663.36 | 23.00 |
| Stafford County | 1789.00 | 75.00 | 1893.77 | 66.00 | 1978.27 | 55.00 | 1977.03 | 40.00 |
| Chesterfield County | 1633.00 | 45.00 | 1670.74 | 32.00 | 1676.69 | 28.00 | 1856.73 | 30.00 |
| Bedford County | 1677.00 | 53.00 | 1802.48 | 48.00 | 1978.05 | 54.00 | 2069.59 | 54.00 |

| Table B-2 | 1988-1989 | r,1989-1990 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Floyd County | 2049.00 | 119.00 | 2239.73 | 117.00 | 2388.82 | 113.00 | 2525.31 | 109.00 |
| Russell County | 2057.00 | 123.00 | 2226.21 | 113.00 | 2446.26 | 117.00 | 2591.51 | 117.00 |
| Richmond County | 1674.00 | 51.00 | 1802.79 | 49.00 | 1909.62 | 47.00 | 2249.79 | 72.00 |
| Nottoway County | 1956.00 | 100.00 | 2137.51 | 100.00 | 2390.53 | 114.00 | 2545.35 | 112.00 |
| Gloucester County | 1571.00 | 35.00 | 1678.79 | 33.00 | 1924.52 | 49.00 | 2120.66 | 59.00 |
| Botetourt County | 1793.00 | 76.00 | 1944.13 | 74.00 | 2079.60 | 68.00 | 2259.87 | 74.00 |
| Warren County | 1611.00 | 38.00 | 1780.34 | 43.00 | 1866.14 | 43.00 | 1913.77 | 36.00 |
| Amherst County | 1923.00 | 93.00 | 2148.51 | 104.00 | 2306.85 | 102.00 | 2373.65 | 87.00 |
| York County | 1704.00 | 58.00 | 1803.63 | 50.00 | 1818.69 | 36.00 | 1935.73 | 37.00 |
| Fluvanna County | 1676.00 | 52.00 | 1835.72 | 56.00 | 2131.00 | 75.00 | 2217.95 | 68.00 |
| Cumberland County | 1985.00 | 105.00 | 2050.89 | 88.00 | 2153.21 | 78.00 | 2323.83 | 82.00 |
| Prince Edward County | 1846.00 | 81.00 | 2039.28 | 85.00 | 2214.62 | 83.00 | 2420.28 | 99.00 |
| Mecklenburg County | 1846.00 | 80.00 | 2023.77 | 84.00 | 2292.81 | 98.00 | 2440.82 | 101.00 |
| Rappahannock County | 1432.00 | 23.00 | 1526.34 | 23.00 | 1253.38 | 14.00 | 1161.92 | 10.00 |
| Patrick County | 1928.00 | 94.00 | 2094.21 | 93.00 | 2304.02 | 100.00 | 2400.11 | 94.00 |
| Craig County | 2005.00 | 110.00 | 2141.75 | 103.00 | 2218.32 | 85.00 | 2337.95 | 83.00 |
| Mathews County | 1454.00 | 27.00 | 1594.21 | 27.00 | 1792.49 | 34.00 | 1861.69 | 31.00 |
| Danville City | 1745.00 | 64.00 | 1840.93 | 58.00 | 2014.66 | 58.00 | 2121.93 | 60.00 |
| Colonial Beach | 1864.00 | 86.00 | 2094.20 | 92.00 | 2287.32 | 94.00 | 2581.29 | 115.00 |
| Henry County | 1879.00 | 89.00 | 2015.73 | 82.00 | 2108.92 | 73.00 | 2254.35 | 73.00 |
| Culpeper County | 1588.00 | 37.00 | 1743.25 | 37.00 | 1787.42 | 33.00 | 1885.23 | 34.00 |
| Buchanan County | 2014.00 | 112.00 | 2238.01 | 116.00 | 2386.75 | 112.00 | 2544.56 | 111.00 |
| Halifax County | 2017.00 | 113.00 | 2210.73 | 111.00 | 2449.52 | 118.00 | 2594.20 | 118.00 |

| Table B-2 | 1988-1989 | r,1989-1990 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Rockingham County | 1763.00 | 68.00 | 1942.68 | 73.00 | 2015.04 | 59.00 | 2014.73 | 43.00 |
| Caroline County | 1853.00 | 83.00 | 2017.00 | 83.00 | 2244.61 | 89.00 | 2241.59 | 71.00 |
| Lunenburg County | 2045.00 | 118.00 | 2190.28 | 108.00 | 2485.48 | 124.00 | 2689.78 | 126.00 |
| Fauquier County | 1185.00 | 10.00 | 1214.77 | 9.00 | 1070.49 | 10.00 | 1004.36 | 9.00 |
| Wise County | 2038.00 | 116.00 | 2247.73 | 119.00 | 2465.66 | 120.00 | 2584.15 | 116.00 |
| Augusta County | 1913.00 | 92.00 | 2119.51 | 96.00 | 2119.26 | 74.00 | 2265.73 | 75.00 |
| Carroll County | 2353.00 | 131.00 | 2530.11 | 129.00 | 2782.65 | 131.00 | 2840.16 | 131.00 |
| Louisa County | 910.00 | 1.00 | 927.32 | 2.00 | 793.01 | 6.00 | 1164.62 | 11.00 |
| Northampton County | 2146.00 | 126.00 | 2384.56 | 126.00 | 2326.87 | 107.00 | 2512.54 | 108.00 |
| King George County | 1750.00 | 66.00 | 1861.11 | 61.00 | 2048.51 | 64.00 | 2074.47 | 55.00 |
| Wythe County | 2022.00 | 114.00 | 2207.15 | 110.00 | 2462.65 | 119.00 | 2564.00 | 113.00 |
| Scott County | 2266.00 | 129.00 | 2534.69 | 130.00 | 2913.75 | 133.00 | 3041.57 | 133.00 |
| Chesapeake City | 1721.00 | 61.00 | 1838.98 | 57.00 | 1914.00 | 48.00 | 2054.17 | 52.00 |
| Franklin City | 1952.00 | 98.00 | 2131.80 | 98.00 | 2314.53 | 103.00 | 2465.66 | 105.00 |
| Greensville County | 2219.00 | 127.00 | 2393.46 | 127.00 | 2484.54 | 123.00 | 2641.78 | 124.00 |
| Waynesboro City | 1439.00 | 25.00 | 1475.95 | 20.00 | 1596.89 | 24.00 | 1705.10 | 25.00 |
| Orange County | 1619.00 | 41.00 | 1762.43 | 39.00 | 1835.80 | 38.00 | 2043.10 | 50.00 |
| Grayson County | 2454.00 | 132.00 | 2726.13 | 133.00 | 2625.20 | 129.00 | 2819.36 | 130.00 |
| Giles County | 1934.00 | 95.00 | 2160.28 | 106.00 | 2421.74 | 115.00 | 2499.25 | 106.00 |
| New Kent County | 1660.00 | 49.00 | 1828.58 | 55.00 | 2044.00 | 63.00 | 2131.60 | 61.00 |
| Middlesex County | 1274.00 | 15.00 | 1390.70 | 16.00 | 1485.19 | 22.00 | 1682.20 | 24.00 |
| Greene County | 1998.00 | 107.00 | 2216.65 | 112.00 | 2332.33 | 108.00 | 2392.72 | 93.00 |
| Salem City | 1533.00 | 31.00 | 1646.09 | 30.00 | 1671.94 | 27.00 | 1800.16 | 26.00 |

| Table B-2 | 1988-1989 | r,1989-1990 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Prince George County | 2068.00 | 124.00 | 2265.49 | 123.00 | 2380.47 | 111.00 | 2385.69 | 91.00 |
| Goochland County | 1355.00 | 19.00 | 1422.66 | 18.00 | 1412.56 | 18.00 | 1437.55 | 16.00 |
| Manassas Park City | 2459.00 | 133.00 | 2659.34 | 132.00 | 2772.26 | 130.00 | 2817.32 | 129.00 |
| Galax City | 1543.00 | 32.00 | 1793.31 | 47.00 | 2030.71 | 62.00 | 2282.31 | 77.00 |
| Dinwiddie County | 2009.00 | 111.00 | 2235.97 | 115.00 | 2489.93 | 125.00 | 2624.69 | 122.00 |
| Buena Vista City | 2055.00 | 121.00 | 2309.13 | 125.00 | 2615.88 | 128.00 | 2750.68 | 127.00 |
| Shenandoah County | 1624.00 | 42.00 | 1764.21 | 42.00 | 1864.92 | 42.00 | 1967.64 | 39.00 |
| Montgomery County | 1723.00 | 62.00 | 1843.41 | 59.00 | 1903.57 | 46.00 | 2032.53 | 46.00 |
| Lynchburg City | 1585.00 | 36.00 | 1723.26 | 36.00 | 1889.10 | 45.00 | 2027.63 | 45.00 |
| Suffolk City | 1764.00 | 69.00 | 1924.58 | 71.00 | 2055.51 | 65.00 | 2213.52 | 66.00 |
| Alleghany County | 2044.00 | 117.00 | 2254.68 | 121.00 | 2314.73 | 104.00 | 2457.78 | 104.00 |
| Clarke County | 1468.00 | 28.00 | 1607.50 | 28.00 | 1610.62 | 25.00 | 1597.96 | 22.00 |
| Charlotte County | 2052.00 | 120.00 | 2270.84 | 124.00 | 2316.06 | 106.00 | 2671.88 | 125.00 |
| Brunswick County | 1992.00 | 106.00 | 2228.79 | 114.00 | 2468.69 | 122.00 | 2777.28 | 128.00 |
| Buckingham County | 1972.00 | 102.00 | 2134.03 | 99.00 | 2443.01 | 116.00 | 2604.57 | 119.00 |
| Norton City | 1781.00 | 74.00 | 1951.50 | 76.00 | 2215.25 | 84.00 | 2380.91 | 89.00 |
| Accomack County | 1938.00 | 96.00 | 2154.58 | 105.00 | 2256.69 | 90.00 | 2385.03 | 90.00 |
| King William County | 1777.00 | 72.00 | 1912.43 | 70.00 | 2213.54 | 82.00 | 2402.10 | 96.00 |
| Rockbridge County | 1764.00 | 70.00 | 1971.32 | 77.00 | 2165.94 | 79.00 | 2318.87 | 81.00 |
| Radford City | 1781.00 | 73.00 | 1948.73 | 75.00 | 2102.31 | 72.00 | 2042.82 | 49.00 |
| Madison County | 1642.00 | 46.00 | 1812.16 | 51.00 | 2060.80 | 67.00 | 2217.56 | 67.00 |
| Bland County | 2743.00 | 134.00 | 2964.96 | 134.00 | 3166.51 | 134.00 | 3499.59 | 134.00 |
| Staunton City | 1532.00 | 30.00 | 1656.19 | 31.00 | 2289.36 | 96.00 | 2310.15 | 79.00 |

| Table B-2 | 1988-1989 | r,1989-1990 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Westmoreland County | 1710.00 | 59.00 | 1910.05 | 69.00 | 2007.91 | 57.00 | 2057.23 | 53.00 |
| Isle of Wight County | 1617.00 | 40.00 | 1813.65 | 52.00 | 2093.31 | 70.00 | 2186.32 | 63.00 |
| Lee County | 2260.00 | 128.00 | 2538.14 | 131.00 | 2877.54 | 132.00 | 3004.97 | 132.00 |
| Hampton City | 1655.00 | 48.00 | 1786.69 | 44.00 | 1873.75 | 44.00 | 2025.09 | 44.00 |
| Martinsville City | 1703.00 | 57.00 | 1823.63 | 54.00 | 1927.47 | 50.00 | 2076.88 | 56.00 |
| Williamsburg City | 1284.00 | 16.00 | 1258.80 | 11.00 | 1326.82 | 16.00 | 1452.32 | 18.00 |
| Nelson County | 1568.00 | 34.00 | 1713.23 | 35.00 | 1850.22 | 40.00 | 2033.87 | 47.00 |
| Essex County | 1626.00 | 43.00 | 1819.79 | 53.00 | 1934.39 | 51.00 | 2180.47 | 62.00 |
| Manassas City | 1251.00 | 14.00 | 1339.82 | 15.00 | 1207.81 | 12.00 | 1369.86 | 14.00 |
| Henrico County | 1349.00 | 17.00 | 1450.63 | 19.00 | 1406.78 | 17.00 | 1574.31 | 20.00 |
| Newport News City | 1734.00 | 63.00 | 1879.09 | 65.00 | 1989.54 | 56.00 | 2191.63 | 64.00 |
| Portsmouth City | 1954.00 | 99.00 | 2140.97 | 102.00 | 2344.55 | 109.00 | 2616.27 | 120.00 |
| Southampton County | 1703.00 | 56.00 | 1894.20 | 67.00 | 2085.52 | 69.00 | 2376.75 | 88.00 |
| Harrisonburg City | 1188.00 | 11.00 | 1286.18 | 12.00 | 1161.69 | 11.00 | 1349.32 | 13.00 |
| Petersburg City | 1845.00 | 79.00 | 2014.67 | 81.00 | 2195.03 | 80.00 | 2401.11 | 95.00 |
| Dickenson County | 2032.00 | 115.00 | 2246.54 | 118.00 | 2467.95 | 121.00 | 2639.16 | 123.00 |
| Prince William County | 1749.00 | 65.00 | 1863.42 | 62.00 | 1773.25 | 32.00 | 1883.37 | 33.00 |
| Sussex County | 1815.00 | 77.00 | 1998.50 | 79.00 | 2094.77 | 71.00 | 2201.55 | 65.00 |
| Loudoun County | 1194.00 | 12.00 | 1218.90 | 10.00 | 788.74 | 5.00 | 727.20 | 2.00 |
| Bristol City | 1700.00 | 55.00 | 1866.36 | 63.00 | 2209.68 | 81.00 | 2403.53 | 97.00 |
| Roanoke County | 1684.00 | 54.00 | 1758.64 | 38.00 | 1766.46 | 31.00 | 1991.10 | 42.00 |
| Colonial Heights City | 1616.00 | 39.00 | 1763.65 | 40.00 | 1836.33 | 39.00 | 1826.97 | 27.00 |
| Hopewell City | 1824.00 | 78.00 | 2040.02 | 86.00 | 2235.50 | 87.00 | 2338.26 | 84.00 |

| Table B-2 | 1988-1989 | r,1989-1990 | 1989-1990 | r,1989-1990 | 1991-1992 | r,1991-1992 | 1992-1993 | r,1992-1993 |
|---|---|---|---|---|---|---|---|---|
| Covington City | 1877.00 | 88.00 | 1994.52 | 78.00 | 2263.41 | 92.00 | 2386.29 | 92.00 |
| Roanoke City | 1547.00 | 33.00 | 1705.59 | 34.00 | 1829.66 | 37.00 | 2036.43 | 48.00 |
| Highland County | 1962.00 | 101.00 | 2110.57 | 95.00 | 2315.53 | 105.00 | 2505.03 | 107.00 |
| Fredericksburg City | 1165.00 | 9.00 | 1322.74 | 14.00 | 1299.78 | 15.00 | 1443.04 | 17.00 |
| King and Queen County | 1864.00 | 84.00 | 2053.38 | 91.00 | 2348.18 | 110.00 | 2540.90 | 110.00 |
| Albemarle County | 1379.00 | 21.00 | 1403.70 | 17.00 | 1434.56 | 19.00 | 1584.87 | 21.00 |
| Winchester City | 1443.00 | 26.00 | 1533.25 | 24.00 | 1475.88 | 21.00 | 1456.51 | 19.00 |
| Norfolk City | 1714.00 | 60.00 | 1872.58 | 64.00 | 2017.75 | 60.00 | 2221.55 | 70.00 |
| West Point | 2056.00 | 122.00 | 2255.26 | 122.00 | 2281.78 | 93.00 | 2350.99 | 86.00 |
| Charles City County | 1983.00 | 104.00 | 2167.07 | 107.00 | 2557.08 | 127.00 | 2620.12 | 121.00 |
| Surry County | 918.00 | 4.00 | 971.94 | 4.00 | 753.93 | 3.00 | 789.33 | 4.00 |
| Fairfax County | 1066.00 | 8.00 | 1086.47 | 6.00 | 864.00 | 9.00 | 856.15 | 7.00 |
| Fairfax City | 910.00 | 2.00 | 920.69 | 1.00 | 677.94 | 1.00 | 674.20 | 1.00 |
| Bath County | 990.00 | 6.00 | 1122.74 | 8.00 | 849.03 | 8.00 | 831.17 | 6.00 |
| Richmond City | 1401.00 | 22.00 | 1482.53 | 21.00 | 1666.16 | 26.00 | 1850.64 | 29.00 |
| Falls Church City | 934.00 | 5.00 | 1020.33 | 5.00 | 780.29 | 4.00 | 794.00 | 5.00 |
| Charlottesville City | 1358.00 | 20.00 | 1538.79 | 25.00 | 1799.63 | 35.00 | 1981.29 | 41.00 |
| Arlington County | 914.00 | 3.00 | 935.11 | 3.00 | 729.34 | 2.00 | 776.88 | 3.00 |
| Alexandria City | 1041.00 | 7.00 | 1112.66 | 7.00 | 840.43 | 7.00 | 858.90 | 8.00 |

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