



The Economic and Community Value of the Worcester County Public Schools

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Introduction

This report presents the findings of a comprehensive economic value study conducted by the Business, Economic, and Community Outreach Network (BEACON) of the Franklin P. Perdue School of Business at Salisbury University, in collaboration with the Eastern Shore of Maryland Educational Consortium (ESMEC). The study evaluates the economic and community impacts of the public-school systems (grades Pre-K through 12) in Worcester County for the 2023-24 budget year.

Worcester County Public Schools serves a diverse student body across 14 schools, WCPS boasts a dedicated staff of over 1,932 members. The per per-pupil expenditure for federal and State/local funds for Worcester County is \$1,067. Public education has a direct impact to the community, its economy, and the savings that could be incurred by the



county. Worcester County supports a total of 14 schools including: three high schools, one middle schools, six elementary schools, and four Other*¹. WCPS students attend at a rate of 91.9% and about 95% of high school students are promoted to the next grade level at year end.

Economic Impact of Worcester County Public Schools

Methodology

The economic impact of public-school systems on the Eastern Shore of Maryland was assessed using the IMPLAN software package, developed by Minnesota IMPLAN Group, Inc. This model, based on Input-Output (IO) theory (for which Wassily Leontief received the Nobel Prize in Economics in 1973), calculates total economic output and employment, including direct, indirect, and induced (ripple effect) impacts. The IMPLAN model incorporates local data from 2022, adjusted to 2024 values, and uses state and county-specific data. Its Social Accounting Matrices provide multipliers to estimate further economic and employment effects.

Economic and employment impacts are categorized into three types: direct, indirect, and induced:

* These may include special needs facilities, vocational and technical institutes, accelerated learning centers, and combination schools for grades of more than one core group.

- **Direct impacts** arise from initial county expenditures on employee salaries and payments to businesses directly serving the school system.
- **Indirect impacts** result from subsequent expenditures within the local economy, including payments to local suppliers who, in turn, pay their employees and contract with other local firms for goods and services.
- **Induced impacts** stem from the spending by employees of the county and its suppliers within the local consumer market, which supports additional jobs at local firms.

Each level of impact experiences "leakage," where money spent on external vendors or by employees who live outside the county and spend their salaries elsewhere does not contribute to the local economic circulation.

Economic and Employment Impacts from Eastern Shore of Maryland Operations

The economic impacts of spending by Worcester County encompass direct, indirect, and induced effects. Direct impacts arise from initial expenditures within the county, such as employee salaries and payments for local supplies and services. This spending generates a multiplier effect, where money circulates through the local economy, leading to further indirect and induced economic activity. The effects on both the economy and employment are assessed separately for the county's annual operating and capital budgets.

Economic Value of Degrees Awarded

Higher educational attainment correlates with greater economic value in the job market. Graduates of WCPS tend to have a higher lifetime earning potential compared to non-graduates. Additionally, enhancing academic achievement among WCPS students boosts their chances of earning a college degree. Consequently, the increased lifetime earnings of students from WCPS who graduate from college can be partly attributed to the education they received in this county.

Economic Development Impacts

WCPS boosts local wealth by enhancing its ability to attract and retain families with skilled or professional workers who contribute significantly to net wealth creation. The benefits of this include:

- Quality-of-Life measures that make school quality a key factor for parents when choosing where to live, thereby increasing local property values;

- Quality-of-Life considerations based on a "Sense of Well-Being" for parents who view high-quality public education as crucial for their children's successful transition from high school to higher education or the job market;
- Increases in property values linked to the presence of reputable local public schools;
- Enhancements in local business productivity stemming from quality K-12 education;
- Boosts in business, economic, workforce, and community development due to the increase in graduates from post-secondary institutions, which is facilitated by quality K-12 education.

Impact of the Worcester County Public School Operating Budget

The significance of this expenditure is magnified by the multiplier effect, which accounts for the re-spending of funds received from the school system within the local economy. The Social Accounting Matrix used in the model calculates the proportion of spending that remains within the county, estimating the percentage of each expenditure category that stays local.

Table 1 illustrates the estimated annual economic and employment impact of the WCPS operating budget for FY24. After accounting for leakage—spending that exits the county—the direct impact within WCPS is estimated at \$95.8 million. This spending generates additional economic activity, leading to an indirect impact of \$26.5 million and an induced impact of \$26.2 million, culminating in a total economic impact of \$148.4 million. In essence, for every dollar spent on operations by WCPS and retained locally, nearly \$1.55 in total economic activity is generated within the County.

The employment impacts on the local economy are substantial. Of the total 1,932 employees, approximately 1,453 (75%) reside in the county. The operational spending of the county additionally supports 138 indirect jobs and 165 induced jobs locally. Thus, every job within the public-school system correlates with a total of 1,756 jobs in the county, meaning each county job supports an additional 1.2 jobs in the local economy.

Table 1. Economic and Employment Impact of WCPS Operating Budget		
	Economic (\$ millions)	Employment
Direct Effect	\$95.75	1,453
Indirect Effect	\$26.45	138
Induced Effect	\$26.16	165
Total Effect	\$148.37	1,756

Despite a significant portion of the economic impact remaining within the county, approximately 70% of it leaks out, benefiting surrounding counties in the state as well. This leakage includes the expenditures of county employees who live both inside and outside the

county. The overall impact on the county extends beyond the Eastern Shore of Maryland alone. Specifically, the total economic impact of WCPS in the ESMEC region amounts to approximately \$177.56 million, while the total employment impact in the ESMEC region is 2,095 jobs.

Impact of the Worcester County Public School Capital Budget

The Eastern Shore of Maryland also undertakes significant capital expenditures that impact the county. These expenditures include updates and modernizations to existing schools, as well as the construction of new school buildings. Given that capital expenditures vary year to year, this analysis considers the average impact of capital projects completed over a ten-year period from FY14 to FY24. During this period, the WCPS spent an average of \$11.47 million annually on capital projects. Table 2 illustrates that the total impact of these average annual capital expenditures over the last ten years exceeds \$15.87 million, supporting 102 local jobs. This translates to every dollar spent on capital projects generating \$1.38 in economic activity. For every dollar spent on WCPS capital projects, an additional 1.35 jobs are supported within the county. In summary, there is a 38% return on the economic activity generated by the county’s capital project spending.

Table 2. Economic and Employment Impact of WCPS Average Annual Capital Spending (FY14-FY24)		
Impact	Economic (\$ millions)	Employment
Direct Effect	\$11.47	75
Indirect Effect	\$2.43	14
Induced Effect	\$1.96	12
Total Effect	\$15.87	102

Economic Value of Degrees Awarded

The primary objective of an education system is to develop knowledgeable and skilled individuals who can add value both to themselves and their communities. Obtaining a high school diploma enhances an individual's prospects for higher wages, career advancement, and increased economic contribution. A workforce that is both trained and adaptable attracts businesses seeking to recruit employees. One way to evaluate the effectiveness of an education system is by assessing the increased earning potential of students who graduate from WCPS. The overall economic impact of the K-12 public education system in this county is closely linked to the retention of graduates within the area, including those who return after pursuing post-secondary education or employment elsewhere.

Incremental Lifetime Earnings of Graduates

Data shows that high school graduates are more likely to earn a higher income than non-graduates. The additional lifetime earning of county graduates will be calculated for each of the

last five graduating classes (2019-2024) as the incremental difference in lifetime earnings of graduates compared to non-graduates over their expected work life. A retirement age of 65 is assumed and therefore, a work life of 47 years is assumed (age 18 to 65). The U.S. Census indicates that non-graduates in Worcester County earned approximately \$31,250 in 2022 (inflated to \$32,531 in 2024) while high school graduates earned approximately \$34,415 in 2022 (inflated to \$36,966 in 2024). The difference in inflated salaries is about \$4,435, which is assumed to be maintained throughout the work lifespan. The present value of the additional annual earnings is calculated using a discount rate of 4.22%, the annual rate on a 30-year constant maturity Treasury Bond in 2024².

Table 3 shows the number of graduating seniors per year and the present value of the incremental lifetime earnings of the sum of graduates for each year. On average over the previous five years, WCPS has annually graduated students who are likely to earn an additional \$34.81 million in earnings over the course of their lifetime.

Table 3. Present Value of Additional Lifetime Earnings of WCPS as Compared to Non-Graduates		
Year	Number of Graduates	Present Value of Additional Earnings (\$ million)
2020	459	\$34.41
2021	486	\$36.44
2022	464	\$34.79
2023	542	\$38.98
2024	469	\$33.73

In addition to increasing personal wealth, higher lifetime earnings also lead to more community spending and greater income tax revenues for local governments. To estimate the additional combined county income taxes over an individual's working life from increased earnings, it is assumed that 70% of this additional income would be subject to local taxes annually. Over the past five years, the present value of these additional income taxes throughout the working lifespan averages about \$548,300.

While the incremental lifetime earnings of the WCPS graduates are significant, not all are expected to stay within the county throughout their entire careers; some may relocate to other counties or states. Conversely, graduates from other areas may move into the county after completing their education elsewhere. It is important to recognize that while the WCPS education system directly contributes to student education, many other factors also influence a student's success and eventual graduation. These include, but are not limited to, family

² Federal Reserve System Historical Data on Selected Interest Rates

dynamics, the effects of other educational systems, and the individual abilities of the students, which are not detailed in this report.

Incremental Lifetime Earnings of Graduates that go on the Graduate College

Following graduation from Worcester County, many students proceed to higher education, significantly enhancing their lifetime earning potential. Over the past five academic years, an average of 20% of WCPS seniors planned to enroll in a two-year college, while 50% aimed for a four-year college. The average annual earnings differential for someone with an associate's degree versus a high school diploma, adjusted to 2023 values, is \$13,169. For those with a bachelor's degree, the differential is \$36,507. These salary differences are expected to persist throughout their careers.

The additional lifetime earning potential for WCPS graduates who complete college is calculated by comparing the incremental lifetime earnings of those with associate's or bachelor's degrees to those with just high school diplomas, using data from the last five years (2019-2024). Assuming a retirement age of 65, a typical two-year college graduate has a 45-year working life (ages 20-65), and a four-year college graduate has a 43-year working life (ages 22-65). The annual incremental earnings multiplied by the difference in the percentage of students intending to pursue two-year or four-year degrees provide the basis for these calculations. The present value of these additional earnings is calculated with a discount rate of 4.22%. The present value of additional lifetime earnings for graduates with an associate's degree is estimated at \$26.58 million, while for those with a bachelor's degree, it is about \$183.48 million. Assuming that 70% of this additional income will be subject to local taxes, the estimated present value of the additional combined county income taxes over their working lifespans amounts to approximately \$325,624 for associate degree holders and \$2.24 million for bachelor's degree holders.

Economic Development Impacts

A high-quality public education system significantly influences community development. As the standard of education improves in an area, it correspondingly enhances real property values and the prevalence of owner-occupied housing. Quality schools attract families, which, in turn, boosts the value of surrounding properties due to increased demand. Additionally, a rising population attracts more business activity, making the area more appealing for commercial ventures. This influx not only fosters economic growth but also contributes to the long-term prosperity and vibrancy of the community.

Real Property Values and Taxes

The quality of public schools has a direct impact on housing values in nearby communities. Areas with superior educational offerings attract residents willing to pay a premium, enhancing local property values. High school graduates typically earn higher lifetime incomes, increasing their spending power within the local economy. This additional spending makes the community more desirable for families and businesses, driving up housing values.

To calculate the additional real property value, we followed the methodology used by Walden (2011). The ratio of real property values to personal income for Worcester County in 2023 was 4.85, with real property valued at \$17.92 million and personal income at \$3.69 million. On average, each graduating class over the past five years is estimated to generate an additional \$7.98 million in real property values, assuming all graduates remain in the county. While some graduates will inevitably move away, new graduates from other counties will likely relocate here, maintaining a steady population of graduates. To estimate the impact on real property tax revenue for Worcester County, we multiplied the annual real property tax rate by the additional lifetime real property values generated by each graduating class. Over the past five years, the estimated increase in real property tax revenue is \$67,491.

Occupied Housing

In counties where the quality of education is presumed to be better, there are more owner-occupied housing units compared to renter-occupied housing units. Owner-occupied housing benefits the community because people are more likely to stay in the county and reinvest their earnings back into the local community. Renter-occupied housing shows a lack of long-term commitment from possible homeowners to the local community; therefore, renters cannot be expected to reinvest the same amount of funds back into the local economy as a full-time homeowner. There are multiple reasons why someone may purchase a home instead of renting one, but the school quality in a given area can be a compelling reason for someone to choose to purchase a home instead of renting one.

In Worcester County, the ratio of owner-occupied housing (5,207) compared to renter-occupied housing (2,537) is 2.05. Of the 5,207 houses that are owner-occupied, 4,420 owners have at least a high school degree or higher compared to the 787 owners that did not graduate high school. The ratio of high school graduates to non-graduates that own a house (5.61) is drastically higher than the ratio of those who rent (2.79).

Cost Savings

Public Cost Savings

Educational attainment plays a crucial role in shaping public expenditures across the economy. A 2007 study by Levin, Belfield, Muennig, and Rouse found that individuals with higher education are less likely to utilize public programs.³ Similarly, The *Education Pays 2023* report from the College Board's Trends in Higher Education series highlights that adults with higher levels of education are more engaged citizens and less reliant on public assistance⁴. Increasing graduation rates within a geographic area can significantly reduce public spending on programs like healthcare, crime prevention, welfare, and unemployment benefits, resulting in substantial savings. This highlights the importance of investing in education as a strategy to reduce long-term public expenditures.

Public Healthcare Costs Savings

Research indicates that individuals who complete high school generally experience better health outcomes compared to those who do not. A 2018 study revealed that individuals with higher levels of education tend to live healthier and longer lives compared to their less-educated peers. The study also explored the connection between non-cognitive skills and academic performance.⁵ These factors contribute to healthier community behaviors and improved overall health status within the population. Individuals with higher educational attainment are more likely to secure higher-quality jobs that offer private health insurance, reducing reliance on publicly funded healthcare programs.

³ Levin, H., Belfield, C., Muennig, P., & Rouse, C. (2007). *The Costs and Benefits of an Excellent Education for All America's Children*. Columbia University.

⁴ College Board. "Education Pays 2023 Presents Data on Benefits of Education for Individuals and Society." *All Access*, 2023, <https://allaccess.collegeboard.org/education-pays-2023-presents-data-benefits-education-individuals-and-society#:~:text=Adults%20with%20more%20education%20are,Trends%20in%20Higher%20Education%20series>.

⁵ Zajacova A, Lawrence EM. The Relationship Between Education and Health: Reducing Disparities Through a Contextual Approach. *Annu Rev Public Health*. 2018 Apr 1;39:273-289. doi: 10.1146/annurev-publhealth-031816-044628. Epub 2018 Jan 12. PMID: 29328865; PMCID: PMC5880718.

Levin et al., through extensive research on health outcomes, Medicaid and Medicare enrollment, graduation rates, and per capita healthcare costs by educational attainment, estimated the lifetime health savings associated with high school graduation to be approximately \$61,424 per student (in 2024 dollars). Table 4 of their analysis details the potential public healthcare cost savings for high school graduates from the classes of 2019 through 2024. The average lifetime healthcare savings for these graduating cohorts is projected to total \$29.72 million.

Table 4. Present Value of Estimated Lifetime Savings in Public Healthcare Costs		
Year	Number of Graduates	Present Value of Lifetime Public Healthcare Costs Savings for Graduating Class (\$ millions)
2020	459	\$28.19
2021	486	\$29.85
2022	464	\$28.50
2023	542	\$33.29
2024	469	\$28.80

Crime Cost Savings

Educational attainment significantly influences criminal behavior, with higher levels of education generally associated with lower crime rates. Education provides individuals with opportunities, skills, and social connections that act as deterrents to engaging in criminal activity⁶. Levin et al. (2007) identified four primary public costs associated with crime: criminal justice expenses (policing and trials), incarceration costs (including parole and probation), state-funded victim expenses (such as medical costs and lost tax revenue), and the operation of government crime prevention agencies.

An analysis comparing the types and costs of crimes committed by high school dropouts with the reduced crime rates among high school graduates reveals an average lifetime savings of approximately \$40,342 per graduate (in 2024 dollars) due to crime reduction. Table 5 highlights the total expected lifetime savings in public crime costs for the past five graduating classes, estimating an average savings of \$19.52 million per class in public crime costs.

⁶ Fiveable. "Educational Attainment and Criminal Behavior." *Fiveable Library*, <https://library.fiveable.me/crime-human-development/unit-10/educational-attainment-criminal-behavior/study-guide/3RBVzyvmKbnTHoXB>

Table 5. Present Value of Estimated Lifetime Savings in Public Crime Costs		
Year	Number of Graduates	Present Value of Lifetime Public Crime Cost Savings of the Graduating Class (\$ millions)
2020	459	\$18.51
2021	486	\$19.60
2022	464	\$18.71
2023	542	\$21.86
2024	469	\$18.92

Welfare Cost Savings

Graduating from high school increases the chances of securing employment or pursuing higher education, thereby reducing reliance on public welfare programs. According to Levin et al., each high school graduate saves an average of \$4,549 in welfare expenditures. These welfare costs include programs such as Temporary Assistance for Needy Families, food stamps, and housing assistance, though federal programs were excluded from their analysis.

The table below highlights the potential welfare cost savings associated with the last five graduating classes in the county. On average, each graduating class over the past five years is estimated to save \$2.20 million in lifetime welfare costs.

Table 6. Present Value of Estimated Lifetime Savings in Welfare Costs		
Year	Number of Graduates	Present Value of Lifetime Welfare Cost Savings of the Graduating Class (\$ millions)
2020	459	\$2.08
2021	486	\$2.21
2022	464	\$2.11
2023	542	\$2.46
2024	469	\$2.13

Conclusion

Worcester County plays a significant role in the state's economy, with its operational and capital spending creating substantial economic and employment impacts. Each \$1 spent on operations locally generates \$1.55 in county spending, while every county job supports an additional 1.2 job in the local economy. Worcester County is a major employer, with most of its employees residing in the county. Incentivizing non-resident employees to relocate to the county could help retain more of the economic benefits derived from their salaries and spending.

Capital expenditures also contribute to the local economy, with every \$1 spent generating \$1.38 in county spending. For every \$1 in capital expenditures, 1.35 additional jobs are supported. Beyond direct economic impacts, the WCPS graduates contribute to broader societal and economic benefits. These benefits include economic development, community growth, and reduced public costs.

High school graduates in the county earn significantly more over their lifetimes compared to non-graduates, with incremental lifetime earnings totaling approximately \$34.81 million. This generates an estimated \$548,300 in present-value county income taxes per graduating class. Graduates with higher degrees earn even more: an additional \$26.85 million for associate degree holders and \$189.48 million for bachelor's degree holders, contributing \$1.57 million and \$9.04 million in county income taxes, respectively.

A well-educated and trainable workforce drives county economic development through multiple channels:

- Enhanced quality of life, as parents prioritize school quality when choosing where to live, boosting local property values.
- A sense of well-being among parents confident in their children's educational success and career readiness.
- Increased property values and owner-occupied housing due to the presence of high-quality schools.
- Greater productivity in local businesses due to better K–12 education.

These benefits directly translate into higher real property values and tax revenues. Each graduating class is estimated to add \$7.98 million to real property values and \$67,491 to real property tax revenues.

An educated population reduces public costs across key areas:

- \$29.72 million in future public healthcare savings
- \$19.92 million in public crime cost savings
- \$2.20 million in welfare cost savings

While public school systems are often viewed as a cost, these findings underscore their role as an investment that yields significant economic and societal returns. However, these benefits depend heavily on retaining graduates in Worcester County. Graduates who leave and do not return contribute their benefits to other areas, highlighting the need for public-private efforts to retain and attract talent to Worcester County.

