

Pennsylvania's Best Investment: The Social and Economic Benefits of Public Education

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Abstract

Public education is a worthy investment for state government, with immense social and economic benefits. Research shows that individuals who graduate and have access to quality education throughout primary and secondary school are more likely to find gainful employment, have stable families, and be active and productive citizens. They are also less likely to commit serious crimes, less likely to place high demands on the public health care system, and less likely to be enrolled in welfare assistance programs. A good education provides substantial benefits to individuals and, as individual benefits are aggregated throughout a community, creates broad social and economic benefits. Investing in public education is thus far more cost-effective for the state than paying for the social and economic consequences of under-funded, low quality schools.

For example:

- High school dropouts are more than twice as likely to be unemployed and three times more likely to receive welfare assistance, costing billions of dollars nationally each year for government funded assistance programs.
- Decreasing the number of high school dropouts by half would nationally produce \$45 billion per year in net economic benefit to society.
- Improved education and more stable employment greatly increase tax revenue, such as a return of at least 7 dollars for every dollar invested in pre-kindergarten education.
- 41% of all prisoners have not completed high school, compared to 18 percent of the general adult population. The annual cost of incarcerating an individual is about \$32,000, while the annual cost of a quality public education is about \$11,000.
- A 5% increase in the male graduate rate would save \$5 billion in crime-related expenses.
- Mortality decreases for every additional year in schooling by 7.2% for men and 6% for women; and the chances of optimum health is up to 8 times higher for citizens with eighteen years of education versus only seven.
- Graduating from high school improves the quality of health, reduces dependence on public health programs by 60 percent, and cuts by six times the rate of alcohol abuse.
- National savings in public health costs would exceed \$40 billion if every high school dropout in just a single year would graduate. Average annual public health costs are \$2,700 per dropout, \$1,000 per high school graduate, and \$170 per college graduate.
- A 1-year increase in median education level is associated with a more than 13% jump in political primary turnout.

Introduction

Public education is the biggest initiative undertaken by many governments around the world [6]. If spending is a measure of social and economic value, no other governmental program – including national defense in many cases – is considered more valuable than exposing youth to a systematic education for at least a minimal period. The United States is in the middle of the pack when it comes to school expenditures—contributing 5 percent of its gross domestic product (GDP) to public education, which is average among the 34 top industrial nations [5]. State governments in the U.S. contribute an average of 48 percent of this overall cost, with local communities paying for 44 percent.

FastFact: *Investment in public education results in billions of dollars of social and economic benefits for society at large.*

The national importance of education is based on the significant positive influence it has on individual lives and on the welfare of communities. Education is primarily a way to train children in the skills they will need as adults to find good jobs and live well [9]. But education also has broader social and economic benefits for individuals, families, and society at large [9]. These benefits are received even by people whose relationship to the public school system does not extend beyond “taxpayer.” The widespread improvement of social and economic conditions is a direct outcome of an educated population that is better able to use information to make good decisions and which is collectively better trained for work.

2009-2010 Pennsylvania Public Education Costs

PA Dept. of Education

Contrary to common expectations, most funding for public education comes from local sources. [This is true even with the use of federal stimulus dollars in 2009-10.]

| | |
|--|------------------------------------|
| Total annual costs from all sources | = \$26.15 billion |
| From local revenue sources | = \$15.04 billion (57.5% of total) |
| From state revenue sources | = \$ 8.86 billion (33.9% of total) |
| From federal revenue sources | = \$ 1.92 billion (7.3% of total) |
| From other sources | = \$ 0.33 billion (1.3% of total) |

A great deal of recent research demonstrates how the benefits of supporting public education extend far beyond each child's individual academic gains. A population that is better educated has less unemployment, reduced dependence on public assistance programs, and greater tax revenue. Education also plays a key role in the reduction of crime, improved public health, and greater political and civic engagement. Investment in public education results in billions of dollars of social and economic benefits for society at large.

In Pennsylvania, local communities invest significantly different amounts in their public schools. State funding can mitigate these differences to ensure that each child's education is supported by adequate resources. But the state share of education funding in Pennsylvania has declined over many years, so that only 6 states now spend a smaller share. Forced to increase revenue for schools from local sources, many communities face an impossible combination of educational challenges – high numbers of disadvantaged children, low student achievement, and insufficient resources despite high property taxes. These problems affect social and economic well-being throughout the entire Commonwealth, well beyond the boundaries of inadequately funded and low performing school districts.

This paper provides an updated review of top research in the field to examine the various benefits of quality education, presents evidence for the social and economic returns of investment in education, and offers some examples of how we as Pennsylvanians benefit locally.¹ The research continues to show that public education works—for Pennsylvania and for the nation. The paper also examines the cyclical relationship between poverty and low-quality education that can be stopped with more effective public policy. In short, increased investment in education by state government is necessary for creating successful communities and will pay great social and economic dividends for Pennsylvania.

¹ Research for this paper was conducted by performing a broad search for and examination of relevant data and analysis published by credible sources. Most sources are national, as Pennsylvania-specific research is often lacking. Special appreciation is extended to Dr. Henry M. Levin, William H. Kilpatrick Professor of Economics & Education, Teachers College, Columbia University. Dr. Levin has published authoritative books on this subject [124] and, together with Michael A. Rebell, Executive Director, Campaign for Educational Equity at Teachers College, has played a leading role in supporting research in the field through the sponsorship of conferences, websites, and other forms of interaction between leading U.S. experts [146,147]. We also extend our thanks to Dr. Ricardo Sabates, Senior Lecturer in International Education & Development (Education) at the University of Sussex; Dr. Claudia Goldin, Henry Lee Professor of Economics at Harvard University; and Dr. Lawrence Katz, Elisabeth Allison Professor of Economics at Harvard University. All of these scholars offered guidance and insight regarding the top current research in the field related to the economic and social benefits of education.

I. The Efficacy of Public Education

The following sections describe the social and economic benefits produced by public education for employment, crime, health, and civic and political participation. The research and evidence persuasively shows that quality education results in positive outcomes in these areas. But before delving directly into the benefits of educational investments, it is important to first examine how these broad social and economic gains are produced through the education of individual children.

FastFact: *The cognitive-intellectual gains that children and youth make in school contribute to the social and economic benefits derived from education for all members of society.*

The fundamental outcome desired for education is that it will pass on to each child the information and skills they will use throughout their lifetime. At its core, every school is a place where children learn what adults in the community already know, a place for the transmission of knowledge [10]. These objectives are supported by common sense, practical needs, and by formal research about how education works.

More specifically, schools train and develop students' intellectual knowledge and abilities. Students gain skills in school for gathering and evaluating new information [11-15]. As each child's intellectual capacities improve, the average intelligence of whole populations can improve [16-19]. Public schools have played an important part in closing the gap between wealthy and poor students on measures of intelligence [20].

These beneficial results occur because education has several basic cognitive benefits. Schooling increases the facts known and understood by students in various academic subjects. More importantly, education improves decision-making ability and reasoning skills [21]. The ability to gather information, identify choices, and consider the consequences of actions all improve the longer students spend in school [21, 22]. This has proven true even when controlling for differences in inherited cognitive ability.

The cumulative impact of these educational benefits helps individuals to have more options for and to make better decisions about their lives. Improved options and decision-making includes better choices about work, better risk assessment concerning deviant or criminal behavior, and better personal health choices. Thus, the cognitive-intellectual gains that children and youth make in school contribute to the social and economic benefits derived from education for all members of society.

There are other “spillover” effects from education that transform individual gains into social gains. The personal, individual benefits of a good education have broad benefits for society when improved “human capital” capacity – personal knowledge, skills, and judgment – is taken by the individual into the workplace, the public square, and the home [23-28]. For example, all of society benefits when more people are able to find adequate and stable employment. A better educated work force not only leads to more research and innovation, but the benefits of this economic innovation are then spread more widely and powerfully throughout a better educated public [29]. Everyone also benefits when fewer citizens experience alienation or general distrust of others and government. And the children of well-educated parents are less likely to seek public assistance, even when eligible [29]. Each of these examples is directly related to receiving a quality education.

In short, effective education improves decision-making abilities that then help individuals stay out of trouble and live better, healthier, and longer lives. As economist Milton Friedman wrote, “the education of my child contributes to other people’s welfare by promoting a stable and democratic society” [23]. Governments in America and in other countries have adopted this approach and invested heavily in education as an institution with significant responsibility both for individual child development and broader social and economic welfare [30,31]. Despite the many challenges that public education faces, it is an effective way to prepare large numbers of youth for their own future and for the overall welfare of society [125].

Given the overall efficacy of education, it is also important to determine the level of resources needed to maximize student achievement and the quality of teaching and learning that takes place in any given school. Research has consistently shown that student achievement benefits from small class sizes, qualified teachers, safe school environments, and up-to-date instructional materials and technology [146]. These things cost money, as do the additional programs and services needed for students with disabilities, English language learners, and children living in poverty [117]. Education costs

also vary from region to region throughout Pennsylvania, with extra resources needed both in fast growing school districts and in small, rural districts.

When these variables are considered and adequate resources are invested in schools, all students can receive a fair chance for academic success [146]. But Pennsylvania's current funding system for public education does not provide adequate resources in an equitable manner. Many districts are able to spend only about \$8,000 per student while others can afford to spend over \$18,000 [1]. This means that the relative quality of a child's education may depend on where her family lives.

The Costing-out Study commissioned by the General Assembly in 2007 found that most school districts in Pennsylvania are not receiving enough funding from the state [117]. The state share of education funding in Pennsylvania has fallen since the 1970's and is now among the lowest in the nation

[118]. The declining state share of total funding has put pressure on local communities to fill the gap by raising property taxes. Many communities do not have the local wealth to raise adequate funding and provide quality schools. The Costing-out Study concluded that, in order to improve educational efficacy and help all students achieve state academic standards, the Commonwealth should raise its investment in public education by \$4.3 billion over time, especially in high-poverty communities already with high property taxes [117].

2009 - 2010 Pennsylvania Public Education Gaps

PA Dept. of Education

Achievement gaps and funding gaps are large throughout the state.

Outcomes:

- 83% of students graduate statewide, but only 54% in Reading (a district with 90% student poverty) and 99% in Tredyffrin-Easttown (4% student poverty).
- 72% of students pass state assessments, but only 56% of students in poverty.
- 536 schools are not making "adequate yearly progress" (25% of all schools). (194 of these schools have been failing for at least 4 consecutive years.)

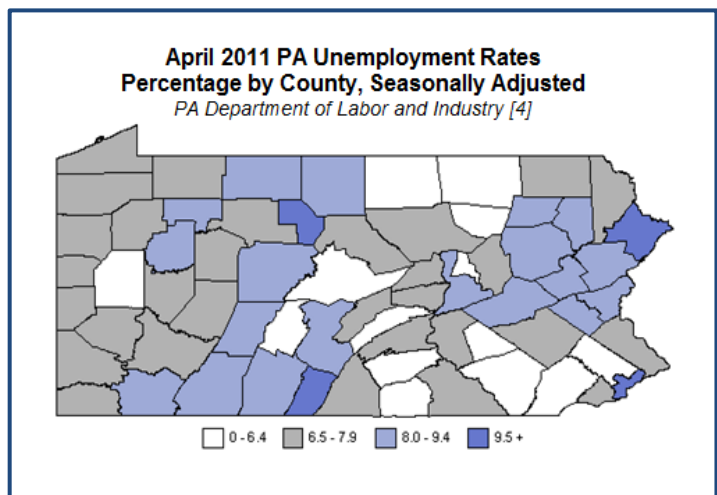
Resources:

- 102 PA school districts spend less than \$10,500 per student each year. 130 districts spend more than \$13,000.
- A \$2,500 difference in per student spending adds up to a difference of \$62,500 per classroom of 25 students.
- At the low and high ends of annual current expenditures (in total) per student, Valley View spends \$8,781 and Lower Merion spends \$23,115.

II. Education and Employment

The recent economic recession demonstrated in unfortunate and powerful ways the connection between education and employment. The recession had the greatest impact on individuals with lower levels of education attainment [113]. In 2009, the unemployment rate was much lower and average earnings were higher for individuals who did not drop out of high school and had achieved some level of college education.

During the recession, the educational disparities in employment and earnings were greatest for African Americans and Latinos [114]. For all Americans who dropped out of high school, the average unemployment rate increased from 9 percent in 2008 to nearly 15 percent in 2009. But for African American dropouts, the unemployment rate in 2009 exceeded 21 percent. And the unemployment rate rose to 14 percent even for high school graduates who were African American and to over 10 percent for Latinos. As noted in *The Washington Post*, “the lowering tide” of our economy “is not sinking all boats in the same way” [115]. The gaps in employment and earnings have increased during the recession based on race and level of educational attainment.



When *The New York Times* reported on these trends for metropolitan areas in different states, it found that a “social multiplier” greatly exacerbated the impact of education levels on unemployment for communities with high concentrations of less educated individuals. Unemployment rates were 80 percent higher on average than expected in cities with low levels of high school and college graduates. The Harvard University professor conducting this analysis concluded, “The fact that education has mattered so much during this recession only reminds us that America’s future depends on its human capital” [116].

Research over many decades has documented the benefits of education for employment [32-36] and economic growth [36-40]. In fact, the expansion of universal high school education in the United States between 1915 and the late 1950s explains beyond any other “factor ... the economic dominance of the United States in the 20th century” relative to other nations [39].

| Unemployment Rate (%) during the “Great Recession” | | | |
|--|----------------------|----------------------|-----------------------|
| State | Dec. 2007 | June 2009 | Net change |
| Delaware | 3.9 | 8.1 | 4.2 |
| Maryland | 3.6 | 7.3 | 3.7 |
| New Jersey | 4.5 | 9.3 | 4.8 |
| New York | 4.7 | 8.6 | 3.9 |
| Ohio | 5.7 | 10.4 | 4.7 |
| Pennsylvania | 4.5 | 8.2 | 3.7 |
| West Virginia | 4.1 | 8.1 | 4.0 |
| United States | 4.7 | 9.5 | 4.8 |
| <i>Data from U.S. Dept. of Labor, Bureau of Labor Statistics (seasonally adjusted) [2]</i> | | | |

Educational achievement has dramatic economic benefits for individuals. Graduating from high school has historically been an important indicator for employers that a person is ready to hold a job. Even today, high school dropouts are more than twice as likely to be unemployed than people who have attended college [119,141].

Receiving a quality K-12 education has also become increasingly important for college preparation. In recent years, college education beyond high school has become essential as higher level knowledge and skills are required by 21st century jobs in an international economy. The relative economic value of a high school diploma by itself – without higher education – has actually decreased over time as more people have access to and complete college [32,39].

The issue of quality education has therefore become a societal *human resources* issue. This operates on the individual level in terms of preparing youth for higher education and employment. The private, personal benefits of having a good, stable job then combine to create broader social and economic benefits.

For example, employment is linked to better health because most Americans gain access to health insurance through their employer. The health benefits of education also occur because better educated people tend to have more stable employment, which reduces life stressors and risk factors that negatively affect health. More stable employment is linked to reduced likelihood of committing crime and reduced need for public assistance programs supported by tax revenue [26,70]. Because dropouts have so many fewer employment opportunities, the ripple effect of their disadvantage costs the nation billions of dollars in lost tax revenue and in welfare, unemployment, and crime prevention programs [111].

FastFact: *Because dropouts have so many fewer employment opportunities, the ripple effect of their disadvantage costs the nation billions of dollars in lost tax revenue and in welfare, unemployment, and crime prevention programs.*

Government support for public education is thus crucial for individual employment, the broad creation of human capital, and overall economic growth [23,26,41,74,128]. Policies that boost government investment in education can help reduce income inequality while expanding economic opportunity [26]. States that invest more in public education eventually reduce levels of income inequality between residents [42]. One report predicts that economic growth will continue to be uneven in Pennsylvania because of local differences in educational opportunity [43].

Reduced government expenditures for welfare programs are a powerful example of the significant employment and economic benefits of quality education. Participation in cash assistance programs is highest among individuals with the lowest levels of education [120-122]. In 1992, high school dropouts were three times more likely to receive income from public assistance than high school graduates who did not go on to college – 17 percent versus 6 percent [121]. Between 1972 and 1992, both high school dropouts and graduates who did not go on to college were more likely to receive public assistance [121].

Graduating from high school and improved employment opportunities have significant positive effects, even in normally at-risk populations. For example, single mothers with a high school diploma are 24 to 55 percent less likely to receive public assistance than single mothers who drop out. Helping all single mothers to graduate from high school would result in an annual national savings of \$1.5 to \$3.5 billion in public assistance alone [122].

The savings in government expenditures are even greater when other low-income assistance programs are considered. Improving education outcomes could result in national savings between \$7.9 and \$10.8 billion annually in public assistance, food stamps, and housing assistance [122]. Just lowering class size for African American males in elementary school would save taxpayers \$22,000 per individual in reduced enrollment in welfare programs over time. And quality pre-kindergarten programs save taxpayers an additional \$20,000 for each participant that graduates from high school [60,123].

FastFact: *Improving education outcomes could result in national savings between \$7.9 and \$10.8 billion annually in public assistance, food stamps, and housing assistance.*

Society also benefits from improved education outcomes when individuals are employed with higher earnings and the government collects greater tax revenue [57]. According to the Pennsylvania Department of Education, “investments in quality pre-kindergarten programming conservatively yield a return of \$7 for every taxpayer dollar invested.” And when the benefits of increased tax revenue are combined with reduced welfare spending, investment in quality pre-kindergarten programs return up to \$17 for every dollar spent [60,123].

From a national perspective, “[d]ecreasing the number of high school dropouts by half would produce \$45 billion per year in net economic benefit to society” [124]. This kind of return on investment has a precedent in the impact of the G.I. Bill after World War II. The G.I. Bill provided 10 million American war veterans with a fully funded college tuition and living stipend. The G.I. Bill cost the federal government roughly \$50 billion in today’s dollars. This investment ultimately returned \$350 billion to the government over time in the form of tax revenue from the enhanced wages veterans earned with their degrees [127].

III. Education and Crime

The public bears a huge financial burden from crime and its related costs to society. The overall “price tag” for crime includes tangible and intangible costs to victims, court costs associated with the prosecution of crime, the costs of incarceration (infrastructure, staff, housing and food, counseling, prisoner education programs), the indirect economic costs associated with productivity and wages lost to both victims and offenders, and the decreased opportunities available to those with a prison record [48,49]. The National Institute of Justice estimates that these costs total \$450 billion annually, or \$1,800 for each U.S. resident (using data for the period between 1987 and 1990) [44].

FastFact: *Public education provides one of the best opportunities to reduce crime and its cost to society, by helping children to gain knowledge, skills and character.*

Public education provides one of the best opportunities to reduce crime and its cost to society by helping children to gain knowledge, skills, and character that help them avoid criminal activity. The following data demonstrates the strong correlation between the lack of educational achievement and crime:

- Roughly 41 percent of all federal, state, and local prisoners in 1997 and 31 percent of probationers had not completed high school or received a GED, while that was true of only 18% of the general population age 18 or older [59].
- Black and white males in prison and 20 to 39 years of age (Two-thirds of all state inmates in 1997) were half as likely to have a high school degree as the same group in the general population [59].
- In 1999, Caucasian men aged 30-34 who had not completed high school were four times more likely to have a prison record than Caucasian men of the same age who had completed high school; African American male drop outs aged 30-34 were two times as likely as those with a high school degree to have a prison record [46].

The main reasons that well-educated people are less likely to engage in criminal activity are related to their employment status and their perception of their own employability [47,48]. Crime is more attractive to individuals who are unemployed or under-employed, or who consider their prospects for permanent, purposeful employment to be limited [48,49]. Generally, studies show that the more formal education a person receives, the less likely he or she is to engage in crime, especially violent crime. Levels of criminal activity within a community are generally lower when the average level of education is higher [29,50].

The public system of education is therefore an important buffer between an individual and the likelihood they will commit a crime because it is the first and most comprehensive employment and life preparation program available to all residents of the state. Quality schools improve personal and collective intelligence by improving individual problem solving skills, social perspective and ability, and employability [16,17,27]. The lack of quality education or incomplete education is a major contributor to unemployment, crime, and incarceration [49,57].

Some have argued that the correlation between increased levels of education and decreased likelihood of incarceration is related to opportunity – the more time someone spends in school, the fewer opportunities to commit crime. This argument may have some validity because youth attending school are in structured and supervised settings rather than on the street. But this reasoning is incomplete because it ignores the fact that children actually spend relatively little time in school compared to their time outside of school. By the time students are 18 years old, they have spent only one-tenth of their life's time (including sleep time) in school settings [51].

In addition, several major studies provide compelling evidence that educational programs play a *causal* role in the reduction of crime [50]. A 2004 evaluation of nationally representative data sets from different sources (the National Longitudinal Survey of Youth and FBI Uniform Crime Reports) explored the relationship between education and crime. The study found significant connections between graduation rates and the reduction of violent crime and found, “When arrests are separately analyzed by crime, the greatest impacts of graduation are associated with [reduced arrests for] murder, assault, and motor vehicle theft” [52]. Other studies have found that participation in early education programs reduces juvenile and violent arrests among participants [53-58]. Fifteen years after participating in a federally funded pre-kindergarten program in Chicago, there were fewer juvenile arrests (16.9 percent versus 25.1 percent), multiple arrests (9.5 percent versus 12.8 percent), and violent arrests (9 percent versus 15.3 percent) among the cohort of mostly African American graduates of the program compared to a cohort who had not attended the program. African Americans who attended Head Start programs as children are also less likely to be booked or charged for a crime as adults [56].

The strong relationship between higher levels of education and lower levels of crime make public expenditures for quality schools a sound investment. By one estimate, “the social benefits of a 1 percent

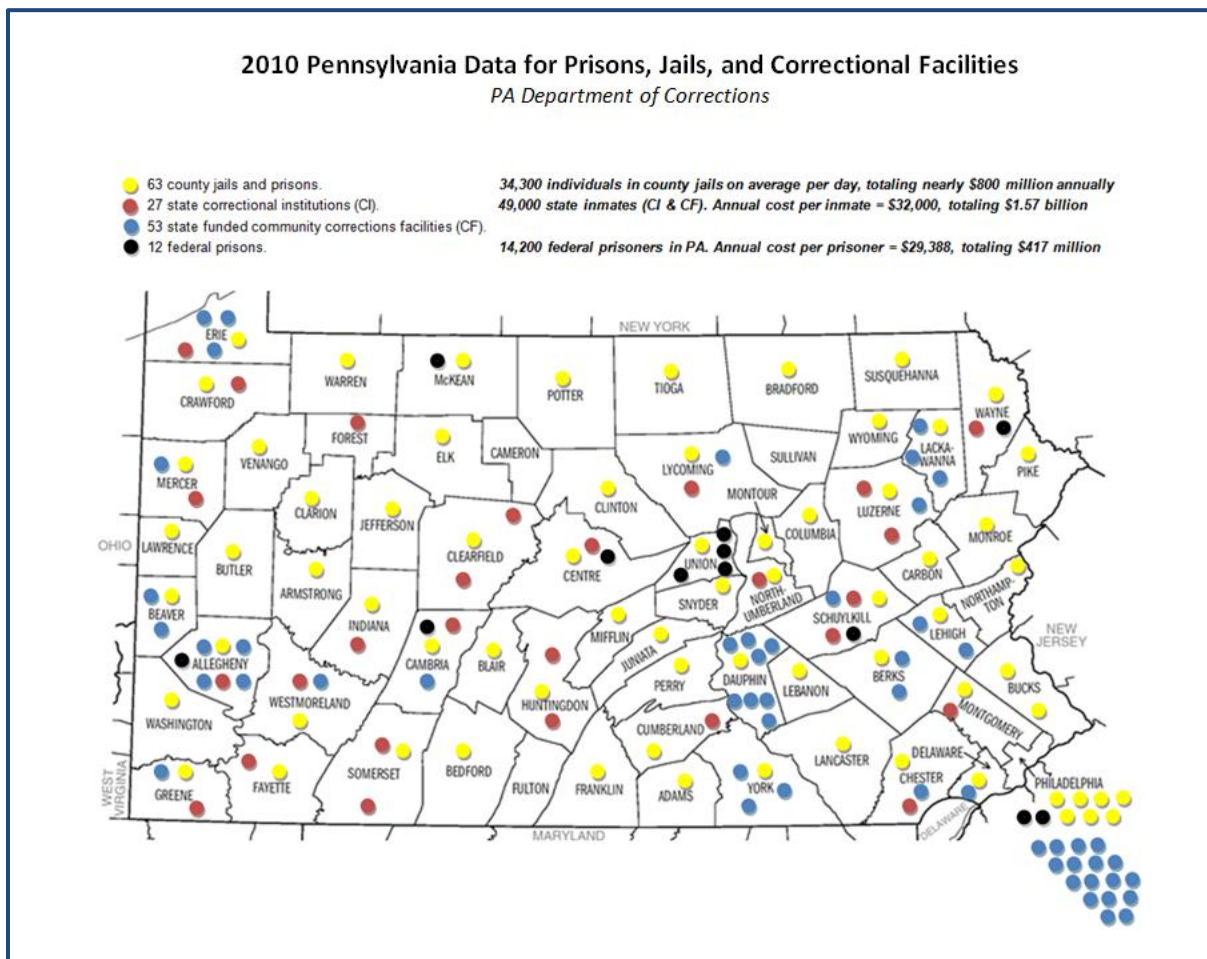
Pennsylvania Crime Statistics

The level of incarceration and its cost are very high in Pennsylvania [4,45,112].

- One out of every 28 Pennsylvania residents are incarcerated or on probation, the 13th highest rate in the country and almost double the rate in New York.
- State and local spending on Pennsylvania prisons and jails is about \$2.6 billion.
- The cost of incarcerating an individual is \$32,000 per year.
- The average annual education cost per student in a PA public school is \$9,500.
- Pennsylvania’s incarceration rate has risen from 50 prisoners per 100,000 residents in 1970 to 372 per 100,000 in 2008, requiring the construction of 18 new prisons since 1980. Specific policy decisions – the war on drugs and mandatory minimum sentencing – are primarily responsible for this large growth, not crime rates or civilian population changes. The general population in Pennsylvania during this same time period remained mostly stable [around 12 million].
- The Alliance for Excellent Education calculates that Pennsylvania would benefit by \$288 million annually from total savings related to crime if graduation rates among males could be increased by only 5 percent. Nearly two-thirds of this amount is related to government savings from less crime prosecution and incarceration, with the remainder related to improved wages and productivity.

increase in male U.S. high school graduation rates (from reduced crime alone) would have amounted to \$1.4 billion” [52]. An average savings of \$26,600 related to criminal justice would be realized over the lifetime of each additional high school graduate [125]. Authors of a study examining the long-term effects of the Perry Pre-School program in Michigan estimate that the program’s effectiveness in reducing crime, as well as participation in welfare and other social programs, produced the equivalent of \$17 in savings to taxpayers for every one dollar spent (including \$11 in crime costs alone) [60].

The nation currently spends on average over \$13,000 more annually per inmate than per student. In 2004 the United States spent almost \$50 billion in incarceration costs [45]. Investing in public education in the short term should result in increased graduation rates over the long term and less need to spend public resources on crime prevention and incarceration.



IV. Education and Health

Imagine going to the doctor and being told about a medication that would add years to your life and add quality to those years. If everyone took the full course of this medication, it could even reduce the public tax burden and improve community well-being. There is such medicine, but it's not a pill – education leads to these beneficial results.

FastFact: *People with higher levels of education tend to live longer, healthier lives and depend less on government-funded health programs.*

People with higher levels of education tend to live longer, healthier lives and depend less on government-funded health programs than people with less education [62-66]. Researchers have found that learning promotes a sense of control in lifestyle choices in individuals that enriches their lives on multiple levels, and improves health as a direct result. In the United States, each additional year of education reduces the risk of death in the next decade by 3.6 percent [5], and in Sweden, research has shown that the risk of bad health is lowered by over 18 percent with an another year of education [67].

Studies have found the following positive benefits of education for personal health [31]:

- People with more education are more likely to have healthy diets and exercise frequently, and are less likely to smoke, be obese, or engage in binge drinking.
- For U.S. women, enrolling in college and staying for at least two years reduces their likelihood of smoking during pregnancy.
- Improved educational opportunity for U.S. women decreased the probability of pre-term births by 20 percent and low birth-weight by 12 percent between 1940 and 1980.
- As high school graduation rates doubled for white Americans and tripled for African Americans between 1960 and 1990, infant mortality for both groups decreased [68].

Furthermore, adults who dropped out of high school are more likely than graduates to die prematurely from cardiovascular disease, cancer, infection, injury, lung disease, and diabetes [62]. People with less education are more likely to enroll in public health assistance programs like Medicaid (17 percent versus 7 percent of college graduates). For example, each African American who does not graduate from high school represents an average public expenditure of \$110,000 for government-funded health care over their lifetime. Each African American with a college degree represents less than \$40,000 in public health costs over their lifetime [70].

Quality education benefits health levels for both individuals and the broader society as a whole. The World Health Organization’s Commission on the Social Determinants of Health (CSDH) recommended that an equitable education for children was a critical component of maximizing health benefits for all of society [71]. Research by the CSDH found a direct correlation between health and structural inequalities including education. Studies have shown that greater levels of education in the United States lowered mortality [5,66,72], tempered the rates of unhealthy life choices, prevented higher numbers of depressed adults, and even improved physical independence amongst senior citizens [69-76].

Education also offsets the impact on health of other negative factors such as income inequality [75]. Studies have found that the health effects of economic inequity are less severe when educational attainment is taken into account [75,76,79]. Early childhood education is especially effective for strengthening neurological development in impoverished children, which may prevent health problems later in life [57, 88-91].

Pennsylvania Health Statistics

PA Depts. of Welfare and Education

Pennsylvania bears significant costs for public health programs.

- Over 2.1 million PA residents – 17% of all residents – receive public health insurance (Medicaid).
- The state spends over \$14 billion on public health insurance each year.
- In the 10 PA counties with the highest percentage of residents receiving public health insurance, 23% of residents receive these benefits.
- The public schools in these 10 counties are underfunded each year by an average of nearly \$2,700 per child or \$67,500 per classroom of 25 children.
- About one-third of all students in these 10 counties are failing state achievement tests, about 4.3% higher than the state average.

Better education is effective because it produces better decision-makers and better gatherers of information, allowing individuals to make better choices about health care for themselves and their families [77-79]. Just as education improves the ability of individuals to weigh the risks of engaging in criminal activity, education also improves the ability to make decisions regarding personal health [80-86]. For example, people who drop out of high school are six times more likely to abuse alcohol or drugs than people with a college degree; people who start but do not finish college are three times more likely to abuse alcohol or drugs than people with a college degree [81].

FastFact: People who drop out of school are six times more likely to abuse alcohol or drugs than people with a college degree.

One interesting indirect relationship between education and health is due to the benefits of marriage for health and longevity. People with higher levels of educational attainment have a lower divorce rate and are more likely to remain in stable, healthy relationships with their spouses [61,72]. More education also makes individuals more employable, and more likely to keep well-paid jobs for longer. For both of these reasons, and the improved decision-making ability mentioned above, people with better education are more likely to avoid living with high personal levels of stress that erode health and reduce the life span or to engage in behaviors that negatively impact their health [25,61,67].

Better educated people are also more likely to seek preventative care [60,77-79]. Preventative care reduces expenditures by heading off costly illnesses and by lowering emergency room use. Pennsylvanians use the emergency room 11 percent more than the national average. There are 900,000 uninsured Pennsylvanians, with 71 percent being adults who are employed but earning low-wages. Often the uninsured make costly visits to the emergency room when preventative care would have saved millions of dollars. In fact, in 2007, *half* of the visits to Pennsylvania emergency rooms did not actually require immediate health care, costing roughly \$232 million. Overall, the annual cost of providing uncompensated health care in Pennsylvania was \$1.4 billion [85,86].

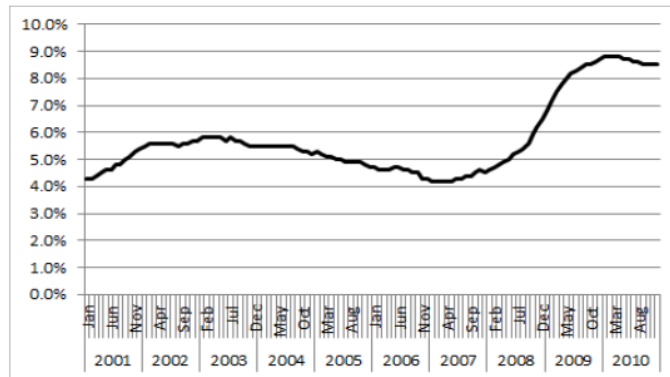
The earlier preventative measures are put into place, the more likely the cycle can be broken [87]. Neurological development in children is encouraged through cognitive stimulation in their environment, which is mostly provided by parents, teachers, and members of their community [57,88-

91]. While the child is developing, the environmental factors play a larger role—widening the impact education can play in their lives [71,92].

Other unnecessary health care costs are also linked to education. The Pennsylvania Office of the Budget estimates that preventable health care issues cost the state \$7.6 billion in 2007 [85]. Of that, \$4 billion – over half – is related to tobacco use. In Pennsylvania, 12 percent of people who have completed college smoke, while nearly 29 percent of those who did not complete high school smoke [93]. In 1998, personal health care costs associated with smoking-related illnesses in Pennsylvania totaled over \$4 billion [93]. The cost in lost economic productivity due to smoking-related illnesses totaled over \$4.5 billion in 2002-3 [94].

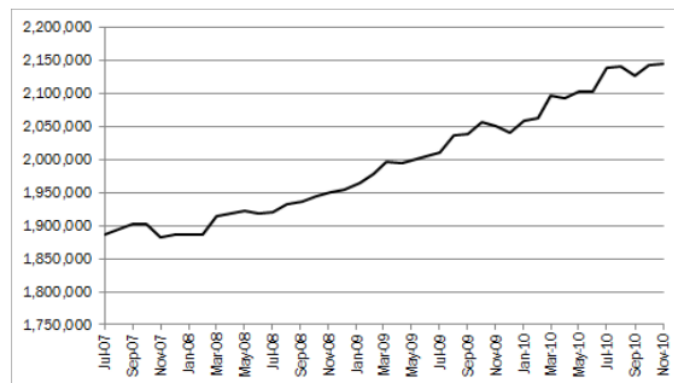
Pennsylvania Unemployment Rate, January 2001 – December 2010

PA Medicaid Policy Center, Univ. of Pittsburgh



Pennsylvania Medical Assistance Enrollment, July 2007 – November 2010

PA Medicaid Policy Center, Univ. of Pittsburgh



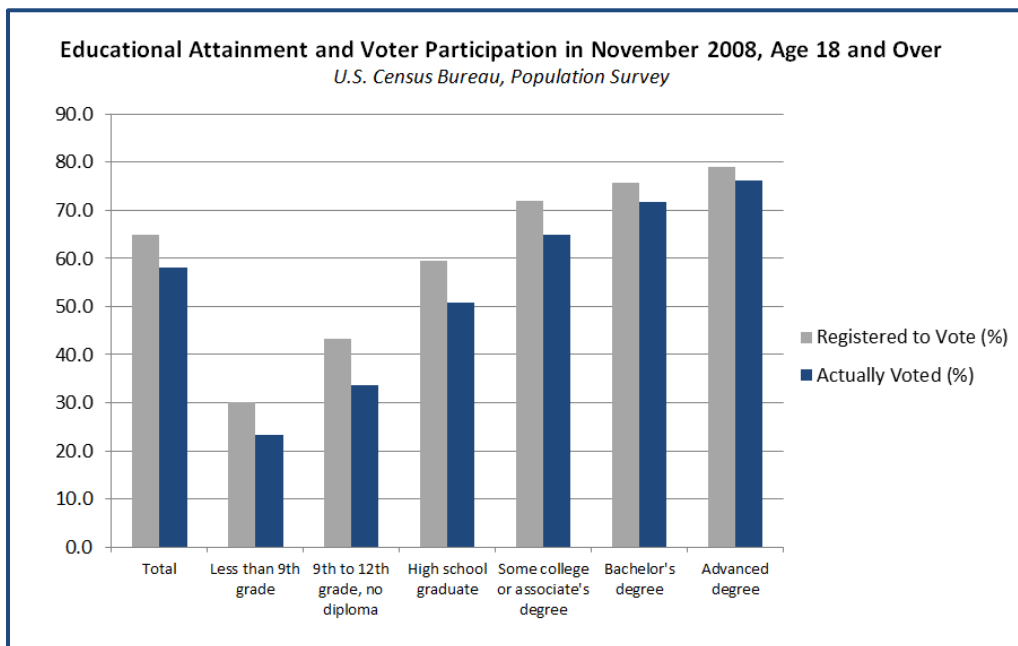
Given that more education leads to better health, what is the likely impact of increasing graduation rates and improving educational conditions? "The average high school dropout consumes \$2,700 in public health insurance cost per year, the average high school graduate, \$1,000, and the average college graduate, just \$170" [7]. Nationally, if every high school drop-out in 2004 had graduated, the savings in health costs to the public would have been \$41.8 billion over their lifetime [60]. These savings would be realized in two ways. First, health insurance premiums are inflated up to 10 percent just to cover the costs of the uninsured, many of whom are dropouts [85,86]. Second, the tax burden related to public health care programs is much higher than it would be if more people finished high school, went on to higher education, and maintained stable employment. Educational attainment improves access to private health care and improves occupational safety due to better employability [60].

V. Education and Civic and Political Participation

Adam Smith, John Adams, Thomas Jefferson and other early thinkers whose ideas influenced the birth of this nation felt strongly that the strength of democracy and the state relied on a well-educated populace who could make informed decisions. Research over time has confirmed that better educated individuals are more likely to be engaged in political activity and to make informed decisions in the electoral process [96-103,105-109].

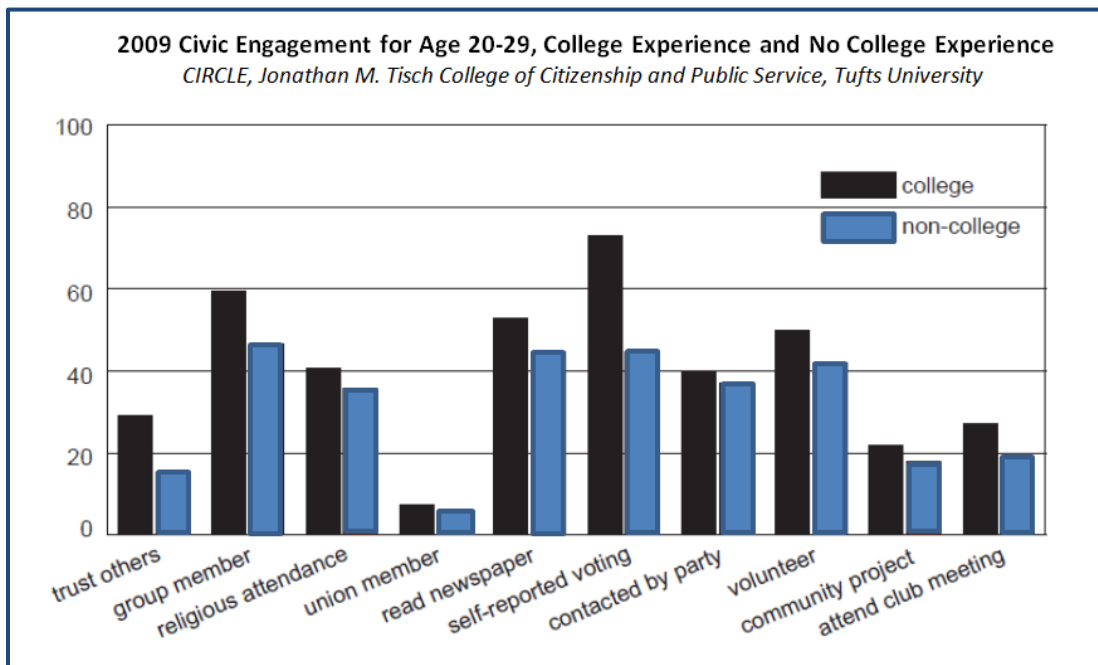
FastFact: Education increases voter participation, participation in volunteer organizations, and personal tolerance of different viewpoints.

Improved educational opportunity and attainment have been found to strengthen social engagement in many ways [126]. Education increases voter participation [26], participation in volunteer organizations, and personal tolerance of different viewpoints [96,97]. One study examined the relationship between education and participation in political primaries in different states and found that a 1-year increase in median education level is associated with a more than 13 percent jump in primary turnout [108]. People with a college education participated in the 2004 presidential election at three times the rate of high school dropouts [99], with similar results in the 2008 election [100].



The cognitive benefits of schooling described above in Section I are often considered to be one of the main reasons that schooling boosts civic activity and voting behavior [126]. Another reason often cited is that a good educational climate allows children to practice civic activities in the classroom. For example, the degree to which students are able to discuss political and social issues in class “has a positive impact on ... knowledge, skills, intention of being an informed voter, intention of being civically engaged, intention of being politically engaged, institutional trust, and tolerance [96].”

In addition to voting, youth who are more educated also are more likely to participate in other civic activities, such as involvement in religious and community groups [100,101]. Civic activities in high school also increase the likelihood of college graduation by 19 percent with an even larger impact on minority groups such as African American males [100-102,104]. And higher levels of education attainment strongly reduce the racial gap in civic and political participation, with African American and Latino college graduates cutting the gap by 66 percent compared to white individuals with the same level of educational achievement [101].



By providing students equal access to civic knowledge, schools can equalize the civic playing field regardless of socio-economic differences [99]. In classrooms that nurture a sense of community and encourage students to become aware of current events, studies show an increased capacity for not just memorizing concepts about government, but for active engagement with the process of deconstructing, framing opinions, and participating in community activities [105-107]. These societal values and cognitive and critical thinking skills form the basis for civic and political participation as adults [107].

Another crucial dimension of the civic benefits of education is related to social cohesion in communities or “social capital.” This is a measure used by sociologists to capture, among other things, the level of trust between different groups within a society, public trust of government, and levels of participation in community programs. Higher levels of educational attainment strengthen social capital, improving public safety, health, and economic activity [110,128]. Research shows “a strong negative relationship between neighborhood crime rates and organized interaction among residents,” and that “localities with higher levels of trust, membership in voluntary groups, and informal social connections have better health outcomes and lower age-adjusted mortality” [109].

Pennsylvania Civic Participation Data

PA Dept. of State (2009) and U.S. Census Bureau (2009)

Educational attainment affects civic and political participation in the state.

- 67% of eligible Pennsylvanians are registered to vote.
- Voter registration is only 63% in the 10 PA counties with lowest per capita income.
- According to exit polls in the 2008 PA primary, 95% of voters were high school graduates or beyond; only 5% had not completed high school [100].
- The PA Supreme Court found that individuals of color, with low income, and low levels of educational attainment are under-represented on most juries [103].

Strong social cohesion also contributes significantly to the economy by establishing common norms and reducing across-group tensions, which facilitates community stability, economic activity between groups, and overall economic growth [128]. These relationships demonstrate how the diverse benefits of education are linked with one another.

Importantly, educational inequality is associated with less general public trust, trust in democracy, and trust of other citizens [24,128]. Greater levels of educational inequality cause a skills gap and drive a wedge between higher and lower skilled (and credentialed) individuals. This can lead to reduced levels of trust between people. Since 1983, the income gap between U.S. high school graduates and college graduates has increased from 40 percent to 60 percent [41]. This growing gap contributes to the low levels of general public trust observed in the United States relative to other western industrialized nations [24].

Based on this research, public schools represent a crucial opportunity for the development of social cohesion in American communities, especially between diverse groups. There is almost no other arena in which people of diverse ethnic, racial, and economic backgrounds come together and interact so closely and continuously. Public schools provide an essential place in which trust between groups can be fostered and relationships strengthened.

VI. Breaking the Community-School Cycle of Inequality

The following research documents the potential for achieving extensive and diverse benefits by strengthening public education. These benefits are more likely to be achieved in communities with quality schools. But improving local schools is often much more difficult when community poverty is high and students and families experience a pattern of educational, economic, and social disadvantage. Such hardships tend to impede school improvement, creating a persistent “community-school cycle of inequality.”

The cycle often starts early in childhood. Students receiving low-quality pre-school and elementary education are less able to take advanced high school classes, obtain a diploma, and access college education [50,129]. Without progress in education opportunities over time, a low level of academic attainment is often passed on from one generation to another. Individuals who do not finish high school are less likely to be fully employed and more likely to have a lower income. This often leads to a multi-generational pattern of low education rates, low employability, and high poverty [130].

FastFact: *Improving schools is much more difficult when community poverty is high and students and families experience a pattern of educational, economic, and social disadvantage.*

The multi-generational pattern of academic and economic disadvantage is exacerbated because the least advantaged students and families tend to reside in school districts that cannot afford high quality schools [117,131]. It is very expensive to provide the school services and supports needed to overcome the educational challenges presented by at-risk students [141]. But communities with weak local economies, high poverty, and low property values often cannot raise the revenue needed to meet the educational challenges of their disadvantaged children. And thus the cycle continues, where low-wealth school districts experience year after year of low student achievement, high dropout rates, and great teacher turnover [132]. Ironically, the wealthiest school districts can often afford to spend up to twice as much per student as less wealthy districts with more complicated and expensive academic challenges.

The impact of under-resourced schools on student achievement is severe and worsens over time [79,132-134]. For example, 15 percent of all 3rd grade students in Pennsylvania failed to pass the state assessment in math in 2010. This failure rate increases to 25 percent in 8th grade and to 42 percent in 11th grade. The trend of increasing failure is exacerbated for students in poverty, going from 26 percent in 3rd grade to 41 percent in 8th grade and 59 percent in 11th grade [135]. Even for students who do not drop out on high school, the pattern continues in college [136,137]. First-generation college students in both 2-year and 4-year institutions struggle much more than others to stay in college and graduate [95,136,137]. In these ways, the pattern of academic and economic disadvantage persists from generation to generation.

With new and increased resources, the community-school cycle of inequality can be broken. This is good news. Educators know how to achieve better outcomes for disadvantaged students. For example, smaller class sizes are strongly associated with better student achievement, even years later [138,139]. Students in small classes are not only more likely to finish high school on time, but are more likely to graduate in the top 25% of their class [140].

***FastFact:** With increased resources, the community-school cycle of inequality can be broken. Educators know how to achieve better outcomes for disadvantaged students.*

Quality student support programs to deal with behavior, attendance, and academic problems can also lower dropout rates [141]. These programs work because participants experience greater success in school and are able to avoid being held back in lower grade levels, which greatly increases dropout rates [142]. Low-income and minority students have demonstrated higher levels of achievement when they attend schools with more qualified teachers, a more challenging and high quality curriculum, and better funding to pay for these programs [20,143]. In short, the quality of the school program matters – the better the program, the better the student outcomes [144,145].

The challenge for Pennsylvania is that the programs and reforms proven to raise achievement for disadvantaged children require funding levels much higher than needed by schools facing fewer difficulties. It is ultimately in the best interest of the state to ensure that resources are available to provide quality schools for all children, regardless of where they live. Low academic achievement, high dropout rates, and the resulting social and economic problems will persist in low-wealth communities without extra financial and technical support. In 2007, the Pennsylvania General Assembly conducted a

Costing-Out Study that confirmed these conclusions and found that increased state funding is needed to help all students meet state academic standards in the under-funded school districts throughout the state [117]. The social and economic consequences of failing to make this investment would affect every taxpayer and resident in Pennsylvania.

Unfortunately, state government has found it difficult to sustain its investment in public education at effective levels. The state share of total education spending in Pennsylvania has fallen from over 50% in 1975 to only 37% in 2010. When state funding levels fall compared to local funding, it puts pressure on school districts to raise local taxes. Low-wealth communities do not have the resources to make up the difference and provide top quality schools.

So why do state officials find it hard to sustain the investment in education needed to implement proven reforms and break the community-school cycle of inequality? One reason is that the full impact of quality schools plays out over a lengthy timeline – 20 to 40 years. In the long run, as school reforms become ingrained and the individual and intergenerational benefits of academic

FastFact: *The state share of total education spending in Pennsylvania has fallen from over 50% in 1975 to only 37% in 2010.*

achievement are realized, quality education accrues the many social and economic benefits for families and communities as described in this paper. But the lengthy timeline for these effects may lead to under-investment in education since the cycles of politics are far shorter [38].

Another reason for under-investment in education by state officials is that they find it difficult to justify increasing the budgets of persistently failing school districts. The academic and financial struggles of these districts create a natural reluctance of the state to invest the resources needed to overcome their difficulties – to lower class sizes, to strengthen curricula, to improve teacher quality, and to add services for at-risk students. But the failure to fund such proven reforms and hold schools accountable for results ends up creating a self-fulfilling prophecy. Without extra help and intervention from the state, districts caught in the community-school cycle of inequality cannot hire the best teachers and administrators, establish effective instructional and support programs, and overcome educational and economic problems.

A final reason for the state's failure to sustain an effective level of investment in education is a stubborn belief that individuals in poverty, including African Americans and Latinos, are responsible for

breaking out of their disadvantaged situation on their own. The success stories of a few individuals are sometimes used to blame others for failing to take advantage of their own opportunities. An objective view of the situation shows that most families and schools caught in the community-school cycle of inequality are unable to overcome these circumstances without outside assistance. State policy makers must be careful to ensure that unfair preconceptions are not used to justify the continuation of an inequitable education funding system. Inadequate support for public schools causes social and economic harm to all Pennsylvanians, not just those living within the boundaries of struggling school districts.

Conclusion

Resources invested in improving the quality of public education should be viewed as more than current expenditures for schools and the students attending them. Such expenditures are long-term investments in strong families, a strong labor force, and strong communities. Education serves a vitally important role in granting access to the information and skills needed by individuals to participate in higher education, to sustain productive employment, and to make effective choices about crime, health care, and civic participation.

FastFact: *Inadequate funding for public schools causes social and economic harm to all Pennsylvanians, not just those living within the boundaries of struggling school districts.*

In these ways, quality schools produce strong individuals and thus help families and communities to remain strong. In contrast, struggling schools are often associated with struggling communities and high levels of unemployment, crime, illness, and social alienation. Low-wealth communities lack the resources to support quality schools on their own, thus creating a cycle of social and economic disadvantage that is hard to break without investment and technical assistance from the state.

All Pennsylvanians benefit from effective public schools. And we all pay the price for educational failure, including the social and economic costs of unemployment, shrinking job opportunities, rising crime, civic distrust, and high taxes needed to pay for health care and public assistance for low-income families. The question is whether we will muster the political will needed to invest in quality schools for children in all communities, or whether we will continue to look the other way as hundreds of thousands of children remain caught in the community-school cycle of inequality.

The executive and legislative branches of Pennsylvania government make choices every year about the level of resources to invest in public education and how to distribute this funding to school districts. The future social and economic well-being of our state will benefit if these choices are based, not on politics, but on objective evidence about where educational investment will have the greatest return. This means that the state must establish a system for funding public education that provides for adequacy, equity, accountability, predictability, and efficiency. Pennsylvania has not had such a system since at least 1991. Now is the time for real education funding reform, because as this report shows, “You can pay me now” or “You can pay me later.”

Future Research Needs

The national research reviewed in this paper has developed over the years to comprehensively document the social and economic impact of public education. This revised report provides the latest and best research to demonstrate the multiple ways in which public education provides economic and social benefits to Pennsylvania and the nation. Researchers in this field have focused on a national perspective, utilizing data from communities and school systems throughout the country.

This paper also refers to Pennsylvania-specific data where it exists. But a great deal of additional research is needed about the social and economic impact of public education in the Commonwealth. Suggestions for future research in Pennsylvania include:

- Examine more closely the application of national research conclusions to conditions found in Pennsylvania.
- Document the relationship between educational quality and funding and the social and economic conditions found locally and statewide.
- Identify ways to foster beneficial interaction between public school improvements and the employment, crime, health, and civic programs affected by these improvements.
- Develop better data collection systems to gather information about the social and economic impact of public education.

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