

# The Tax and Transfer Fiscal Impacts of Dropping Out of High School in Philadelphia City and Suburbs

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## Executive Summary

A high school diploma has increasingly become a prerequisite to full participation in the mainstream economy. Access to year-round, full-time jobs, even at low hourly rates of pay is quite limited for high school dropouts living in the city of Philadelphia and the surrounding suburban areas. Individuals who fail to graduate from high school have become increasingly relegated to the fringes of the labor market, stuck in extended periods of joblessness and, when working, more likely employed in part-time, part-year, low skill jobs.

Dropping out of high school imposes very high costs on the individual who drops out of school mainly through poor labor market outcomes. Other costs imposed are restricted access to higher education and training and a weaker voice in the political and electoral system. The weak labor market outcomes of high school dropouts result in reduced annual earnings, low income levels, a sharply higher risk of poverty, and all the negative personal and family consequences associated with life at the margins of the labor market. However, the costs of dropping out are not borne exclusively by the dropout. Many of the costs of dropping of high school spill over to the local communities: Philadelphia city, Philadelphia suburbs, the Commonwealth of Pennsylvania, and the nation a whole.

There are a variety of non-monetary as well as monetary costs that the decision to drop out of high school imposes upon the broader community. One of the primary sources of direct monetary costs that high school dropouts impose on the community are in the form of lower tax payments. A second major source of costs imposed by dropouts on the larger community is more intensive reliance on both cash and non-cash government income transfers. Another cost that is imposed by high school dropouts on the economy is the cost of incarceration. High school dropouts have much higher probabilities of incarceration at any one point in time than those with more schooling.

The grim fiscal consequences of dropping out of high school are exacerbated in an economy that continues to create jobs that require high levels of skills and literacy proficiencies. Employment opportunities for unskilled persons have declined sharply as

the industry structure of employment has shifted from manufacturing to service industries and as the production of the nation's output has become more technologically sophisticated raising the literacy and educational requirements of the workforce. Although employment opportunities for high school dropouts do exist at the lower end of the labor market, an increase in the labor supply of low skilled workers from undocumented immigration and increased globalization and outsourcing of low-skill jobs have exerted a downward pressure on both dropout employment rates and wages. All of these trends have increased the cost of dropping out of high school to the individual high school dropout, the economy, and society at large.

### **Employment and Earnings**

- Only 39 percent of high school dropouts in Philadelphia city were employed during the 2006 calendar year compared to nearly 58 percent of the city's high school graduates, 70 percent of those with a college education below a bachelor's degree, and 82 percent of those with a bachelor's or a higher college degree.
- The employment rate of suburban Philadelphia residents ranged from 55 percent among high school dropouts, 73 percent among high school graduates, to 85 percent among college graduates with a bachelor's or a higher degree.
- The mean annual earnings of 18- to 64-year old high school dropouts in Philadelphia city were only \$9,663 or less than 40 percent of the mean annual earnings of all non-elderly adults in the city, \$25,314. The mean earnings of high school graduates in the city were \$19,437 representing an earnings premium compared to high school dropouts, of \$9,774 or 101 percent. The earnings of college-educated Philadelphians ranged from \$26,723 among those who had completed some college below the bachelor's degree level, to \$47,613 among those with a bachelor's or a higher degree. These earnings levels were, respectively, 2.0, 2.8, and 4.9 times higher than the mean annual earnings of high school dropouts in the city.
- The mean earnings of high school dropouts in the suburban Philadelphia area also were much lower than their better-educated counterparts. Compared to the mean annual earnings of high school dropouts, high school graduates, those who had a

college education below the bachelor's degree level, and those with a bachelor's or a higher college degree in the suburban areas, respectively, had 1.8, 2.5, and 4.5 times higher annual earnings.

- These sharp differences between the annual earnings of high school dropouts and well-educated adult residents of Philadelphia city and suburbs are expected to result in large difference in their annual tax payments for payroll taxes, federal and state personal income taxes and sales taxes.
- Over their entire working lifetime, high school dropouts in Philadelphia city are expected to earn only \$457,100 and high school graduates, \$870,600. Philadelphians who complete some college education below a bachelor's degree can expect to earn \$1.178 million or 2.6 times as much as high school dropouts, whereas those with a bachelor's a higher degree are expected to earn 4.5 times as much as high school dropouts over their working lifetimes.
- Differences between the lifetime earnings of high school dropouts and their better-educated counterparts were also quite large in suburban Philadelphia, albeit not as large as the gaps among their counterparts residing in Philadelphia city. The mean lifetime earnings of high school graduates in suburban Philadelphia were 1.6 times higher than that of high school dropouts, and college graduates with a bachelor's or a higher degree were expected to earn 3.8 times more over their work lifespan compared to high school dropouts.

### **Home Ownership and value of Owner-Occupied Homes**

The amount of property taxes paid by individuals depends on their home ownership rates and the market value of their homes. The rate of home ownership and the value of owner-occupied homes also increased with educational attainment in Philadelphia city.

- Only 54 percent of all 18- to 64-year old householders in Philadelphia city owned their homes. Home ownership is less common in cities than it is in suburban areas. The rate of home ownership in Philadelphia city varied from just 47 percent among high school dropouts, to 55 percent among high school graduates and those householders with some college education below the bachelor's degree

level, to 57 percent among householders with a bachelor's or a post-graduate education.

- In suburban Philadelphia, home ownership rates were higher across all educational groups compared to the city. Three quarters of all 18- to 64-year old householders were home owners. The rate of home ownership in the suburban Philadelphia area increased sharply with educational attainment. Only one half of the householders in Philadelphia suburbs who had failed to complete high school owned their homes, compared to two-thirds of high school graduates, 73 percent of householders with some college education below the bachelor's degree level, and 83 percent among householders with a bachelor's or a higher college degree.
- The mean value of owner-occupied homes increased steadily with education of the householder. In 2006, the mean value of an owner-occupied home in Philadelphia city was \$162,190 and the range of the values of these homes by the education of the householder varied from a low of \$92,070 among high school dropouts to a high of \$262,320 among owner-householders with a bachelor's or a higher degree.
- The mean value of owner-occupied homes in the suburban Philadelphia area stood at \$353,260 among householders of all education levels. The mean values of owner-occupied homes in Philadelphia's suburbs across educational groups of householders ranged from \$241,180 among high school dropouts to \$415,270 among householders who had a bachelor's or a higher college degree.

### **Annual Tax Payments**

Not only were better-educated Philadelphians more likely to pay the federal, state, and local taxes but they also paid much higher amounts of these taxes over the year.

- High school dropouts in Philadelphia city made a combined tax payment (including federal and state income taxes, Philadelphia city wage tax, social security payroll taxes, federal government retirement contributions, local property taxes, and state sales taxes) of just \$4,250, which represents less than 40 percent of the mean combined tax payment of all adult residents of the city (\$10,320). The

mean combined tax payment among high school graduates was \$9,320 or nearly 2.2 times higher than the amount paid by high school dropouts. Philadelphians with a bachelor's or a higher college degree paid an average of \$17,180 in tax payments.

- On average for every \$1 in taxes paid by a high school dropout in Philadelphia city, high school graduates paid \$2.19 and bachelor's or higher college degree holders paid \$4.04.
- Tax payments were considerably higher among non-elderly residents of Philadelphia suburbs compared to their city counterparts. Per capita tax payments increased sharply with educational attainment in the suburbs, albeit not as sharply as it did in the city. The mean combined tax payments ranged from \$8,000 among high school dropouts to \$13,465 among high school graduates, and \$28,340 among college graduates with a bachelor's degree or higher level of education.
- For every \$1 of tax payment by high school dropouts in the suburbs, high school graduates paid \$1.68 and college graduates with a bachelor's or a higher college degree paid \$3.54.

### **Cash Transfers**

Income is a recurring and important component of most eligibility criteria for government transfer payments to the non elderly population of the state. Given the lower levels of employment and earnings and incomes among the poorly-educated compared to their better-educated counterparts, poorly educated individuals would be more likely to be eligible for, and therefore more likely to receive, government transfers.

- Over 28 percent of all Philadelphia city's non elderly residents received one or more cash transfer payments. The proportion of working age Philadelphia city adults who received government transfers was highest among high school dropouts and declined sharply among better-educated groups.
- Nearly 49 percent of Philadelphia city residents who were high school dropouts received one or more cash transfer payments, compared to 29 percent among high

school graduates, and 14 percent among college graduates with a bachelor's or a higher college degree.

- Although the receipt of cash transfer payments was lower among adult residents of Philadelphia suburbs, the rate of cash transfer receipt varied widely by education ranging from 22 percent among high school dropouts to 6 percent among college graduates with a bachelor's or higher degree. Across all education levels, one in six adult non elderly suburban residents received cash transfer payments during the 2004-2006 period.

### **Non Cash Transfers**

- Nearly one-quarter of all non elderly adult residents of Philadelphia city and 9 percent of their suburban counterparts had reported receiving one or more in-kind transfers such as Medicaid benefits, food stamps, energy assistance, housing subsidies, or school lunch subsidies.
- The rate of receipt of non cash transfers among the non elderly population in Philadelphia city varied sharply by level of educational attainment. Among the city's high school dropouts, 54 percent received a non cash transfer benefit—representing nearly 2.5 times the rate of receipt among high school graduates without any college education (22 percent) and 4.3 times the rate of receipt among the best-educated city residents (12.5 percent).
- The rate of receipt of non cash transfer benefits during the 2004-2006 period also varied widely by education among suburban Philadelphia residents. Nearly one-quarter (23 percent) of high school dropouts in the suburbs reported receiving a non cash transfer benefit; a rate that was 1.4, 3.4, and 10 times higher than the rate of non cash government transfer benefit receipt, respectively among, high school graduates (16 percent), residents with some college education below bachelor's degree level (7 percent), and college graduates with a bachelor's or a higher academic degree (2.3 percent).

## **The Incidence and Costs of Institutionalization**

- The incidence and costs of institutionalization of adults in Pennsylvania declined sharply with increases in educational attainment. While 1.3 percent of all 18- to 60-year Pennsylvanians was institutionalized in 2006, the rates of institutionalization varied from a high of over 5 percent among high school dropouts, to 1.6 percent among those with just a high school diploma or a GED, to 0.2 percent among college educated adults with a bachelor's or a higher degree.
- The high rate of institutionalization among high school dropouts resulted in a very high annual average cost of institutionalization per adult high school dropout in Pennsylvania (\$1,867). The annual institutionalization cost among adult high school graduates, with no college education, was much lower (\$575). Among college educated adults residents of Pennsylvania, the average annual cost of institutionalization per person was \$232 among adults with a below bachelor's degree level college education, \$57 per year among college graduates with a bachelor's or higher academic degree.

## **The Mean Annual Net Fiscal Contributions**

The difference between the mean annual tax payments and the mean values of annual cash and in-kind transfers and per capita annual costs of institutionalization represent the mean annual net fiscal contributions.

- The net fiscal contribution of the average non elderly working age adult without a high school diploma in Philadelphia city was negative (-\$6,780) indicating that mean annual tax payments were lower than the sum of the mean value of annual transfers and the annual institutionalization costs by \$6,780.
- High school dropouts residing in the suburban Philadelphia area had small; albeit positive, annual net fiscal contribution per capita (\$2,500).
- Adults in the remaining 4 educational groups had positive net fiscal contributions albeit of varying magnitudes. Citywide, adults with only a high school education and no postsecondary education annually contributed \$5,790 more in tax payments than the sum of what was received in the form of transfers and the costs

that they imposed for institutionalization. The net fiscal contribution of adults with below bachelor's level college education was \$6,040 per year. The per capita annual net fiscal contribution of college graduates with a bachelor's or higher degree was \$15,200.

- The annual net fiscal contribution of suburban residents varied from \$9,420 among high school graduates to \$27,400 among college graduates with a bachelor's or a higher degree.

### **The Ratio of Mean Annual Tax Payments to Combined Value of Transfers and Institutionalization Costs**

- The ratio of mean annual tax payments to the annual mean value of transfers and annual institutionalization costs rose sharply with education in Philadelphia city—from only 0.39 among adults who did not complete high school, to 8.59 among adults with a bachelor's or a higher academic degree. A high school dropout paid only \$0.39 for every \$1 received in the form of transfers and institutionalization costs whereas those with a bachelor's or a higher degree contributed \$8.67 in tax payments for every \$1 received in transfers and institutionalization costs.
- Among suburban Philadelphia residents, the ratio of mean annual tax payments to the annual mean value of transfers and annual institutionalization costs also rose sharply with education. High school dropouts paid \$1.45 in taxes for every \$1 of transfer benefits and institutionalization costs whereas the tax payments of college graduates (with a bachelor's or higher degree) in the suburbs stood at \$29.50 for each \$1 that they received in the form of transfers and institutionalization costs.

### **The Lifetime Mean Annual Net Fiscal Contributions**

- Over their working lives, the negative annual net fiscal contribution of adult residents of Philadelphia city who failed to complete high school would accumulate into (-) \$319,000. In contrast, a high school graduate (without any college education) is estimated to make a net fiscal contribution of (+) \$261,000. The mean lifetime net fiscal contributions of adults with a bachelor's or a higher academic degree are estimated at (+) \$623,000.

- Each high school dropout in Philadelphia city is estimated to impose a lifetime cost (negative net fiscal impact) of (-) \$319,000. Each high school graduate (without any college education) resident of the city is expected to make a net positive fiscal contribution of (+) \$261,000 over their working lives. The difference between the two (the contribution of each high school graduate (\$261,000) minus the (negative) contribution of each high school dropout (-\$319,000) or  $(\$261,000) - (-\$319,000) = \$580,000$  represents the potential gain to the federal, state, and local governments for each successful high school graduation of a urban area student who would have otherwise dropped out of high school.
- Over their working lifetimes, the per capita net fiscal contribution of high school dropout residents of the suburban Philadelphia area is estimated to be \$117,000. The area's high school graduates (without any college education) are expected to make a net positive fiscal contribution of (+) \$424,000 over their working lives. The difference between the two (the contribution of each high school graduate (\$424,000) minus the contribution of each high school dropout (117,000) or  $(\$424,000) - (\$117,000) = \$307,000$  represents the potential gain to the federal, state, and local governments for each successful high school graduation of a suburban area student who would have otherwise dropped out of high school.

Clearly, working age adults who fail to complete high school impose very high costs upon the public coffers in the form of low tax payments, high rates and amounts of receipt of government transfer payments along with high institutionalization costs. These fiscal losses to taxpayers are in addition to the sizable personal costs of dropping of high school that are borne by the individuals themselves. The large gap between the lifetime net fiscal contributions of high school dropouts and their counterparts with just a high school education indicate that the monetary benefit of each successful high school graduation to the public coffers is indeed very large. Although the components in the net fiscal contributions estimated in this report encompass a wide array of taxes and transfers and costs, these estimates are still very conservative since they do not include non-quantifiable personal costs, health costs, and social costs of high school dropouts and the

transmission of these costs to future generations through diminished resources available to their children.

## Introduction

A high school diploma has increasingly become a prerequisite to full participation in the mainstream economy. Access to year-round, full-time jobs, even at low hourly rates of pay is quite limited for high school dropouts. Individuals who fail to graduate from high school have become increasingly relegated to the fringes of the labor market, stuck in extended periods of joblessness and, when working, more likely employed in part-time, part-year, low skill jobs. A high school diploma has become the minimum educational requirement for residents of Philadelphia city and the surrounding suburban area that can provide access to employment and earning experiences over their working lives capable of generating sufficient income to achieve a middle class standard of living.<sup>1</sup>

While high school dropouts are increasingly relegated to the margins of the labor market, they also are largely shut out of the economic gains associated with access to post secondary education at the two- and four-year college degree level as well as in non degree post secondary educational programs. Admission to a higher education program requires the completion of high school. Even when admission is not contingent upon earning a high school diploma, dropouts are less likely to enroll in a post secondary program. High school dropouts are therefore also shut out of most education and training opportunities.

The degree of civic engagement of individuals is also found to be highly correlated with their level of educational attainment. Unsurprisingly, civic engagement is another arena with very limited participation by high school dropouts. Compared to better educated individuals including high school graduates, high school dropouts are considerably less likely to participate in the labor market, are not eligible (and are

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<sup>1</sup> This was not always the case. As late as the end of the 1970s, men who had dropped out of high schools had expected life time earnings that could provide their families with decent living standard. See: Neeta P. Fogg, Paul E. Harrington and Ishwar Khatiwada, *The Long Term Labor Market Consequences of Dropping Out of High School In Pennsylvania*, Prepared for the Pennsylvania Department of Education, Harrisburg, October, 2007 and Neeta P. Fogg, Paul E. Harrington and Ishwar Khatiwada *The Lifetime Employment and Earnings Consequences of Dropping Out of High School in Philadelphia*, prepared for the Philadelphia Workforce Investment Board, Philadelphia, February, 2008

unlikely) to enroll in most postsecondary education programs and a number of training programs, and are not as active in the civic or the electoral arena.

Evidence on the poor labor market participation and inferior labor market outcomes among high school dropouts abounds.<sup>2</sup> Individuals who fail to complete high school are less likely to participate in the labor market and to look for a job. When they do look for employment, the lack of a high school diploma poses a major barrier to finding work. Consequently, the unemployment rate of high school dropouts is considerably higher than that of their better-educated counterparts. During 2007, the annual average unemployment rate of high school dropouts across the nation was 10.6 percent compared to 5.6 percent among high school graduates, and only 2.2 percent among college graduates. Even when dropouts do find a job, they typically work considerably fewer hours per year and have sharply lower hourly wages; the combination of both of these factors sharply depresses their annual earnings compared to those with more schooling. High school dropouts are also much less likely to receive employment-related benefits such as health insurance and employer sponsored retirement programs compared to better-educated individuals. Although possessing just a high school diploma does not guarantee the best labor market outcomes, completing high school sharply increases access to labor market opportunities that are now largely unavailable to those without a high school diploma.

In the education arena, access to postsecondary education and many training programs is typically denied to those who do not have this basic credential. Civic engagement in the form of volunteering activities, active group or association membership, fundraising and charity activities, regular voting in elections, and

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<sup>2</sup> For a review of the relationship between educational attainment, changing skills requirements and labor market outcomes in Philadelphia city and the state of Pennsylvania, see: Paul Harrington, Neeta Fogg, and Kevin McCabe, *The Educational Deficit in Philadelphia*, Prepared for the Philadelphia Workforce Investment Board, December 2005; See also Philadelphia Workforce Investment Board, *A Tale of Two Cities*, PWIB, 2006; for a review of the relationship between educational attainment, literacy proficiencies, and labor market outcomes in the nation, see: (i) Andrew Sum, Irwin Kirsh, and Kentaro Yamamoto, *Pathways to Labor Market Success: The Literacy Proficiencies of U.S. Adults*, Education Testing Service, Princeton, New Jersey, 2004; (ii) Irwin Kirsh, Henry Braun, Andrew Sum, and Kentaro Yamamoto, *The Perfect Storm: Three Forces Changing Our Nation's Future*, Education Testing Service, Princeton, New Jersey, 2007; (iii) Paul Barton, *One-third of a Nation: Rising Dropout Rates and Declining Opportunities*, Policy Information Center, Educational Testing Service, Princeton, New Jersey, 2005.

volunteering for political campaigns is much less likely among high school dropouts.<sup>3</sup> Moreover, civic engagement has declined over time with the largest declines occurring among high school dropouts.<sup>4</sup> An apt description of this phenomenon was provided by John Bridgeland, a former domestic advisor to President Bush, who said that “High school dropouts are ... nearly voiceless in a system that fails them.”<sup>5</sup>

There is no doubt that dropping out of high school imposes very high costs on the individual who drops out of school mainly through poor labor market outcomes but also from restricted access to higher education and training and a weaker voice in the political and electoral system. The weak labor market outcomes of high school dropouts result in low level of earnings, low income levels, a higher risk of poverty, and all the negative personal and family consequences associated with poverty and economic disadvantage. However, the costs of dropping out are not borne exclusively by the dropout. Many of the costs of dropping of high school spill over to local communities: the city of Philadelphia, suburban Philadelphia, the Commonwealth of Pennsylvania, and the nation a whole.

There are a variety of non-monetary as well as monetary costs that the decision to drop out of high school imposes upon the broader community. One of the primary sources of direct monetary costs that high school dropouts impose on the community are in the form of lower tax payments. Most taxes are levied on income, consumption and wealth, all of which are heavily dependent on an individual’s ability to generate earned income over their working lives. A second major source of costs imposed by dropouts on the community is more intensive reliance on both cash and non-cash government income transfers. As is amply evident in the remainder of this paper, the impact of dropping out on federal, state, and local government revenues and expenditures is quite considerable and the costs of these revenue deficits and increased expenditures that are associated with

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<sup>3</sup> Scott Keeter, Cliff Zukin, Molly Andolina, and Krista Jenkins, *The Civic and Political Health of the Nation: A Generational Portrait*, The Center for Information & Research on Civic Learning & Engagement, Tufts University, Medford, Massachusetts, September 2002.

<sup>4</sup> *Broken Engagement: America's Civic Health Index*, National Conference on Citizenship, Washington, D.C., September 2006; *Renewed Engagement: Building on America's Civic Core*, National Conference on Citizenship, Washington, D.C., September 2007; Robert Putnam, *Bowling Alone: The Collapse and Revival of American Community*, Simon and Schuster, New York, New York, 2000.

<sup>5</sup> Amy Goldstein, “Civic Involvement Tied to Education,” *The Washington Post*, September 19, 2006, p. A19.

dropping out of high school are borne by those who have achieved higher levels of educational attainment.

The incomes of high school dropouts are depressed because they are less likely to be employed and when they do find employment they gain access to lower-quality jobs that pay lower wages and provide fewer benefits; and this has important implications for tax revenues at the federal, state and local level. High school dropouts have lower rates of participation in the labor force, lower employment rates, work fewer hours per week and fewer weeks during the year, and thus have much lower annual and lifetime earnings than those who have higher levels of education including college graduates as well as high school graduates. Low earned income among dropouts in Philadelphia city translates into reduced tax payments and higher transfer costs.

Most taxes are closely associated with the income and earnings of individuals. Tax payments generally increase with income. In the case of income taxes this connection is especially strong. Since income taxes are based upon income levels and high school dropouts have lower earnings and incomes, they are likely to make much smaller contributions to the public coffers in the form of income taxes. The social security payroll tax is also tied to earnings as it is imposed as a fixed percent of earnings. The more marginal employment and earnings experiences of high school dropouts means that at any given point in their working lives they either pay no social security payroll tax or pay much smaller amounts of this tax compared to those with more schooling.

Because of their lower earnings and incomes, high school dropouts also have a lower purchasing power and therefore pay smaller amounts of sales taxes than better-educated individuals who have higher earnings and incomes and a higher purchasing power. High school dropouts are also much less likely to own their home and when they do own their home, they are more likely to own a lower-price home that is within the reach of their limited means. Since real estate (home) property tax payments are proportionate to the assessed value of the home, high school dropouts are likely to pay either no property tax since many do not own their homes or they are likely to pay smaller amounts of property taxes since many own lower priced homes. Thus, high

school dropouts contribute less than better-educated individuals to the revenues of the federal, state, and local governments.

As noted earlier, high school dropouts are much more dependent on public assistance income transfer programs than their better-educated counterparts. They are more likely to receive transfer payments than others and the amount of cash and non-cash transfer payments are higher among high school dropouts than among their better-educated counterparts. The reason underlying the higher reliance on public assistance among high school dropouts is their poorer labor market outcomes—lower rates of labor force participation, lower employment rates, and fewer annual hours of employment, and lower wages—that result in lower earnings and incomes among them. Eligibility for cash and non-cash transfers for the non elderly (those under the age of 65) is largely based upon household income levels. The lower levels of earnings and incomes of high school dropouts sharply increase their likelihood of eligibility for transfer payments. The receipt of cash and non-cash transfer income is therefore much higher among high school dropouts.

Another cost that is imposed by high school dropouts on the economy is the cost of incarceration. Many high school dropouts operate on the fringes of the legitimate labor market. Involvement in illegal activities is much higher among high school dropouts than among those who have completed high school. The rate of involvement in illegal activities decreases sharply among those with postsecondary education and college degrees. A higher involvement in illegitimate activities among high school dropouts leads to a higher rate of incarceration among them. In fact, a large majority of the nation's inmates lack a high school diploma. According to the Bureau of Justice Statistics in 1997, 41 percent of the nation's inmates in federal and state prisons and local jails did not have a high school diploma and another 24 percent had obtained only a GED. Thus, nearly two-thirds of the nation's inmates did not earn a regular high school diploma. As a comparison, only 18 percent of the general population (age 18 or older) lacked a regular

high school diploma associated with the successful completion of four years of high school.<sup>6</sup>

Some economists argue that the high rate of involvement of high school dropouts in illegitimate activities is associated with a lack of opportunities in the mainstream or legitimate economy. The lack of opportunities in the mainstream economy among high school dropouts reduces their opportunity cost (lost wages) of incarceration, which is one of the consequences of participation in illegitimate activities.<sup>7</sup> If their perceived earnings from the illegitimate activities are higher than their earnings in legitimate jobs, high school dropouts will be more likely to pursue illegitimate activities.<sup>8</sup>

The grim consequences of dropping out of high school are exacerbated in an economy that continues to create jobs that require high levels of skills and literacy proficiencies. Employment opportunities for unskilled persons have declined sharply as the industry structure of employment has shifted from manufacturing to service industries and as the production of the nation's output has become more technologically sophisticated raising the literacy and educational requirements of the workforce. Although employment opportunities for high school dropouts do exist at the lower end of the labor market, an increase in the labor supply of low skilled workers from undocumented immigration and increased globalization and outsourcing of low-skill jobs have exerted a downward pressure on wages at the lower end of the labor market and limited the access to employment of high school dropouts even in the low-skill sector of the labor market. All of these trends have increased the cost of dropping out of high school to the individual high school dropout, the economy, and society at large.

This research report describes and estimates some of the most important financial impacts on federal, state and local government revenue and expenditures of high school dropout residents of Philadelphia city relative to residents with more schooling. It examines the financial consequences to government of dropping out in Philadelphia city.

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<sup>6</sup> Caroline Wolf Harlow, *Education and Correctional Populations*, Bureau of Justice Statistics, Special Report, January 2003, NCJ 195670.

<sup>7</sup> Lance Lochner and Enrico Moretti, "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self Reports," *The American Economic Review*, March 2004, pp. 155-189.

<sup>8</sup> Richard Freeman, "Why Do So Many Young American Men Commit Crimes and What Might We Do About It," *Journal of Economic Perspectives*, Winter 1996, pp 25-62.

The paper provides an estimate of the net lifetime fiscal impact of dropping out for each of five distinct educational groups in the city of Philadelphia. The net fiscal impact is measured as the difference between quantifiable revenues in the form of taxes paid and the total quantifiable costs or expenditures in the form of cash transfer payments, monetary value of non-cash transfers, and incarceration costs of each adult resident of the city.

The report begins with an analysis of the labor market outcomes of employment, earnings, and lifetime earnings, of the working-age adult (18-64) city residents by their educational attainment.<sup>9</sup> The income of adult residents in the city, which is the primary determinant of their tax payments and their dependency on income transfers, is largely determined by their labor market outcomes. A large majority of income for most people is derived from earnings in the labor market. Analysis of the 2006 ACS data by the authors indicates that among all working age individuals, earnings comprise 72 percent of total personal income in the Commonwealth of Pennsylvania and 66 percent in the city of Philadelphia. If the elderly population (65 years or older) is excluded, earnings account for 86 percent of personal income in the Commonwealth and 79 percent in the city. Thus, the level of income for most individuals is closely related to the level of their earnings in the labor market.

Also presented in this section are home ownership rates and the values of owner-occupied homes among Philadelphia residents in each of the four educational groups. The ability to accumulate wealth, most often held as a form of property, is heavily dependent on an individual's lifetime stream of earnings. The lower level of earnings and incomes of high school dropouts result in lower rates of home ownership among them. Furthermore, when they do own their homes, high school dropouts are likely to own lower-priced homes. Home ownership rates and the market values of owner-occupied homes determine the amount of property tax payment by households. Lower home ownership rates combined with ownership of lower priced homes among high school dropout households translate into lower property tax payments among high school dropouts compared to better-educated individuals.

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<sup>9</sup> A more detailed review of these findings can be found in op.cit, *The Lifetime Employment and Earnings Consequences of Dropping Out ...*

Following our discussion of home ownership the report describes and presents estimates of each of the components of quantifiable revenues—tax payments— from households, that are included in computing the net fiscal impact for each educational group. Estimates are presented for federal income tax payments, social security retirement payroll taxes, federal government retirement contributions, state income tax payments, state sales tax payments, and the property tax liability. Estimates of these tax payments are presented for each of the following four educational subgroups of adults (18-64) in Philadelphia:

- Less than 12 or 12 years of school, no high school diploma or GED certificate.<sup>10</sup>
- High school diploma or GED, no completed years of post-secondary schooling
- One to three years of college, including Associate degree holders
- Bachelor’s or higher degree holders

The sum of these tax payments represents the total tax payments made by individuals in each educational group.

The next section of the report contains descriptions and estimates of each of the components of quantifiable costs—cash and non-cash transfer payments and incarceration costs—used in our computation of net fiscal impacts. Dollar values of nine cash transfer payments and estimated market values of six non-cash or in-kind transfers for adult (18-64) Philadelphians by their level of educational attainment are presented in this section.

Another component of the quantifiable costs used in our computation of net fiscal impacts is the cost of incarceration. Our methodology of computing incarceration costs involves the use of the ACS data to compute the rate of institutionalization among residents of the area. The ACS count of the residents of an area includes the residents of all group quarters located in the area. This means that if a jail or prison is located in an area, the area will have a higher institutionalization rate. This methodology would produce accurate rates of institutionalization for an entire state. However, the institutionalization rate at the substate areas would be highly sensitive to the location of

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<sup>10</sup> High school students and college students under the age of 25 are excluded from the analysis. The monthly CPS survey collects data on the school enrollment status of persons 16-24 years of age.

jails and prisons in the area resulting in an upward bias in the institutionalization rate for the area if a prison or jail is located in the area. An upward bias in the institutionalization rate would produce an upwards bias in the cost of institutionalization per adult resident in the area. Therefore in this paper, we have used the institutionalization costs per adult resident in the entire state of Pennsylvania to represent the incarceration costs per adult resident in Philadelphia city and suburbs.

The final section of this paper contains estimates of the net fiscal impacts associated with each educational subgroup of adult residents of Philadelphia. Annual average estimates of the net fiscal impacts associated with each educational subgroup of Philadelphia residents are presented in this section. We also extrapolate these mean annual estimates over the working lifetimes of each educational subgroup of residents to obtain estimates of the expected lifetime fiscal impacts of achieving a given level of educational attainment in Philadelphia.

## **Employment, Earnings, and Lifetime Earnings of Residents of Philadelphia City and Suburbs**

The employment and earnings experiences of adults are key determinants of their fiscal contributions to the federal and state government budgets in the form of tax payments. The federal personal income tax is a progressive tax whereby adults with higher personal incomes not only pay higher federal income tax payments but also pay a higher share of their personal income in federal income taxes. The Pennsylvania state personal income tax is proportional and not progressive which means that the state income tax liability still rises proportionately with income levels.<sup>11</sup> The social security payroll tax is also a proportional tax of 6.2 percent up to a maximum income threshold that is increased each year based on the rate of inflation. The upper income limit for social security payroll tax was \$97,500 in 2007 and 102,000 in 2008.<sup>12</sup> The state sales tax

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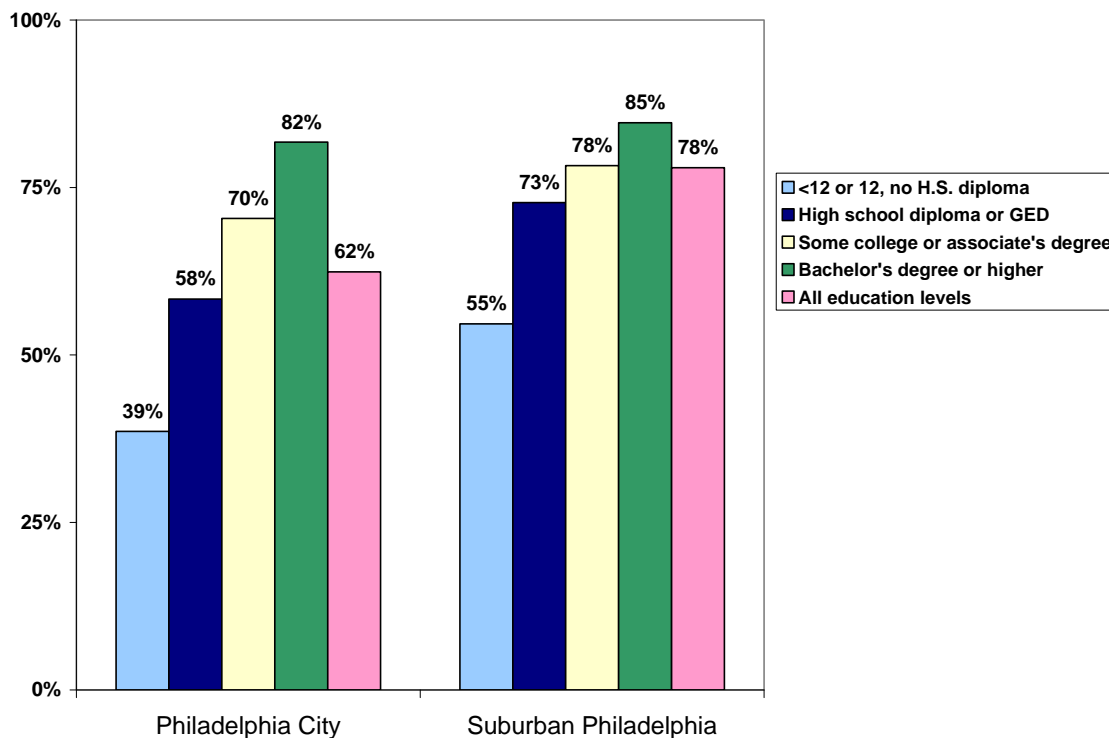
<sup>11</sup> Tax exemptions for low income individuals make even the proportional state income taxes mildly progressive.

<sup>12</sup> The 6.2 percent tax is paid by employee and is matched by a 6.2 percent tax payment by the employer. There is no upper income limit on Medicare taxes where the employer and employee each pay 1.45 percent on all earnings. See: Social Security Online Electronic Fact sheet. Available at: <http://www.ssa.gov/pubs/10003.html>.

payments also increase with income since increased incomes are associated with increase in expenditures on goods and services many of which are subject to the sales tax.

The employment rates of 18- to 64-year old adults varied widely by educational attainment in Philadelphia city and its suburbs. The employment rate of adult residents of both areas increased with educational attainment. Only 39 percent of high school dropouts in Philadelphia city were employed during the 2006 calendar year. Completing high school increased the probability of employment among city residents by nearly 20 percentage points. Fifty-eight percent of the city’s high school graduates were employed in 2006. Postsecondary education is associated with even higher rates of employment. Adult residents of the city with some college education or an associate’s degree had an employment rate of 70 percent, while 82 percent of those with a bachelor’s or a higher

**Chart 1:**  
Employment to Population Ratio of 18-64 Year Old Civilian Non-Institutional Population (Excluding 18- to 22-year Old Students) of Philadelphia City and Suburbs\*, 2006



Source: 2006 American Community Survey (ACS), Public Use Microdata Samples (PUMS) files, Census Bureau, tabulations by authors.

\*Philadelphia suburbs include Bucks, Chester, Delaware, and Montgomery counties.

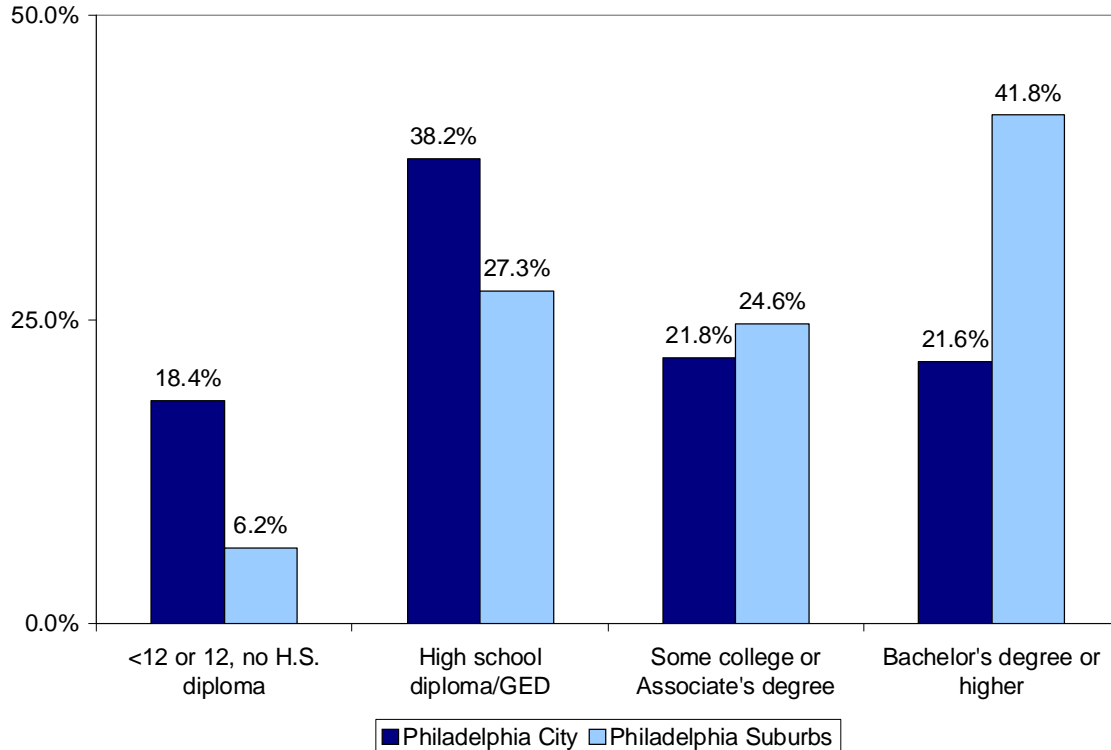
academic degree were employed in 2006. There were sizable differences in employment rates of high school dropouts and college educated residents of the city. The employment rate of college-educated city residents with a bachelor's or higher degree was more than twice as high, and those with some college or an associate's degree was over 30-percentage points higher than that of their counterparts who had failed to complete high school

The employment rate of adult residents of Philadelphia suburbs also varied by educational attainment albeit not as sharply as that of their city counterparts. The employment rates of 18- to 64-year old residents in Philadelphia suburbs varied from 55 percent among high school dropouts and 73 percent among high school graduates to 78 percent among those with some college education or an associate's degree and 85 percent among college graduates with a bachelor's or a higher degree.

Within Philadelphia city and its suburbs, individuals with lower levels of education have lower rates of employment than better educated individuals. In fact, as we shall see in the remainder of this paper, on every labor market outcome, the performance of poorly educated individuals is considerably inferior compared to that of better-educated individuals. Therefore, the overall labor market performance of the population of an area is closely linked to the educational attainment of its workforce. Areas with a better-educated workforce are expected to have better overall labor market outcomes than those with poorly-educated workforce.

A comparison of the educational attainment of the adult residents of Philadelphia city and Philadelphia suburbs reveals very sharp differences with considerably lower educational attainment among residents of the city compared to the suburbs. City residents were much more likely than their suburban counterparts to drop out of high school and much less likely to have graduated with a bachelor's degree. Data presented in Chart 2 reveals that the share of high school dropouts among 18- to 64-year residents in Philadelphia city was nearly 3 times as high as the share of high school dropouts among Philadelphia's suburban residents (18 percent in the city versus 6 percent in the suburbs). An equally sizable gap exists at the upper end of the educational distribution. The share of the city's residents with a bachelor's or a higher academic degree was 20 percentage

Chart 2:  
Percentage Distribution of the 18-64 Year Old Civilian Non-Institutional  
Population (Excluding 18- to 22-year Old Students) of Philadelphia City and Suburbs\* by  
Educational Attainment 2006



Source: 2006 American Community Survey (ACS), Public Use Microdata Samples (PUMS) files, Census Bureau, tabulations by authors.

\*Philadelphia suburbs include Bucks, Chester, Delaware, and Montgomery counties.

points higher than their suburban counterparts (22 percent in the city versus 42 percent in the suburbs). The different level of educational attainment of the residents of Philadelphia city and suburbs partly underlies the lower employment rate among the city residents that is evident in Chart 1. In 2006, the overall employment rate (among all education groups) in Philadelphia city was 62 percent, a rate that was 16 percentage points lower than the rate of employment among suburban residents (78 percent).

A comparison of the city and suburban employment rates within each educational subgroup reveals that within each education subgroup the rate of employment was higher among suburban residents than their city counterparts. The employment rate gap between city and suburban residents was largest among high school dropouts (39 percent in the city versus 55 percent in the suburbs-a difference of 16 percentage points) and the

smallest among college graduates with a bachelor’s or a higher degree (82 percent in the city versus 85 percent in the suburbs—a difference of 3 percentage points).

Clearly, the city’s high school dropouts have considerably fewer employment opportunities than their counterparts residing in the surrounding suburbs. This is evident from a comparison of the job structure of the city with that of the suburban areas which reveals that the share of employment in the construction, manufacturing, and retail trade industry sector—where most high school dropouts find employment—was considerably smaller in the city compared to the suburbs.<sup>13</sup>

Wide gaps also exist between high school dropouts and their better-educated counterparts in the level of their annual earnings. The lower rates of employment of poorly educated individuals coupled with lower hourly wage rates and fewer annual hours of work among them result in considerably lower level of earnings. The mean annual earnings of 18- to 64-year old high school dropouts in Philadelphia city stood at only \$9,660. Just earning a high school diploma is associated with a two-fold increase in earnings. On average high school graduate residents of the city earned \$19,400 per year.

Table 1:  
Mean Annual Earnings of 18- to 64-Year Old Civilian Non-Institutional Population  
(Excluding 18- to 22-year Old Students) in Philadelphia City and Suburbs\*, 2006

Educational Attainment	Ratio Relative to		Ratio Relative to	
	Philadelphia City	High School Dropouts	Philadelphia Suburbs	High School Dropouts
<12 or 12, n H.S. diploma	\$9,663	1.000	\$15,317	1.000
High school diploma or GED	\$19,437	2.012	\$27,715	1.809
Some college or associate's degree	\$26,723	2.766	\$38,013	2.482
Bachelor’s degree or higher	\$47,613	4.928	\$69,498	4.537
All education levels	\$25,314	2.620	\$46,954	3.065

Note: Individuals with no earnings were assigned 0 earnings in the computation of mean annual earnings.

Source: 2006 American Community Survey (ACS), Public Use Microdata Samples (PUMS) files, U.S. Census Bureau, tabulations by authors.

\*Philadelphia suburbs include Bucks, Chester, Delaware, and Montgomery counties.

<sup>13</sup> Analysis of the annual 2007 employment data by industry sector from the Current Employment Statistics reveals that manufacturing sector employment accounted for 4 percent of the city’s jobs compared to 10 percent in the suburbs; the share of retail trade sector jobs was 7 percent in the city and 12 percent in the suburbs, and construction jobs represented only 2 percent of the city’s jobs compared to 6 percent of all jobs in the suburbs.

The earnings of Philadelphia city residents increased sharply with additional education after high school completion. Individuals with a postsecondary education are more likely to be employed, are paid a higher hourly wage, and work more hours during the year, and thus earn much more than those without any postsecondary education. The earnings of college-educated Philadelphians ranged from \$26,700 among those who had completed some college below the bachelor's degree level to \$47,600 among those with a bachelor's or a higher academic degree. These earnings levels were, respectively, 2.8 and 4.9 times higher than the mean annual earnings of high school dropouts in the city.

The mean annual earnings among residents of Philadelphia suburbs were higher within each educational group as well as for all education groups combined compared to the earnings of their counterparts who lived in the city. The mean annual earnings of the city's residents were \$25,300 representing a level that was only a little more than one-half of the mean annual earnings of their suburban counterparts (\$46,900). Even among high school dropouts, the mean annual earnings of those who lived in the suburbs was considerably higher than their city counterparts; \$15,300 or a level that was \$5,650 or nearly 60 percent higher than the \$9,660 earnings of high school dropouts residing in the city. Many factors underlie these differences including the incidence of employment, intensity of employment, access to better quality jobs, and wage rates. Higher earnings in the suburban areas compared to those in the city means that the tax payments within each educational group of residents of the suburban areas, including high school dropouts, will be higher than the tax payments of city residents.

Although the level of earnings of each educational subgroup of residents was higher in the suburbs than in the city, the earnings differentials between educational subgroups of adults in the Philadelphia suburban area were similar to those in the city. The mean annual earnings of high school graduates in the suburbs were 1.8 times higher than that of high school dropouts. Suburban residents who had completed some college education below the bachelor's degree level earned 2.5 times as much as high school dropouts per year. The gap between the earnings of high school dropouts and college graduates with a bachelor's or higher degree was much larger. For every \$1 earned by high school dropout residents of Philadelphia's suburbs, their college graduate counterparts (with a bachelor's or a higher degree) earned \$4.50. These sharp differences

between the annual earnings of high school dropouts and well-educated adult residents of Philadelphia city and Philadelphia suburbs are expected to result in large differences in their annual tax payments for payroll taxes, federal and state personal income taxes and sales taxes.

Not only are there wide differences between the annual earnings of educational subgroups of the population, but an examination of their lifetime earnings reveals that these differences persist over their entire working lifetimes. We have used the 2006 American Community Survey data to calculate lifetime earnings of 18-64 year old residents of Philadelphia in each of the four educational subgroups. The lifetime earnings of each group were calculated as the sum of the 2006 mean annual earnings in single age groups within each educational subgroup. The lifetime earnings differentials represented by these cross-sectional estimates are conservative since they do not account for declines in the earnings of poorly educated individuals that are likely to continue into the future as they have occurred over the past 25 to 30 years.

Table 2:  
Mean Lifetime Earnings of 18- to 64-Year Old Civilian Non-Institutional  
Population (Excluding 18- to 22-year Old Students) in Philadelphia City  
and Philadelphia Suburbs\*, 2006

Educational Attainment	Ratio Relative to		Ratio Relative to	
	Philadelphia City	High School Dropouts	Philadelphia Suburbs	High School Dropouts
<12 or 12, no H.S. diploma	457,089	1.000	756,544	1.000
High school diploma or GED	870,625	1.905	1,221,346	1.614
Some college or associate's degree	1,177,846	2.577	1,637,735	2.165
Bachelor's degree or higher	2,051,455	4.488	2,885,495	3.814
All education levels	1,131,452	2.475	1,996,710	2.639

Source: 2006 American Community Survey (ACS), Public Use Microdata Samples (PUMS) files, U.S. Census Bureau, tabulations by authors.

\*Philadelphia suburbs include Bucks, Chester, Delaware, and Montgomery counties.

Over their entire working lifetimes, high school dropouts in Philadelphia are expected to earn under one-half million dollars (\$457,100). The lifetime earnings of high school graduates were somewhat higher, \$870,600 or nearly 91 percent higher than that of high school dropouts. Similar to the college annual earnings premium, the lifetime

earnings associated with a college education was sizable. Philadelphians who complete some college education below a bachelor's degree can expect to earn \$1.178 million representing lifetime earnings that were 2.6 times as large as that of high school dropouts. Individuals with a bachelor's degree or higher are expected to earn 4.5 times as much as high school dropouts over their working lifetimes. The mean lifetime earnings of adult residents of Philadelphia city with a bachelor's degree or higher was \$2.051 million.

Similarly large lifetime earnings differences between the four educational groups were estimated for residents of Philadelphia suburbs. The mean lifetime earnings of suburban high school dropout residents was \$756,500, a level that was nearly \$464,800 lower than that of high school graduates, \$881,200 lower than the lifetime earnings of those with some college below a bachelor's degree, and \$2.129 million lower than those with a bachelor's degree or higher level of education. Individuals with a high school diploma or a GED in the suburbs are expected to earn over 1.61 times as much as high school dropouts, and those with a bachelor's degree or higher are expected to earn 3.8 times as much as high school dropouts over their working lifetimes.

## **Home Ownership Rate and the Value of Owner-Occupied Homes in Philadelphia City and Suburbs**

The property tax is the largest single source of revenue for most local governments. Many of the services provided by local governments, particularly elementary and secondary education, are largely financed by local real estate or property taxes. In Pennsylvania as well as other states, property tax revenues are a large component of the financing of the K-12 education system. In Pennsylvania, during the 2001-02 fiscal year the real estate property taxes accounted for nearly 80 percent of local taxes for school districts and local taxes in turn accounted for nearly 57 percent of the general fund revenue for school districts in the state.<sup>14</sup> Given the importance to state and local finance we have included property tax revenue impacts as one of the revenue

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<sup>14</sup> Sources: (i) Pennsylvania Department of Education, Selected Revenue Data and Equalized Mills For Pennsylvania School Districts, 2001-2002, [http://www.pde.state.pa.us/k12\\_finances/lib/k12\\_finances/2001-02\\_RevPubTotal.pdf](http://www.pde.state.pa.us/k12_finances/lib/k12_finances/2001-02_RevPubTotal.pdf); (ii) Scorecard data for Education Finance, Local School Tax Sources, Fiscal Year 2001-02, <http://www.issuespa.net/scorecards/382/476?curCategory=173>

components in our estimates of the fiscal impacts of adults with different levels of education.

The amount of property taxes paid by individuals depends on their home ownership rates and the market value of their homes. Home ownership is closely associated with the level of income of the householder which in turn is determined largely by the employment and earnings of the householder. As noted above, the employment rate and earnings of individuals in Philadelphia city and suburbs rose sharply with educational attainment. Similar to most cities, the home ownership rates in the city of Philadelphia were quite low. However, the rate of home ownership in the city did increase with educational attainment. While 54 percent of all 18- to 64-year old householders in Philadelphia city owned their homes, the rate of home ownership varied from just 47 percent among high school dropouts, to 55 percent among high school graduates and those householders with some college education below the bachelor's degree level, to 58 percent among householders with a bachelor's or a higher academic degree.

Table 3:  
Home Ownership Rates and the Mean Value of Owner-Occupied Homes  
of 18- to 64-Year Old Householders in Philadelphia City and Suburbs\*  
by Educational Attainment, 2006

Educational Attainment	<u>Philadelphia City</u>		<u>Philadelphia Suburbs</u>	
	Home Ownership Rate	Mean Value of Owner-Occupied Home	Home Ownership Rate	Mean Value of Owner-Occupied Home
<12 or 12, no H.S. diploma	47.2%	92,069	50.1%	241,177
High school diploma or GED	54.7%	124,426	67.4%	278,665
Some college or associate's degree	55.1%	150,919	73.0%	304,213
Bachelor's degree or higher	57.5%	262,320	83.2%	415,271
All education levels	54.4%	162,191	75.3%	353,264

Source: 2006 American Community Survey Public Use Microdata Samples (PUMS) Data Files. Tabulations by authors.

\*Philadelphia suburbs include Bucks, Chester, Delaware, and Montgomery counties.

The suburban Philadelphia area had a much higher rate of home ownership than the city. Over three-quarters of 18- to 64-year old householders residing in the suburbs owned their homes. A comparison of home ownership by educational attainment of suburban householders reveals sizable gaps. Home ownership gaps were significantly larger between poorly educated and better educated residents in Philadelphia suburbs than in the city of Philadelphia. Only one-half of householders in Philadelphia suburbs who were high school dropouts owned their homes. Compared to high school dropouts the likelihood of owning a home was more than one third greater among high school graduates (67 percent), nearly 46 percent more likely among householders with a some college education below a bachelor's degree (74 percent), and two-thirds more likely among the best-educated householders—those with a bachelor's or a higher degree.

The property tax revenues of local governments are determined by the value of the property that is owned by residents of the locality. Our analysis found of the ACS data files found that the value of owned homes varied widely by the educational attainment of the householder. In 2006, the mean value of an owner-occupied home in Philadelphia city was \$162,200 and the range of the values of these homes by the education of the householder varied from a low of \$92,100 among high school dropouts to a high of \$262,300 among owner-householders with a bachelor's or a higher degree. The mean value of owner-occupied homes increased steadily with education of the householder. The homes owned by high school graduates had a 35 percent higher market value (\$124,400) compared to those owned by high school dropouts. Postsecondary education was associated with even higher home values. The mean values of homes owned by householders with some postsecondary education below the bachelor's degree level and by householders with a bachelor's degree or higher education were, respectively, 64 percent and 285 percent higher than the mean value of homes owned by Philadelphia city householders who had failed to complete high school.

## **Data Sources and Methodology Underlying the Fiscal Impact Estimates in Philadelphia City and Suburbs**

The analyses of the fiscal consequences of dropping out of high school presented in this report are based on a wide array of national and state data sources that are listed in

Table 4. The estimates of the net fiscal contributions of adult residents in Philadelphia city and suburbs in selected educational subgroups are based on a number of different data sources and a massive series of data calculations by the U.S. Census Bureau and the Center for Labor Market Studies of Northeastern University.

First, the primary source of data for most of the annual tax and cash/in-kind transfer data is the Annual Social and Economic Supplement to the March Current Population Survey (CPS).<sup>15</sup> We have used the U.S. Census Bureau's March CPS Supplement surveys data for the March 2005, March 2006, and March 2007 CPS. The March CPS surveys for these three years involved interviews with over 1,000 18-64 years old adults in Philadelphia city and 2,200 persons in Philadelphia suburbs.<sup>16</sup> The monthly CPS household survey is conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics and is the source of the monthly data on the nation's labor force, employed, and unemployed populations.

The March CPS survey contains a supplementary set of questions that collects information from respondents on their sources of income during the previous calendar year, and their receipt of various forms of cash and in-kind assistance (energy assistance, food stamps, and housing subsidies) from local, state, and national government agencies. With the available income and employment information and marital status of respondents, the U.S. Census Bureau imputes estimates of the amount of Social Security payroll taxes, federal retirement contributions, and state and federal income taxes paid by individuals during a given calendar year. These imputed tax and cash/in-kind transfer data for calendar years 2004, 2005, and 2006 are used to estimate the net fiscal contributions of 18- to 64-year adults in Philadelphia city and suburbs by their educational attainment level.

Second, many of the employment and earnings measures as well as a number of the housing, income, home value, property tax measures are based on the findings of the American Community Surveys for 2006. The American Community Survey (ACS) is a

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<sup>15</sup> For more details on the design of the March CPS supplement and the definitions for each of the variables for which data are collected. See: [www.census.gov/cps](http://www.census.gov/cps)

<sup>16</sup> For a review of the labor force concepts and measures underlying the monthly CPS household surveys, See: U.S. Bureau of Labor Statistics, *Employment and Earnings, January 2007*, "Appendix A," U.S. Government Printing Office, Washington, D.C., 2007.

national household survey conducted by the U.S. Census Bureau since 2000. During 2006, over 3,600 households in Philadelphia city and nearly 7,930 households in Philadelphia suburbs completed an ACS questionnaire that collected detailed information

Table 4:  
Sources and Uses of the Databases Used in This Research Report

Data Source	Use of Data
American Community Survey 2006	Provided estimates for a variety of employment, earnings, income, housing, and educational attainment measures for PA and U.S. adults.
March 2005, March 2006, and March 2006 Current Population Surveys (CPS)	Primarily used to estimate the net fiscal contributions of adult residents by their level of educational attainment.
Urban Institute and Kaiser Foundation Commission on Medicaid and the Uninsured	Provided estimates on the cost of Medicaid services and health insurance.
U.S. Department of Treasury, Internal Revenue Service, “State and Local General Sales Taxes”, Publication 600, 2006.	Used to estimate personal sales tax
U.S. Department of Justice	Used the annual report for information on the number of inmates in jails and prisons and the annual cost to house inmates.
The City of Philadelphia Department of Revenue	Used the Philadelphia wage tax rates for resident Philadelphians and non-residents who worked in Philadelphia city to estimate the dollar amount of city wage tax payments.

on the demographic (age, gender, race-ethnic origin, marital status) and socioeconomic characteristics of all household members, including their educational attainment and school enrollment status,<sup>17</sup> the employment status of all working-age adults (16 and older) at the time of the survey, their labor market experiences in the twelve month period

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<sup>17</sup> Respondents to the ACS survey were asked to identify whether they were enrolled in school at any time in the two month period immediately prior to the survey. Persons who were not enrolled in school and who lacked a high school diploma/GED are classified as high school dropouts in this report. GED holders will be assigned to the high school graduate category if they did not complete any years of post-secondary schooling.

prior to the survey, and their earnings and other sources of money income in the previous twelve months. The ACS survey data on the annual money incomes of families and the number/age distribution of family members can be used to identify the number of families and persons that were poor/near poor or low income.<sup>18</sup> The ACS public use files for 2006 were used to generate many of the estimates appearing in this report.

A third data source was the administrative data from the Urban Institute and Kaiser Foundation Commission on Medicaid and the Uninsured. This data source provided estimates of the annual cost to the Medicaid system in Pennsylvania of providing health services to the Medicaid population by disability status. We have used these data to generate the fiscal costs of providing health insurance to Medicaid recipients by educational attainment in Philadelphia city and suburbs.

A fourth set of data that we used in estimating sales tax was provided by U.S. Department of Treasury, Internal Revenue Service for 2006. We used 2006 ACS survey personal income data and IRS sales tax exemption data to estimate average sales tax for adults.

A fifth source of data that was used in conducting this study was an administrative data base provided by the U.S. Department of Justice. This database provided information on the numbers of individuals who were inmates of jails and prisons across the state in recent years and the annual costs of housing an inmate in a Pennsylvania prison. These cost data were used to estimate the higher lifetime institutionalization costs associated with adult dropouts in the state of Pennsylvania in comparison to those of their better educated counterparts.

A final source of data was used to estimate Philadelphia city wage tax payments made by employed city residents and by Philadelphia suburban residents who worked in Philadelphia city. The city of Philadelphia taxes all types of earned income, wage and

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<sup>18</sup> The definition of a “low income family” in this report is that used by many poverty and welfare reform researchers across the country. It is a family with an annual pre-tax, money income below two times the poverty line for a family of its given size and age composition. For a review of the poverty, low income, and selected other income thresholds used by poverty researchers to define income inadequacy, See: Garth Mangum, Stephen Mangum, and Andrew Sum, The Persistence of Poverty in the United States, Johns Hopkins University Press, Baltimore, 2004.

salaries, commissions and other forms of compensation paid to workers.<sup>19</sup> There are two city wage tax rates. The first is the rate that is applied to the earnings of Philadelphia city residents regardless of their place of work and the other is for non-residents of Philadelphia city who commute to the city for work. We obtained the city wage tax rates from the website (<http://www.phila.gov/Revenue>) of the Revenue Department of the City of Philadelphia. Philadelphia city residents are taxed at a higher rate on their earned incomes than their non-resident counterparts. For example, in 2006, city wage tax on earned income for Philadelphia residents was 4.33% compared to 3.77% for non-resident workers.

## **Methodology and Calculations Underlying the Estimates of the Net Fiscal Contribution of the Residents of Philadelphia City and Suburbs**

In the March CPS supplement survey, given the self-reported information on annual earnings and incomes, sources of those incomes, the marital status of respondents, and the type of household in which the respondent lived (married couple family, single parent family, single individual), the U.S. Census Bureau calculates estimates of their Social Security payroll taxes, federal government retirement contributions, and their state and federal income tax liability.<sup>20</sup> In the case of federal and state income tax payments, the U.S. Census Bureau has a methodology for married couple families. On the assumption that married couple families file a joint tax return, the estimate of the federal and state income tax payments are assigned to the householder in a married couple family. The spouse in a married couple family is assigned a value of zero for federal and state income taxes. Using a methodology that we have developed (described in Appendix A) we have made separate estimates of the federal and state income tax liability for the householder and the spouse in married couple families. For each non-married individual the U.S. Census Bureau imputes estimates of their federal and state income tax payments and assigns these payments to their personal record.

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<sup>19</sup> The city wage tax is not levied on unearned income.

<sup>20</sup> For married couples, an assumption is made by the U.S. Census Bureau that the couple files a joint tax return in determining its federal income tax liability.

Social Security payroll taxes and federal government retirement contributions were estimated by the U.S. Census Bureau for each individual based on their annual earnings and the source of their annual earnings. Only the employees' contribution to the social security payroll tax is included in this estimate. However, employers also pay an equivalent amount of social security payroll taxes to the federal government. The employers' contribution goes to the U.S. treasury in the form of tax revenue. This social security payroll tax payment by the employer would not have been made without the employment and earnings of the employee. Therefore the employer portion as well as the employee portion of the social security payroll tax payment should be attributed to the worker.

Using the 2005-2007 March CPS survey data and the 2006 ACS survey data, we have estimated the annual tax payments for each individual between the ages of 18 and 64 (excluding 18-24 year olds who were enrolled in school at the time of the March surveys) in each of the tax categories listed in Table 5. The sum of these taxes represents the combined annual tax payments that were estimated for individuals in each of the four educational groups.

The U.S. Census Bureau does not provide any estimates of annual state sales tax payments for persons interviewed during the March CPS survey. In our fiscal impact analyses, we have estimated sales tax payments for individuals by using a combination of personal income data from the 2006 ACS survey and sales tax tables for Pennsylvania published annually by the U.S. Department of Treasury's Internal Revenue Service (IRS).<sup>21</sup> Federal taxpayers are allowed to claim state and local sales taxes paid when filing their federal income tax returns. Tax filers use published data from IRS tables to estimate their sales tax deductions based on their taxable income and the number of exemptions. Sales tax rates vary by state.<sup>22</sup> The allowable deductions for state sales taxes are based on the number of exemptions. In our analysis of state sales taxes, we applied a single person exemption to each individual respondent 18-64 years old with a positive income. For each person in each state in our analysis, we assigned a state sales tax

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<sup>21</sup> U.S. Department of Treasury, Internal Revenue Service, "State and Local General Sales Taxes", Publication 600, 2006, [www.irs.gov](http://www.irs.gov).

<sup>22</sup> Alaska, Delaware, New Hampshire, Montana, and Oregon did not have a state sales tax in 2005.

payment equal to the IRS sales tax deduction for a person with their income in 2006. In computing the national sales tax payment amounts we calculated these sales tax payments separately for each of the 45 states that had a state sales tax in 2006.

Table 5:  
Income, Payroll, Sales, and Property Tax Payments to the Federal Government and State and Local Governments that are Used in the Computation of the Net Fiscal Impacts

Federal Government	State and Local Governments
Federal income tax payments	State income tax liability
Federal retirement payroll deductions	Property tax liability
Social Security retirement payroll taxes	State Sales tax payments
	Philadelphia city wage tax payments

The U.S. Census Bureau also does not provide estimates of the annual property taxes paid by households that own their homes. These data are not collected as part of the March CPS supplement on earnings and incomes. We have utilized findings from the 2006 American Community Surveys (ACS) on home ownership rates of households and their annual property tax payments to compute their expected annual property tax payments.<sup>23</sup> The property tax payments are assigned to the householder in each household that owned the housing unit they occupied at the time of the 2006 ACS survey.

Using the Philadelphia city wage tax rates, we computed the per capita annual city wage tax payments among residents of Philadelphia city and suburbs. We applied tax rates for resident and non-resident workers of Philadelphia city on their earnings reported in 2005 and 2006 American Community Surveys. We divided this gross tax revenue by the 18-64 years old resident population of Philadelphia city to obtain estimates of the per capita city wage tax payment. We repeated this calculation for each of the four educational subgroups in our analysis. We also repeated these sets of calculations to estimate per capita wage tax paid by residents of Philadelphia suburbs who worked in city of Philadelphia.

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<sup>23</sup> The expected values of these property tax payments are the product of the home ownership rate for a given group and the mean value of their property tax payments.

The U.S. Census Bureau also has used the March CPS supplement to collect data from respondents on their receipt of a wide array of cash income transfers from local, state, and federal governments, including unemployment insurance payments, Temporary Assistance to Needy Families (TANF) benefits, Supplemental Security Income (SSI) payments for the aged and the disabled, Social Security Disability payments, general relief, and veteran's payments. The combined annual incomes from each of these cash income transfer programs (listed in Table 6) were calculated for each respondent. In addition to the cash transfer payments, the March CPS questionnaire collected information on respondents' receipt of a wide array of in-kind transfers from state and federal governments, including food stamps, federal Earned Income Tax Credits (EITC) Medicaid/Medicare health insurance benefits, energy assistance and rental subsidies.<sup>24</sup>

Table 6:  
Cash and Non-Cash Transfers Received by Individuals or Households  
That are Used in the Computation of the Net Fiscal Impacts

Cash Transfers	Non-Cash Transfers (In-Kind Benefits)
Unemployment benefits	Market value of food stamps
Worker's compensation	Market value of Medicare insurance
Social Security payments	Market value of Medicaid benefits
Supplemental Security Income for the disabled and aged	Family market value of housing subsidies
Public assistance income (TANF, general relief)	Family market value of school lunch subsidies
Veteran's payments	Energy assistance payments
Survivor's income benefits	
Other disability income	
Federal Earned Income Tax Credits	

The U.S. Census Bureau has imputed cash values for each of these in-kind benefits. They are primarily assigned to the household unit rather than to individual household members.

<sup>24</sup> The federal Earned Income Tax Credit (EITC) is primarily a cash tax credit refunded to low earner households by the Internal Revenue Service. The federal EITC is treated as a cash transfer rather than a negative tax by the U.S. Census Bureau in its calculations of the taxes paid and transfers received by individuals. For a review of the design and operations of the federal EITC program, see: Saul Hoffman and Laurence S. Seidman, Helping Working Families: The Earned Income Tax Credit, W.E. Upjohn Institute for Employment Research, Kalamazoo, 2003.

We have assigned most of these in-kind transfers to the householder.<sup>25</sup> We then summed the cash values of each of these in-kind benefits and added them to the estimated value of cash income transfers for each household member.

Table 7:  
A Listing of the Tax Payments, Cash Transfer, Non-Cash Transfer,  
and Jail/Prison Cost Items Used in the Computation of the Net Fiscal Impact

<b>(A) Total Tax Payments</b>
+ Mean Federal Income Tax Payments
+ Mean State Income Tax Payments
+ Mean Federal Government Retirement Contribution
+ Mean Social Security Payroll (Include Employer Contribution)
+ Mean Expected Property Tax Payment
+ Mean Sales Taxes
+ Mean Philadelphia City Wage Tax Payment
<b>(B) Total Transfers/Jail or Prison Cost</b>
+ Mean Non-Cash Transfers
+ Mean Cash Transfers
+ Mean Jail/Prison Cost (for 18-60)
<b>Taxes Paid -Transfer/Jail or Prison Cost (A-B)</b>
<b>Ratio of Taxes Paid to Transfer/Jail or Prison Cost (A/B)</b>

Finally, we also estimated jail/prison costs for adults in Pennsylvania<sup>26</sup> in the four educational groups using ACS and U.S. Justice Department’s statistics on jail/prison costs by state. The final fiscal ledger for estimating fiscal costs is presented in Table 7. Details about the specific of the series of computations that were undertaken to produce estimates of federal and state income tax payments, property tax payments, sales tax

<sup>25</sup> Medicaid/Medicare expenditures are assigned to an individual household member by the U.S. Census Bureau.

<sup>26</sup> As noted earlier our methodology of computing incarceration costs involves the use of the ACS data to compute the rate of institutionalization among residents of the area. The ACS count of the residents of an area includes the residents of all group quarters located in the area. This means that if a jail or prison is located in an area, the area will have a higher institutionalization rate. This methodology would produce accurate rates of institutionalization for an entire state. However, the institutionalization rate at the sub state areas would be highly sensitive to the location of jails and prisons in the area resulting in an upward bias in the institutionalization rate for the area if a prison or jail is located in the area. An upward bias in the institutionalization rate would produce an upwards bias in the cost of institutionalization per adult resident in the area. Therefore in this paper, we have used the institutionalization costs per adult resident in the entire state of Pennsylvania to represent the incarceration costs per adult resident in Philadelphia city and suburbs.

payments, costs of Medicaid, estimates of jail and prison costs, and the lifetime net fiscal contributions of adults in the four educational subgroups are presented in Appendix A through G.

## **Incidence of Tax Payments of the Residents of Philadelphia City and Suburbs by Educational Attainment**

In this section we present the proportion of Philadelphia city and suburban residents in each educational category that paid federal and state income taxes, social security payroll tax, and property tax.<sup>27</sup> The data presented in Charts 3 and 4 and Table 8 clearly demonstrate that the proportion of Philadelphians that paid the different types of taxes increased sharply with educational attainment. The level of earnings and incomes of individuals determine the likelihood that they would pay taxes. Analysis presented in a previous section clearly demonstrates that earnings rose steadily and sharply with increases in education. Consequently the proportion of individuals that contribute to the public coffers through taxes should also increase with increases in educational attainment.

The federal personal income tax payment was made by 62 percent of the 18- to 64-year old residents of Philadelphia city (aged 18 to 64) per year during the 2004-2006 period. The share of the city's non elderly residents who were federal income taxpayers varied widely by educational attainment. Just one-half of high school dropouts in the city had paid any federal personal income tax compared to 61 percent of high school graduates and 64 percent of those who completed some college below the bachelor's degree level. The higher rate of employment among college graduates with a bachelor's

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<sup>27</sup> Although our computation of fiscal impacts of achieving alternative levels of educational attainment includes seven tax types listed in Table 7, we have analyzed the incidence of tax payment in this section for only four tax types. Data on the actual tax payments by persons and the incidence of tax payment are not available for the sales tax and Philadelphia wage tax. We have estimated state sales tax payments for individual adults in Philadelphia city and suburbs by using a combination of personal income data from the 2006 ACS survey and sales tax tables for Pennsylvania published annually by the U.S. Department of Treasury's Internal Revenue Service (IRS). Our computation of the amount Philadelphia city wage tax payments is based upon city wage tax rates for resident and non-resident workers and aggregate earnings reported for resident and non-resident workers from the 2005 and 2006 American Community surveys. The Federal Government Retirement Contributions are included in our fiscal computations. However, only .7 to .8 percent of workers actually made these contributions, and the per capita contributions were \$29 in Philadelphia city and \$41 in the suburbs. Because the very low incidence of payment of this tax, we have not included a separate discussion in this paper on the incidence of payment or the amount of payment of federal retirement contributions and the variation of these payments by educational attainment.

or a higher degree yield a higher share of federal taxpayers among this group of Philadelphians. Seven out of ten Philadelphians with a bachelor's or a higher degree had contributed to the U.S treasury by paying the annual federal income tax in the 2004-2006 period.

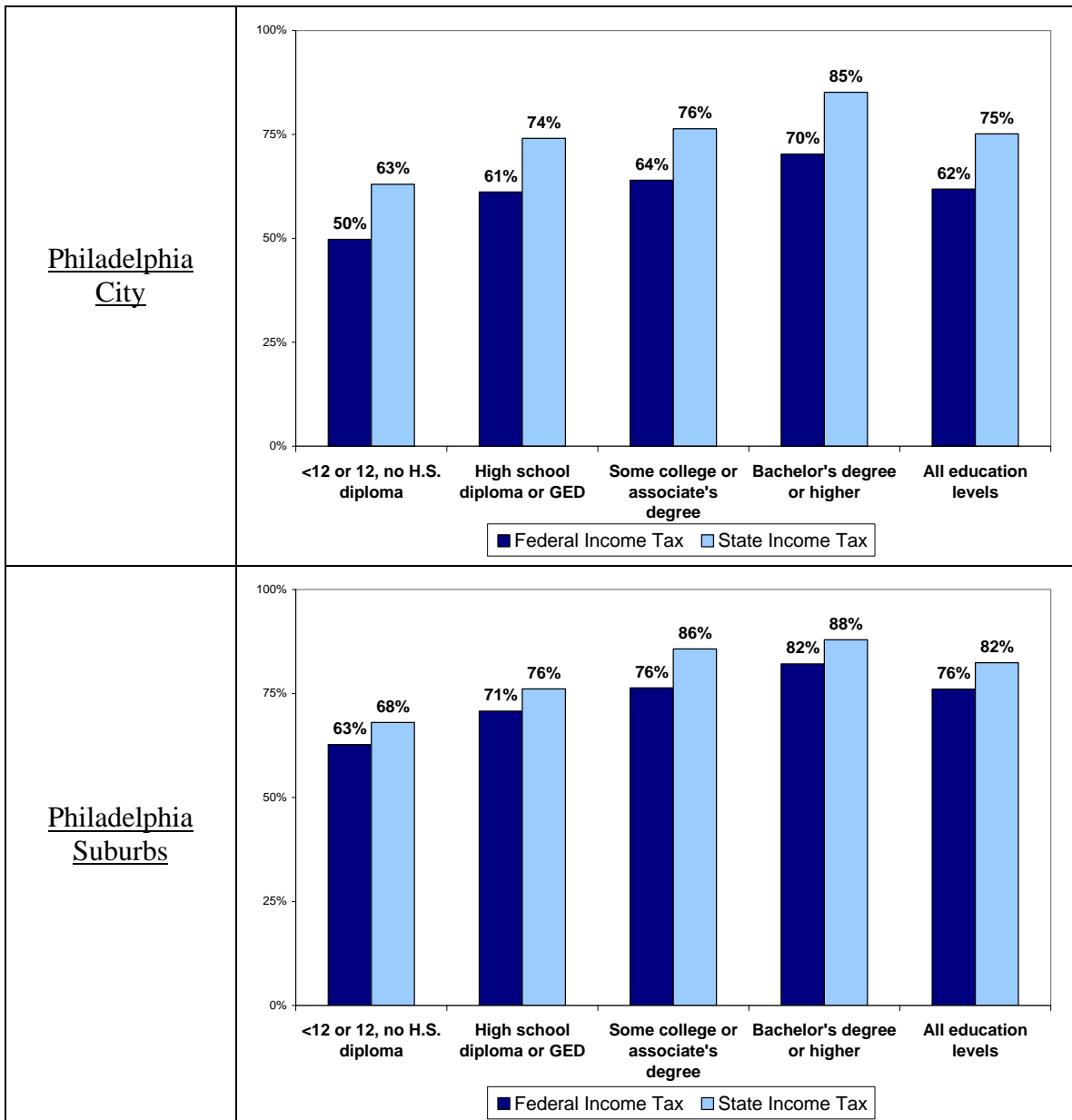
Residents with a high school diploma or higher education level were considerably more likely to pay the federal income tax than were high school dropouts. Relative to high school dropouts, the likelihood of paying the federal income tax was 11 percentage points higher among high school graduates, 14 percentage points higher among those with some college education below a bachelor's degree, and 20 percentage points higher among college graduates with a bachelor's or higher degree.

The proportion of the adult population in Philadelphia city who paid any state income tax also increased steadily by educational attainment. Three-quarters of adult residents of Philadelphia city had paid some state personal income tax during the calendar year over the 2004-2006 period. Among high school dropouts, 63 percent had paid any state income tax during the year over the 2004-2006 period; 11 percentage points lower than the share of high school graduates who had made annual state tax payments over the same period. The incidence of tax payments increased steadily as educational attainment increased. Philadelphians with some college education below the bachelor's degree level had a slightly higher state income tax payment incidence of 76 percent; higher than high school dropouts and high school graduates, but lower than those with a bachelor's or higher degree. Among college graduate Philadelphians with a bachelor's degree or higher level of education, 85 percent had paid annual state income taxes over the 2004-2006 period.

Adult residents of the Philadelphia suburban area were more likely than their counterparts in the city to pay federal and state income taxes. In each educational subgroup of the suburban population, a higher proportion of suburban residents paid taxes compared to their city counterparts. The incidence of federal income tax payment among suburban residents ranged from 63 percent among high school dropouts, to 71 percent among high school graduates and 82 percent among college graduates with a bachelor's or a higher degree. State income tax payments in the Philadelphia suburbs

were made by 68 percent of high school dropouts, 76 percent of high school graduates, and 88 percent of college graduates.

**Chart 3:**  
Percent of 18- to 64-Year Old Residents of Philadelphia City and Philadelphia Suburbs\*  
Who Paid Any Federal or State Income Tax (3-year average 2004-2006)



Source: March Supplement to the Current Population Survey, 2005, 2006, 2007. Tabulations by authors.  
 Note: 18- to 24-year old students were excluded from the analysis.  
 \*Philadelphia suburbs include Philadelphia Metropolitan Area (within the boundaries of Pennsylvania) excluding Philadelphia city.

The social security payroll tax is a proportional tax on earnings up to a maximum threshold or the social security wage base that is increased each year based on the rate of inflation.<sup>28</sup> Although there is an upper income limit on taxable earnings (\$97,500 in 2007 and \$102,000 in 2008), the social security payroll tax liability begins with the very first dollar of earnings on jobs that are subject to the FICA (Federal Insurance Contributions Act) tax.

The incidence of social security payroll tax payments varied widely by educational attainment among adult residents of Philadelphia city. Over 68 percent of all 18- to 64-year old adults made social security payroll tax payments in Philadelphia city (Table 8). The percent of Philadelphians paying this tax ranged from only 40 percent of high school dropouts, to 71 percent of high school graduates and those with some college education below the bachelor's degree level, to 81 percent among those with a bachelor's or a higher degree.

Table 8:  
Percent of 18- to 64-Year Old Residents of Philadelphia City and Philadelphia Suburbs\*  
Who Paid Any Social Security Payroll Tax (Average 2004-2006)

Educational Attainment	Philadelphia City	Philadelphia Suburbs
<12 or 12, no H.S. diploma	40.1%	66.7%
High school diploma or GED	71.7%	74.9%
Some college or associate's degree	70.2%	86.4%
Bachelor's degree or higher	80.8%	86.9%
All education levels	68.5%	81.6%

Source: March Supplement to the Current Population Survey, 2005, 2006, 2007. Tabulations by authors.

Note: 18- to 24-year old students were excluded from the analysis.

\*Philadelphia suburbs include Philadelphia Metropolitan Area (within the boundaries of Pennsylvania) excluding Philadelphia city.

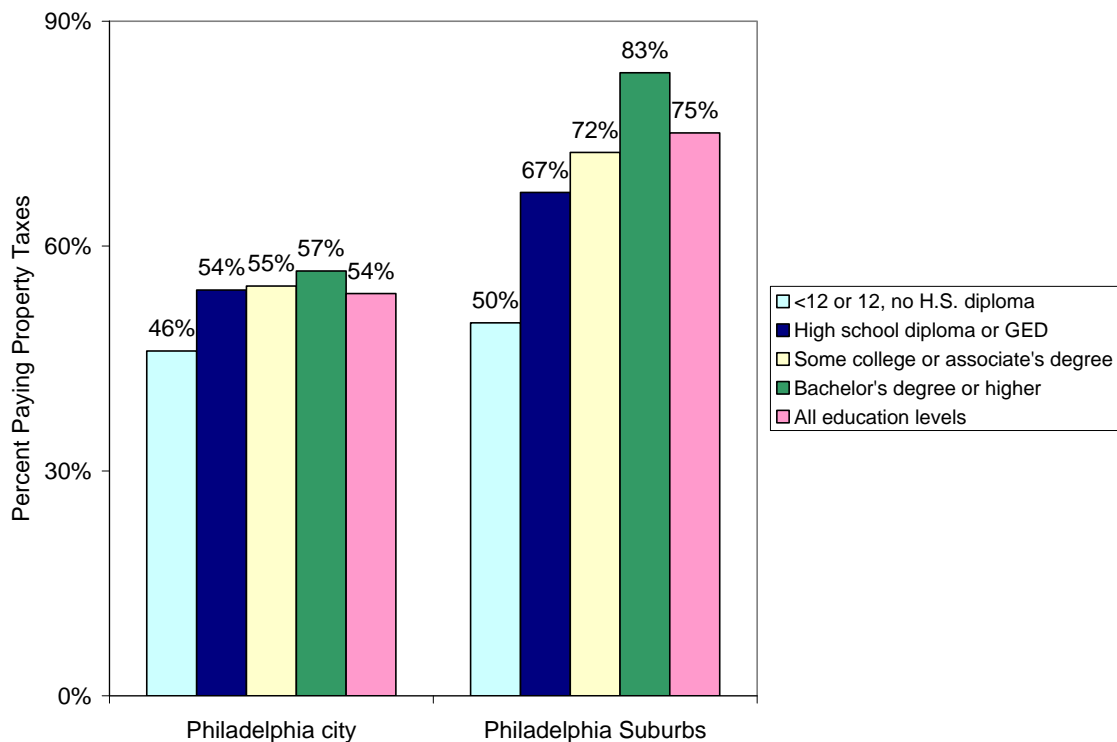
Among residents of suburban Philadelphia, 82 percent had paid social security payroll tax over the 2004-2006 time period. Two-thirds of high school dropout suburban Philadelphia residents had paid the social security payroll tax compared to three-quarters

<sup>28</sup> The 6.2 percent tax is paid by employee and is matched by a 6.2 percent tax payment by the employer. There is no upper income limit on Medicare taxes where the employer and employee each pay 1.45 percent on all earnings. See: Social Security Online Electronic Fact sheet. Available at: <http://www.ssa.gov/pubs/10003.html>.

of high school graduates and nearly 87 percent of the area’s adult residents with a college education. Within each educational group as well as across all educational groups, residents of Philadelphia suburbs were more likely to pay this tax than their counterparts who lived in Philadelphia city. The difference was particularly large among high school dropouts (40 percent paid social security payroll tax in the city compared to 67 percent in the suburbs).

The incidence of property tax payments is directly associated with property ownership. As noted in an earlier section of this paper, the higher earnings and incomes of better educated adults means that they are likely to own their homes and therefore more likely to pay property tax. Given this, it is not surprising that our analysis found differences in the incidence of property tax payments by level of educational attainment

**Chart 4:**  
Percent of 18- to 64-Year Old Householders in Philadelphia City and Philadelphia Suburbs\* Who Paid Any Property Tax on Owned Homes in 2006 by Educational Attainment



Source: 2006 American Community Survey Public Use Microdata Samples (PUMS) Data Files. Tabulations by authors.

\*Philadelphia suburbs include Bucks, Chester, Delaware, and Montgomery counties.

of the householder. However these differences were much wider among residents of Philadelphia suburbs than those living in the city. In Philadelphia city, compared to high school dropouts, the incidence of property tax payments was 11 percentage points higher among householders with a bachelor's degree or a post-graduate degree (57 percent versus 46 percent), and about 8 percentage points higher among householders who had graduated from high school with a diploma or a GED or had completed some college education below the bachelor's degree level (54 to 55 percent versus 46 percent).

In contrast, the incidence of property tax payment among householders residing in suburban Philadelphia varied from 50 percent among high school dropouts, to 67 percent among high school graduates, 72 percent among those householders with some college education below the bachelor's degree level, and 83 percent among college graduates with a bachelor's or higher degree. Compared to a high school dropout householder, in Philadelphia's suburbs, the share of property tax payers was 17 percentage points higher among high school graduates and 33 percentage points higher among college graduates with a bachelor's or a post-graduate degree.

### **Annual Tax Payments of the Residents of Philadelphia City and Suburbs by Educational Attainment**

Not only were better-educated residents of Philadelphia city and suburbs more likely to pay the federal, state, and local taxes but they also paid much higher amounts of these taxes over the year. We have estimated the mean amount of annual federal and state income taxes, Philadelphia city wage taxes, social security payroll tax, federal government retirement tax contribution, property tax, and sales tax payments by adult residents of Philadelphia city and suburbs. The methodologies underlying the computations of these estimates are described in detail in Appendices A, B, C, and G. Findings presented in Table 9 highlight the sharp differences in the amount of these taxes that were paid by Philadelphians with different levels of educational attainment.

During the 2004-2006 period, the mean annual federal income tax paid by city residents was only \$1,220 among high school dropouts compared to \$3,100 among high school graduates, \$3,200 among those with some college education below bachelor's

degree level, and \$5,600 among those with a bachelor's or a higher degree. High school graduates in Philadelphia made federal income tax payments that were on average 2.5 times higher than those paid by high school dropouts. The much higher annual earnings of those Philadelphians who had a bachelor's or a higher degree meant that these individuals paid 4.6 times more in federal income tax payments than high school dropouts within the non elderly adult population of the city.

The progressive structure of the federal income tax is expected to result in disproportionately sharp differences by income levels in the amount of taxes paid. The Pennsylvania state income tax has a flat or proportional rate structure with a rate of 3.07 percent in the years included in the analysis in this report—2004, 2005, and 2006. Although the tax forgiveness provision of the Pennsylvania tax code makes the state's income tax somewhat progressive, only 23 percent of all Pennsylvania state personal income tax returns in 2005 were filed as tax forgiveness returns (1.334 million tax forgiveness returns out of 5.730 million total returns filed).<sup>29</sup> Moreover, some of the tax forgiveness returns filers may have been eligible for only partial tax forgiveness meaning that they did pay the state tax albeit over a smaller portion of their incomes. Thus the tax forgiveness provision of the state's income tax makes it only mildly progressive. The city wage tax, sales tax, property taxes, and social security payroll taxes are flat or proportionate taxes with a constant tax rate.

Despite the less progressive nature of the state income tax and the proportionate structure of the sales tax, property taxes, city wage tax, and social security payroll tax, better educated residents of the city paid much more in these taxes compared to high school dropout residents. Relative to high school dropouts, the best educated Philadelphians (those with a bachelor's degree or a higher level of education) paid 4.6 times more in social security payroll taxes, 4.5 times more in city wage taxes, 2.7 times more in state income taxes and property taxes, and 2.1 times more in the sales taxes during the 2004-2006 period. The mean per capita amounts of taxes paid by Philadelphia city residents increased steadily and sharply with increases in educational attainment. The

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<sup>29</sup> Tax Forgiveness is a credit that allows eligible taxpayers to reduce all or part of their Pennsylvania state tax liability, see: [http://www.revenue.state.pa.us/revenue/lib/revenue/2005\\_PIT\\_Booklet.pdf](http://www.revenue.state.pa.us/revenue/lib/revenue/2005_PIT_Booklet.pdf)

higher rates of employment and earnings among better-educated individuals underlie their higher per capital tax payments.

Table 9:  
Estimates of Mean Annual Tax Payments of Adult (18-64) Residents of Philadelphia City and Philadelphia Suburbs, by Type of Tax Paid and Educational Attainment (2004-2006 Averages in 2006 Dollars)

Educational Attainment	Federal Income Tax Payments	State Income Tax Payments	Philadelphia City Wage Tax	Social Security Payroll Tax Payments*	Mean Expected Property Tax Payment**	Mean Sales Taxes***
<b>Philadelphia City</b>						
High school dropout	1,220	491	455	1,346	478	246
HS Graduate or GED	3,059	899	875	3,439	711	313
1-3 Years of College	3,158	925	1,151	3,535	821	358
Bachelor's Degree or higher	5,595	1,340	2,041	6,226	1,280	512
All education levels	3,341	936	1,118	3,736	814	349
<b>Philadelphia Suburbs</b>						
12 or 12, No HS Diploma	2,275	728	66	2,799	1,854	284
HS Graduate or GED	4,905	1,185	108	4,319	2,565	368
1-3 Years of College	5,495	1,352	172	5,818	2,893	440
Bachelor's Degree or higher	12,294	2,379	470	8,410	4,088	615
All education levels	7,884	1,679	271	6,209	3,204	482

Notes: (i) Federal, state, and payroll taxes are 3-year averages (CPS March Supplements 2005, 2006, and 2007). Persons 18-24 year old enrolled in school are excluded from the analysis; (ii) Property tax data are estimated from ACS 2006; (iii) Sales taxes data estimated from ACS 2006 using IRS sales tax exemption for 2006; (iv) Philadelphia city wage taxes data estimated from ACS 2006 using resident tax rate city on earnings of employed city residents and non-resident tax rate for suburban residents who were employed in Philadelphia city.

\* Includes employer contribution

\*\* For all 18-64 year old adults

\*\*\*For non-enrolled 18-64 year old individuals

The per capita tax payments among residents of Philadelphia suburbs were higher than that of their city counterparts. Suburban residents in each educational subgroup as well as across all education levels had higher per capital tax payments than city residents in all six tax categories presented in Table 9. However, sizable gaps existed in the per

capital tax payments between high school dropouts and better educated residents of Philadelphia suburbs. For every \$1 of taxes paid during the 2004-2006 period by high school dropouts residing in the suburbs, their college graduate counterparts paid \$7.10 in city wage tax, \$5.40 in federal income tax, \$3.20 in state income tax, \$3 in social security payroll tax, and \$2.20 each in property tax and sales tax. High school graduates and suburban residents with a college education below the bachelor's degree level also had considerably larger amounts in tax payments than high school dropouts.

The mean combined tax payments by educational attainment represent the total tax payments in the form of federal, state, and local contributions made by individuals in each educational group and are provided in Chart 5.<sup>30</sup> The mean combined tax payment by each Philadelphia city adult was \$10,300. High school dropouts made a combined tax payment of just \$4,250, which represents just 41 percent of the mean combined tax payment of all adult residents of the city (\$10,300). The mean combined tax payment among high school graduates was \$9,300 or more than twice (2.2 times) as high as the amount paid by the city's high school dropout residents.

Postsecondary education below the bachelor's degree level in the city was associated with a somewhat higher tax payment. City residents with postsecondary education below the bachelor's degree level made combined tax payments of \$9,980 or 2.3 times more than high school dropouts and only 7 percent higher than high school graduates who had no additional schooling. Philadelphians with a bachelor's or a higher degree paid an average of \$17,200 in combined annual taxes each year during the 2004-2006 period. On average for every \$1 in taxes paid by a high school dropout in Philadelphia city, high school graduates paid \$2.19, those with postsecondary education below the bachelor's degree level paid \$2.35, and college graduates with a bachelor's or a higher degree paid \$4.04.

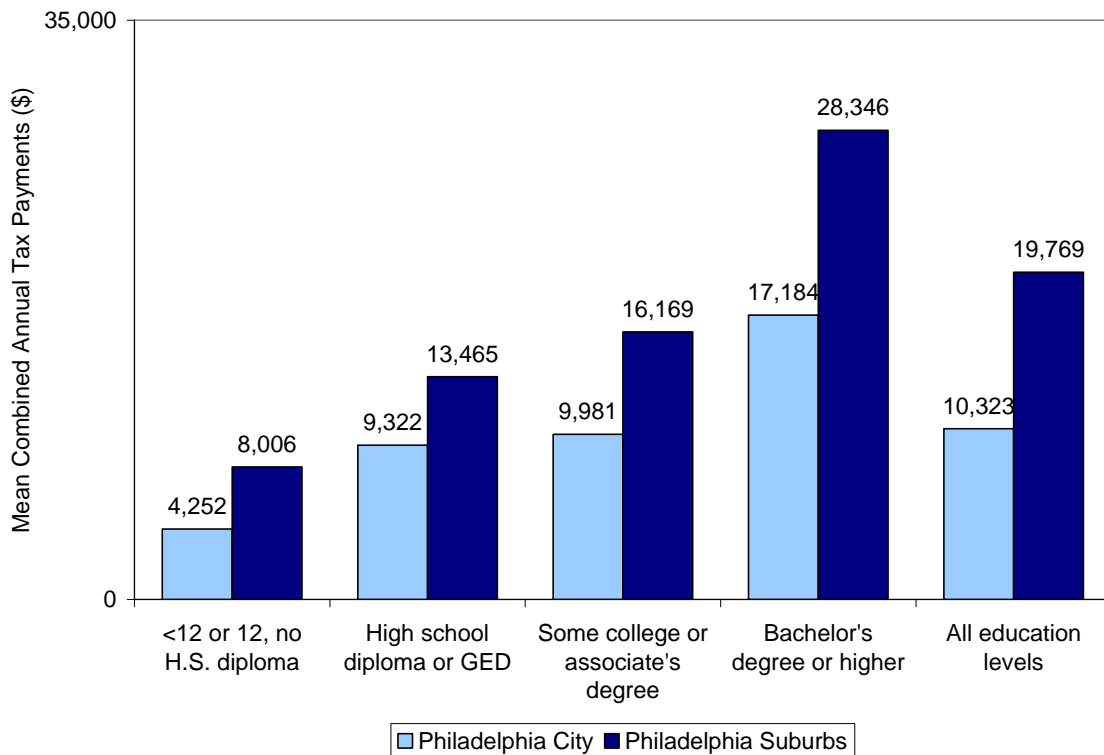
The mean per capita tax payment among residents of suburban Philadelphia during the 2004-2006 period was \$19,800. Suburban residents who were high school

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<sup>30</sup> The combined tax payments include the six taxes listed in Table 9 as well as federal government retirement contributions. As noted earlier, because of the small incidence of the payment of these taxes and the consequent small per capita amount of payment of federal government retirement contributions, this report does not provide a separate discussion of the variation in the payment of this tax by educational attainment.

dropouts paid only \$8,000 in taxes, a level of payment that was only 40 percent of the level of payments of all adult residents of the Philadelphia suburban area. The mean per capita tax payment of high school graduates was \$13,500 or 68 percent higher than high school dropouts and residents who had completed postsecondary education below the bachelor's degree level had paid somewhat more in taxes--\$16,200 or 2 times higher than high school dropouts and 20 percent higher than high school graduates without any

**Chart 5:**  
Estimates of Mean Combined Annual Tax Payments of  
Adult (18-64) Residents in Philadelphia City and Philadelphia Suburbs  
(2004-2006 Averages in 2006 Dollars)



The mean combined annual tax payments include federal and state income taxes, social security payroll taxes, Philadelphia city wage tax, federal government retirement contributions, local property taxes, and state sales taxes.

Notes: (i) Federal, state, payroll, and retirement taxes are 3-year averages (CPS March Supplements 2005, 2006, and 2007). Persons 18-24 year old enrolled in school are excluded from the analysis; (ii) Property tax data are estimated from ACS 2006; (iii) Sales taxes data estimated from ACS 2006 using IRS sales tax exemption for 2006; (iv) Philadelphia city wage taxes data estimated from ACS 2006 using resident tax rate city on earnings of employed city residents and non-resident tax rate for suburban residents who were employed in Philadelphia city.

postsecondary education. The best educated residents of suburban Philadelphia had paid an average of \$28,300 in taxes during the 2004-2006 period. For every \$1 of tax paid by a high school dropout living in Philadelphia suburbs, their counterparts who were high school graduates without any postsecondary schooling paid \$1.68, those with some postsecondary schooling below the bachelor's degree level paid \$2, while those with a bachelor's degree or higher paid \$3.54. Although there were sizable gaps between the tax payments of high school graduates and better educated residents in suburban Philadelphia, the sizes of these gaps were smaller than those of their counterparts who lived in Philadelphia city.

The contributions of high school dropouts to the federal, state, and local governments in the form of tax payments are significantly smaller than that of their better-educated counterparts. Across each of the six types of taxes that we have included in this analysis, the amount of taxes paid by better-educated adult residents of Philadelphia city and suburbs were considerably higher than those paid by high school dropouts. Although not included separately in the discussion, the per capital amounts of the federal government retirement contribution exhibited similar variation by educational attainment.

Across the various tax types, the mean tax payments in Philadelphia city of college graduates with a bachelor's or higher degree were between 208 percent and 463 percent greater than those paid by high school dropouts. Even high school graduates in the city paid taxes that were between 21 percent and 255 percent higher than the amounts paid by high school dropout residents of the city. Tax payments, across the six tax types discussed in this paper, by the best educated residents of Philadelphia suburbs exceeded tax payments by the area's high school dropouts by 217 percent to 709 percent. High school graduates in the suburbs paid between 30 percent and 216 percent higher per capita taxes than high school dropouts.

The low levels of employment and earnings of high school dropouts in Philadelphia city and suburbs clearly translate into a low incidence of tax payment and much lower dollar amounts of taxes paid when such payments are made. On the contribution side of the fiscal ledger, poorly-educated adult residents of Philadelphia city

and suburbs, particularly high school dropouts were least likely to pay taxes and made the smallest average tax payments across each category of taxes compared to their better-educated counterparts.

## **The Receipt of Cash and Non-Cash Government Transfer Payments Among Residents of Philadelphia City and Suburbs by Educational Attainment**

### **Cash Transfers**

We emphasized in earlier sections of this study the strong connections between the level of educational attainment of the residents of Philadelphia city and their labor market success. We found that as a result of their higher earnings and incomes, better-educated Philadelphians were much more likely to pay federal, state, and local taxes than those who were poorly-educated especially those who failed to graduate from high school. Moreover better educated adult residents of the city also made larger tax payments and therefore made larger revenue contributions to the budgets of the federal, state, and local governments.

In this section we present our analysis of the other side of the budget ledger—government transfer payments in the form of cash and in-kind benefits —received by Philadelphia city residents relative to their level of educational attainment. Our analysis of transfers includes 9 cash transfers and 6 non-cash (in-kind) transfers. The entire list of these cash and non-cash transfers is presented in Table 6. In order to receive a government transfer payment, the applicant must meet a variety of program eligibility guidelines. Income is a recurring and important component of most eligibility criteria for government transfer payments to the non elderly population of the state. Indeed, these programs are often referred to as ‘means-tested transfer programs.’ Non elderly individuals and families with lower incomes are more likely to be eligible to receive both cash and non-cash government transfers. Given the lower levels of employment and earnings among the poorly-educated compared to their better-educated counterparts, poorly educated individuals would be more likely to be eligible for, and therefore more likely to receive, government transfers. In fact the proportion of working age adult

residents of Philadelphia city and suburbs who received government transfers was highest among high school dropouts and declined sharply among better-educated groups.

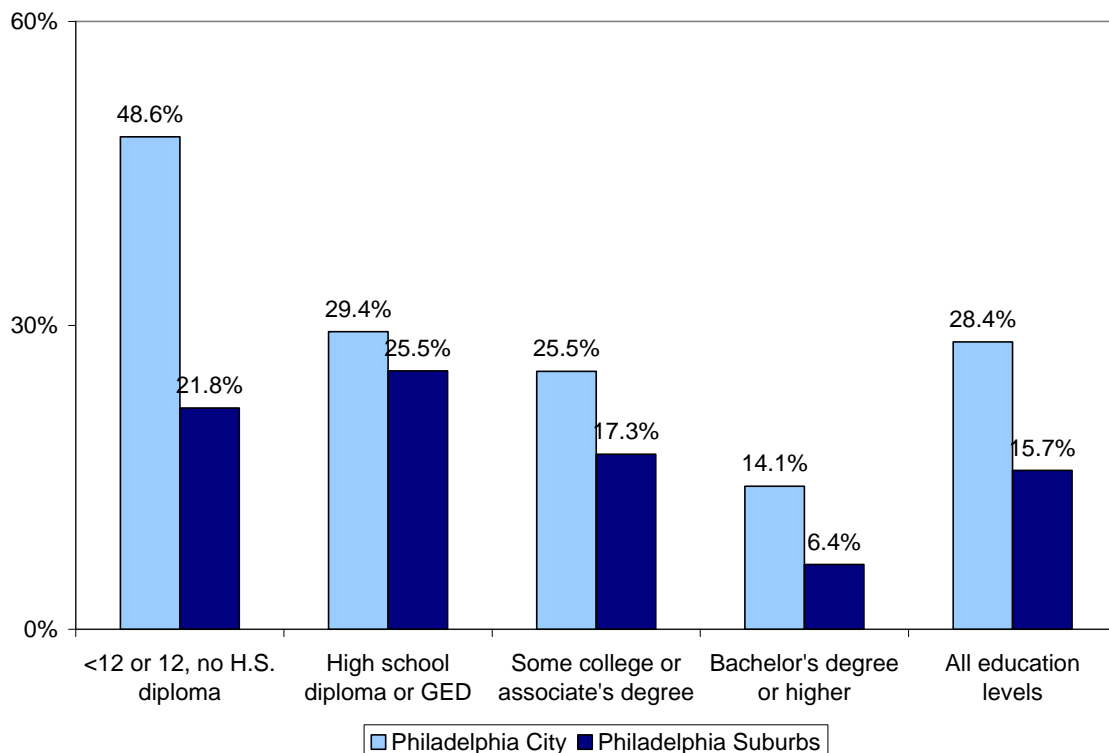
We begin by estimating the share of the city's non elderly adult population who received money income or cash transfer income from a federal or state income transfer program. These cash programs include: earned income tax credit, unemployment insurance compensation, TANF/AFDC payments, veteran's payments, and supplemental security income. We also include those OASDI payments made to Philadelphia city residents under age 65. This includes cash payment to residents under the social security widows and survivors insurance programs as well as to those eligible for payment under the social security disability insurance program. In addition, some residents between the ages of 62 and 64 received cash payments under social security's old age retirement insurance program by opting to receive reduced retirement benefits relative to those available to them at the normal retirement age of 65.

The receipt of cash transfer payments varied widely across educational groups of Philadelphia city adults. The least educated adults were the most likely to receive cash transfer payments. Nearly one-half of high school dropout residents of the city (49 percent) received one or more cash transfer payments. The percentage of individuals receiving cash transfer payments was 29 percent among high school graduates (with no postsecondary education), representing a 20 percentage points lower rate of receipt of cash transfer payments compared to high school dropouts. The share of cash transfer recipients was 26 percent among adults (18-64) in the city with some college education below the bachelor's degree level, and 14 percent among college graduates with a bachelor's or a higher college degree. Across all education levels, over 28 percent of adult (18-64) city residents received cash transfer payments in the 2004-2006 period. High school dropouts in the city were 3.4 times more likely than their counterparts with a bachelor's or higher degree, and 1.65 times more likely than high school graduates (without any postsecondary education) to collect one or more cash government transfer payment.

The receipt of cash transfer payments was much lower among high school dropouts who lived in suburban Philadelphia. Nearly 22 percent of suburban adults

(18064) without a high school diploma or a GED had received at least one type of cash transfer payment; representing less than half of the rate of cash transfer receipt among their city counterparts (49 percent). One-quarter of suburban residents with a high school diploma or a GED received cash transfer payments and only 6 percent of the best-educated residents of Philadelphia suburbs (those with a bachelor's degree or higher level of education) reported receipt of cash transfer payments during the 2004-2006 period. The overall cash transfer receipt among 18- to 64-year old residents of suburban Philadelphia was 16 percent, which was 55 percent lower than the 28 percent cash transfer receipt among their counterparts in the city. Underlying this difference was the better educational attainment of suburban residents and the lower receipt of transfer payments in the suburbs in each educational groups of the adult (18-64) population.

**Chart 5:**  
Percent of Adult (18-64) Residents in Philadelphia City and Suburbs who Received Cash Transfers, by Educational Attainment (2004-2006 Averages)

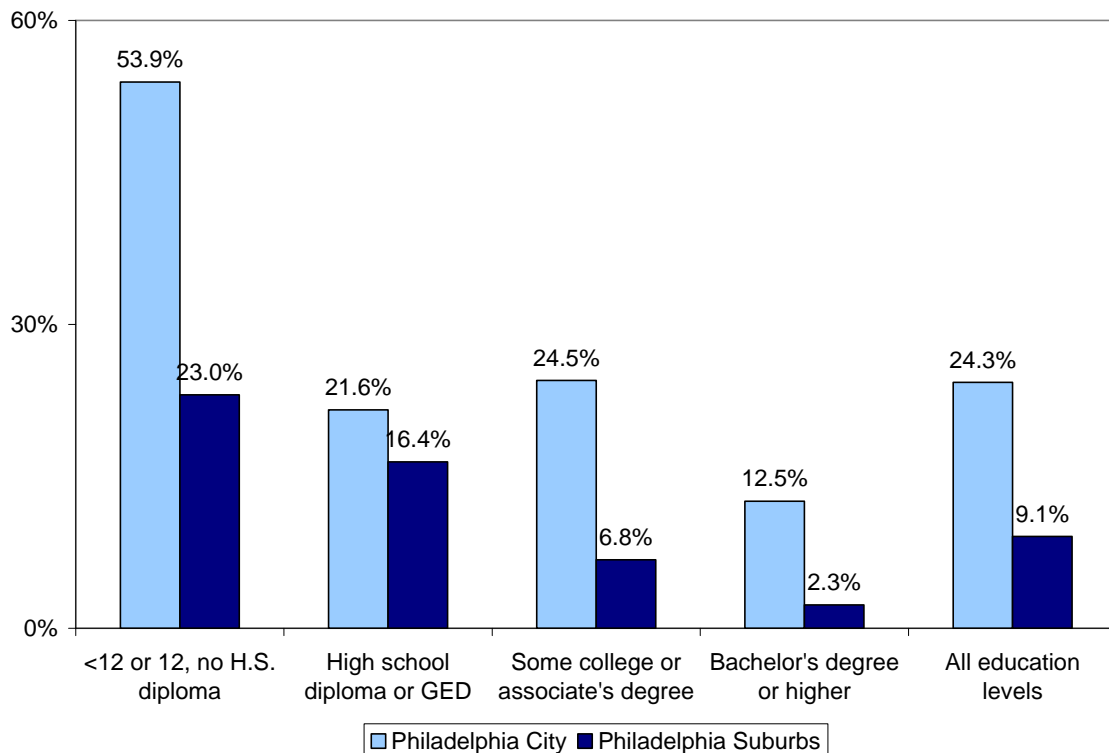


Notes: (i) Cash transfers are 3-year averages (CPS March Supplements 2005, 2006, and 2007). Persons 18-24 year old enrolled in school are excluded from the analysis.

**Non Cash Transfers**

The share of adults receiving in-kind or non-cash transfers was lower than the proportion of cash transfer recipients among all Philadelphians and among three out of the four educational subgroups. High school dropouts is the only educational subgroup in the city with a somewhat higher receipt of in-kind or non-cash transfers. Nearly 54 percent of the city's high school dropout residents received one or more in-kind transfers while 49 percent received one or more cash transfer payments. Nearly one-quarter (24 percent) of all adult Philadelphians had reported receiving one or more in-kind transfers such as Medicaid benefits, food stamps, energy assistance, housing subsidies, or school lunch subsidies. While on average about one in four non-elderly adults in Philadelphia city received a non cash transfer benefit, the rate of receipt of non cash transfers among the city's non elderly population varies sharply by level of educational attainment.

**Chart 7:**  
Percent of Adult (18-64) Residents in Philadelphia City and Suburbs who Received Non Cash Transfers, by Educational Attainment (2004-2006 Averages)



Notes: (i) Non-cash transfers are 3-year averages (CPS March Supplements 2005, 2006, and 2007). Persons 18-24 year old enrolled in school are excluded from the analysis.

Our analysis of the data found that 54 percent of residents who fail to complete high school in Philadelphia city received a non cash transfer benefit. However, this proportion fell to less than half that amount among high school graduates without any college education (22 percent). Among city residents who had completed some college education below the bachelor's degree level about one-quarter had received non-cash transfers. Among college graduates with a bachelor's or a higher college degree, the incidence of non cash benefit receipt was quit relatively lower. Fewer than 13 percent of those with a bachelor's degree or higher had participated in some type of in-kind benefit transfer program. High school dropouts in the city were 4.3 times more likely than college graduates with a bachelor's or higher degree to collect non-cash transfers at any time during the year over the 2004-2006 period.

One in eleven non-elderly residents of the Philadelphia suburban area had received a non-cash transfer during the 2004-2006 period, a rate of receipt that was only four-tenths as high as that among non-elderly residents of the city. Suburban residents who had dropped out of high school were more likely than better-educated residents to have received one or more non-cash transfer benefit. Nearly one-quarter of high school dropouts in Philadelphia suburbs had participated in a non-cash transfer program during the 2004-2006 period. Compared to high school graduates, the rate of receipt of non-cash transfer benefits was nearly 7 percentage points lower among high school graduates (16 percent), 16 percentage points lower among suburban residents who had completed some postsecondary education below the bachelor's degree level (7 percent), and nearly 21 percentage points lower among college graduates with a bachelor's or a higher academic degree. In the Philadelphia suburban area, high school dropouts were 1.4 times more likely than high school graduates, 3.4 times more likely than those with some below-bachelor's level college education, and 10 times more likely than college graduates with a bachelor's degree or higher to receive non-cash transfer benefits.

## **The Incidence and Costs of Institutionalization in Pennsylvania**

The nation's incarceration rates have increased sharply over the past 25 years. The number of inmates incarcerated in federal and state prisons per 100,000 persons in

the population more than tripled from 139 in 1980 to 501 in 2006.<sup>31</sup> These totals do not include individuals who were incarcerated in local jails. The total incarceration rate (including federal and state prisons and local jails) increased from 600 per 100,000 population in 1996 to 752 per 100,000 in 2006; representing a one-quarter increase.<sup>32</sup>

This increase in incarceration imposes considerable costs on society in the form of monetary costs of building and operating prisons and jails as well as human costs in the form of forgone wages of those who are institutionalized, reduced future opportunities for inmates after release, and many different types of social costs that are difficult to quantify. Institutionalization is more likely to be concentrated among poorly educated individuals, particularly high school dropouts. As noted in a previous section, a large majority of the nation's inmates lack a high school diploma. According to the Bureau of Justice Statistics in 1997, 41 percent of the nation's inmates in federal and state prisons and local jails did not have a high school diploma and another 24 percent had obtained only a GED. Thus, nearly two-thirds of the nation's inmates did not earn a high school diploma. This concentration of high school dropouts among inmates is considerably larger than the 18 percent share of high school dropouts in the general population age 18 or older.<sup>33</sup>

As noted in an earlier section of the paper, our methodology of computing incarceration costs involves the use of the ACS data to compute the rate of institutionalization among residents of the area. The ACS count of the residents of an area includes the residents of all group quarters located in the area. This means that if a jail or prison is located in an area, the area will have a higher institutionalization rate. This methodology would produce accurate rates of institutionalization for an entire state. However, the institutionalization rate at the substate areas would be highly sensitive to the location of jails and prisons in the area resulting in an upward bias in the

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<sup>31</sup> Key Facts at a Glance, Incarceration Rate, 1980-2006, Correctional Populations in the United States and Prisoners in 2006, Bureau of Justice Statistics, December 2007.

<http://www.ojp.usdoj.gov/bjs/glance/tables/incrttab.htm>

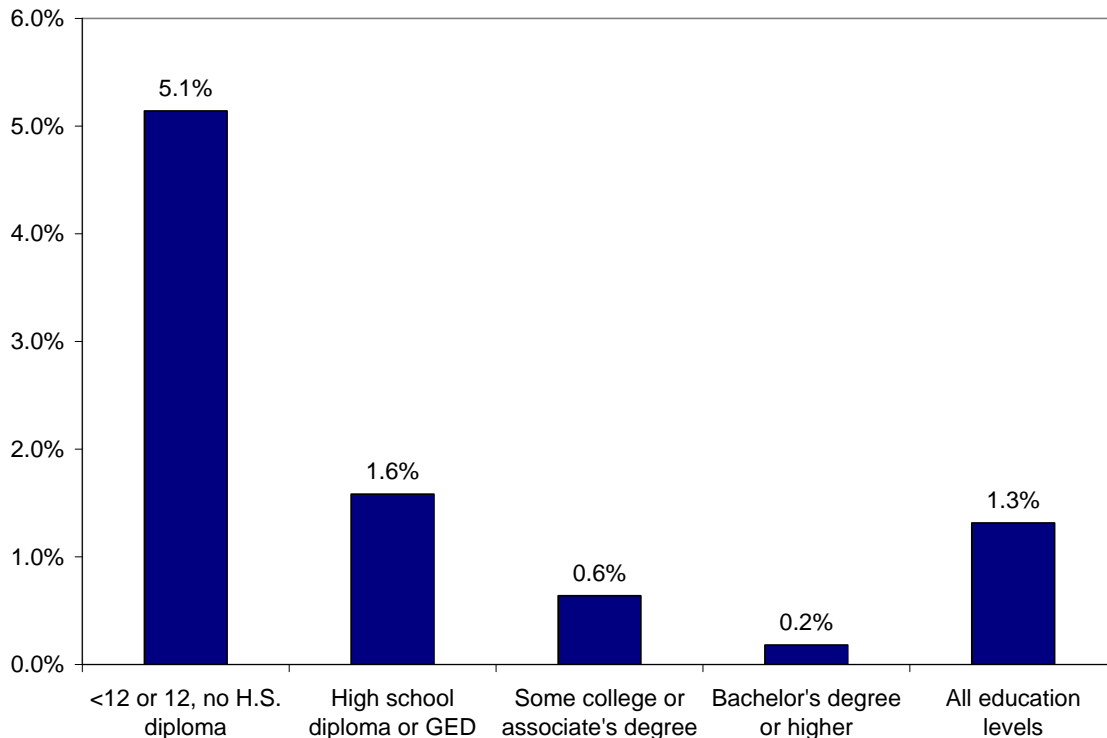
<sup>32</sup> Darrell K. Gilliard and Allen J. Beck, *Prison and Jail Inmates, 1995*, Bureau of Justice Statistics Bulletin, August 1996, NCJ-161132; William J. Sabol, Todd D. Minton, and Paige M. Harrison, *Prison and Jail Inmates at Midyear 2006*, Bureau of Justice Statistics Bulletin, June 2007, NCJ 217675.

<sup>33</sup> Caroline Wolf Harlow, *Education and Correctional Populations*, Bureau of Justice Statistics, Special Report, January 2003, NCJ 195670.

institutionalization rate for the area if a prison or jail is located in the area. An upward bias in the institutionalization rate would produce an upwards bias in the cost of institutionalization per adult resident in the area. Therefore in this paper, we have used the institutionalization costs per adult resident in the entire state of Pennsylvania to represent the incarceration costs per adult resident in Philadelphia city and suburbs.

We have estimated the rates of institutionalization among the non-elderly (18-60) population in Pennsylvania from the 2006 American Community Survey, which interviewed residents of group quarters during the year. Group quarter residents in the ACS include persons who were in correctional facilities (jails and prisons), nursing facilities, psychiatric hospitals, in-patient hospice facilities, and group homes for juveniles. The ACS survey public use data files unfortunately do not identify the type of

**Chart 8:**  
Institutionalization Rates of 18-60 Year Old Adults in Pennsylvania, by Educational Attainment 2006 (rates per 100 members of the 18- to 60-year old population)



Source: 2006 American Community Survey (ACS) Public Use Microdata Samples (PUMS) data files. Tabulations by authors.

institution in which group quarter residents lived at the time of the survey. However, a substantial majority of the adult institutionalized population under age 60 consisted of inmates of correctional facilities. Therefore we have used the ACS PUMS data files to estimate the incidence of institutionalization among 18-60 year old residents of Pennsylvania by their educational attainment.

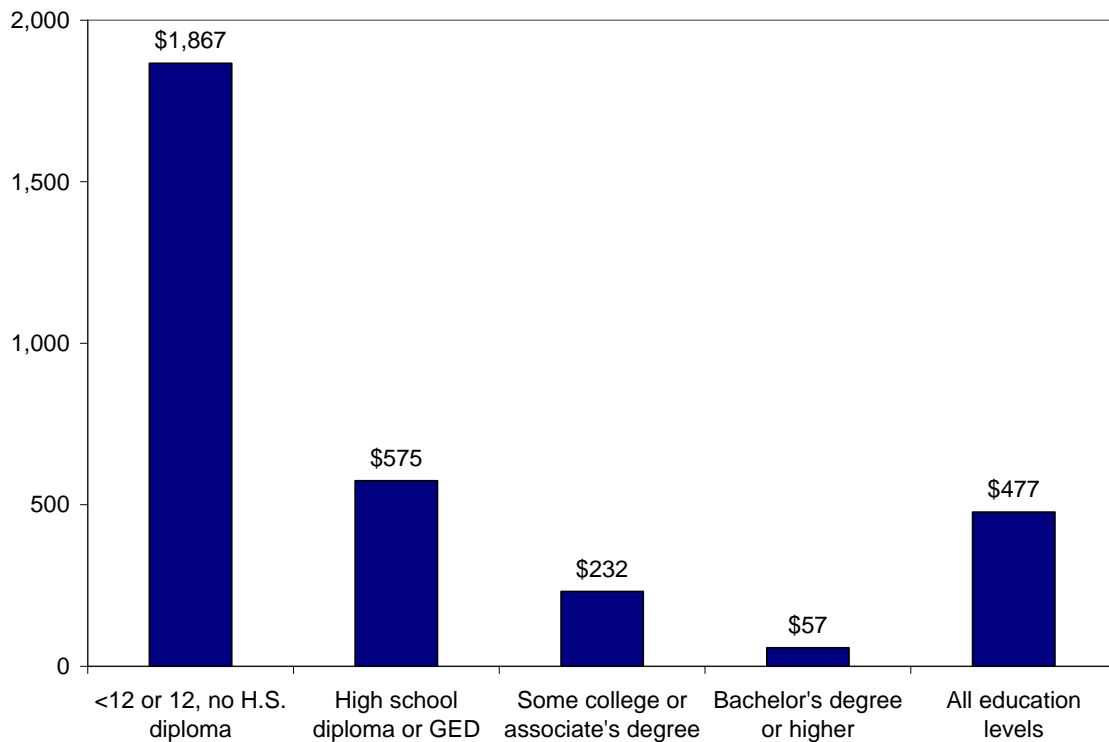
The findings reveal that overall 1.3 percent of the 18- to 60-year old population of Pennsylvania was institutionalized at the time of the 2006 ACS survey. The rates of institutionalization of these adults varied from a high of over 5 percent among high school dropouts, to 1.6 percent among those with just a high school diploma or a GED, to 0.2 percent and 0.1 percent, respectively, among college educated adults with a bachelor's degree and with a master's or a higher degree.

One of the components in our fiscal impact analysis is the per capita cost of institutionalization, that is, the cost per resident aged 18 to 60 in Pennsylvania associated with the incarceration of an individual within that educational group. The increase in the numbers of residents incarcerated has resulted in an increase in the total incarceration costs and per capita costs as well. Assuming that per inmate costs remain the same, the increased rates of incarceration raises the per capita costs of incarceration for a given educational group within the non elderly adult population in the state. Since disproportionate numbers of inmates are high school dropouts, the group costs and per capita costs of incarceration and institutionalization are expected to be higher among high school dropouts than among better-educated adults.

Utilizing the Bureau of Justice Statistics estimate of the annual expenditures per inmate for Pennsylvania in 2001 and adjusting this per inmate cost for inflation between 2001 and 2006, we have derived a per inmate cost of incarceration for Pennsylvania of \$36,313 in 2006. By multiplying this per inmate cost by the number of institutionalized adults in each educational group we derived the total institutionalization cost for that educational group. We then divided this total institutionalization cost in each educational group by the total number of adult Pennsylvanians in the educational group to obtain mean per capita institutionalization cost (or mean institutionalization cost per person) in each educational group.

Findings presented in Chart 8 reveal wide differences in the costs of institutionalization of adults by educational attainment. The high rate of institutionalization among high school dropouts resulted in a very high annual average cost of institutionalization per adult high school dropout in Pennsylvania (\$1,867). The annual institutionalization cost among adult high school graduates, with no college education, was much lower (\$575). Among college educated adults residents of Pennsylvania, the average annual cost of institutionalization per person was \$232 among adults with a below bachelor's degree level college education, \$66 per year among college graduates with a bachelor's degree, and only \$40 among college graduates with a master's or higher academic degree.

Chart 9:  
Mean Annual Costs of Maintaining 18-60 Year Old Adults in Institutions in Pennsylvania, by Educational Attainment 2006



Note: Jail and prison cost data are estimated for 18-60 year olds from the 2006 American Community Survey micro data files and the Bureau of Justice Statistics (BJS) cost estimates for 2001 adjusted for inflation to 2006 dollars.

The mean annual cost of institutionalization among Pennsylvania adults without a high school diploma was 3.2 times as high as that of high school graduates without any college education, and 28 times higher than that of adults with a bachelor's degree.

### **The Mean Net Fiscal Contributions of the Residents of Philadelphia City and Suburbs by Educational Attainment**

Using the mean annual tax payments, mean values of cash and in-kind transfers, and mean per capita annual costs of institutionalization, we have estimated the net fiscal contribution to the federal, state, and local governments for each working age educational group of adult residents of Philadelphia city. Utilizing the same methodology, we have also produced the net fiscal contribution by educational attainment for all adult (18-64) residents of Philadelphia suburbs.

Findings presented in Table 10 reveal that over the 2004-2006 period, the mean annual tax payments made by all adult (18-64) residents of Philadelphia city was \$10,323 whereas the mean value of their cash and in-kind transfers and their institutionalization costs was \$4,128, yielding a net fiscal contribution of \$6,195. Among residents of Philadelphia suburbs, the mean annual tax payments were considerably higher than the city (\$19,769 in the suburbs versus \$10,323 in the city) and the mean value of transfers and institutionalization costs was lower than the city (\$2,435 in the suburbs versus \$4,128 in the city), thus yielding a positive net fiscal impact in the suburbs of Philadelphia that was 2.8 times higher compared to Philadelphia city (\$17,334 in the suburbs versus \$6,195 in the city).

The value of the net fiscal contributions of non elderly adults in Philadelphia city and suburbs varied widely according to their level of educational attainment. The mean annual tax payments by high school dropouts was only \$4,252, while their mean annual total transfers and institutionalization costs was \$11,031. Thus the net fiscal contribution of the average adult resident without a high school diploma in the city was negative. The mean annual tax payments by this group of city residents were \$6,779 lower than the sum of the mean value of annual transfers and the annual institutionalization costs. Adults in the remaining 3 educational groups had positive net fiscal contributions albeit of varying

magnitudes. These adults collected less in transfers and imposed smaller institutionalization costs than the amounts that they contributed in the form of tax payments. Adults with only a high school education and no postsecondary education annually contributed \$5,791 more in tax payments than the sum of what was received in the form of transfers and the costs that they imposed for institutionalization. The net fiscal contribution of adults with below bachelor's level college education was \$6,041 per year. College graduates with a bachelor's or a higher college degree in the city made sizable positive net contributions to the federal, state and local governments (\$15,203). They collected less in transfers and imposed lower institutionalization costs (\$1,981) and paid much larger amounts in taxes (\$17,184), largely the result of their high degree of success in the labor market.

Table 10:  
The Mean Net Annual Fiscal Contributions of 18-64 Year Old Adults in Philadelphia City and Suburbs by Educational Attainment, Annual Averages, 2004-2006 (Dollars)

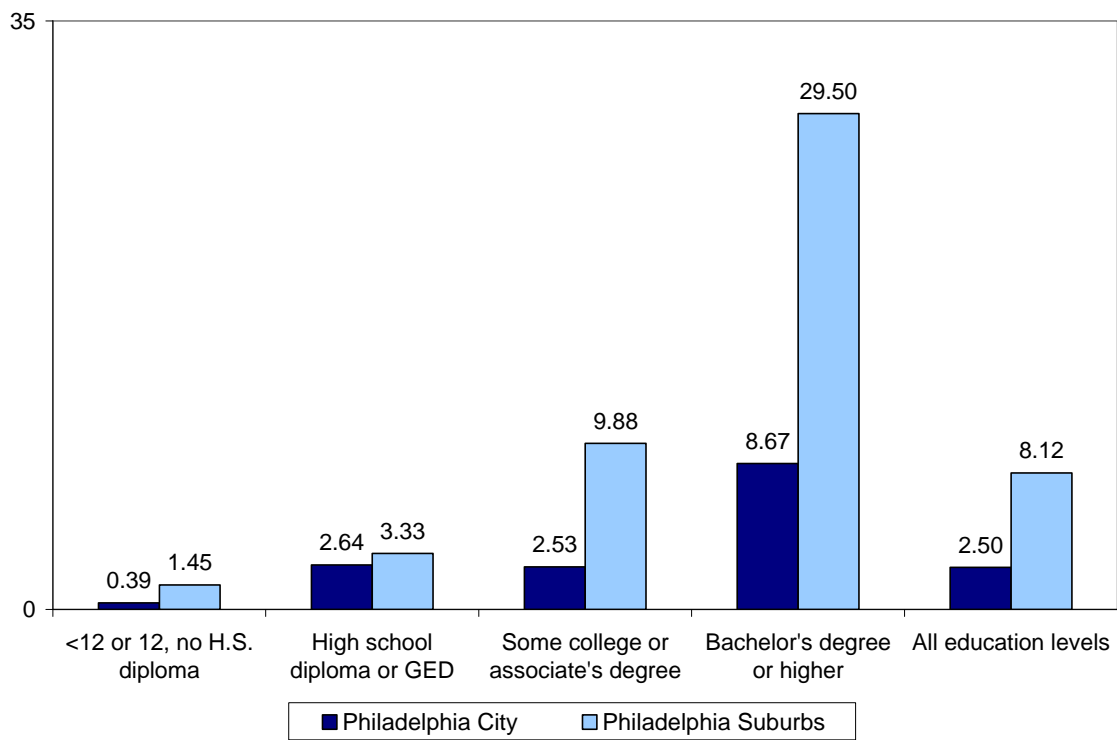
Educational Attainment	Mean Annual Total Tax Payments	Mean Annual Total Transfers and Institutionalization	Annual Net Fiscal Contributions (total tax payments minus total transfers and institutionalization costs)
<b><u>Philadelphia City</u></b>			
<12 or 12, no H.S. diploma	4,252	11,031	-6,779
High school graduate or GED	9,322	3,531	5,791
Some college or associate's degree	9,981	3,941	6,041
Bachelor's degree or higher	17,184	1,981	15,203
All education levels	10,323	4,128	6,195
<b><u>Philadelphia Suburbs</u></b>			
<12 or 12, no H.S. diploma	8,006	5,512	2,495
High school graduate or GED	13,465	4,045	9,420
Some college or associate's degree	16,169	1,637	14,533
Bachelor's degree or higher	28,346	961	27,385
All education levels	19,769	2,435	17,334

The net fiscal contributions of adults in each educational group in the suburbs were considerably larger than that of Philadelphia city. High school dropouts in the suburbs had a small but positive net fiscal contribution (\$2,495). The net fiscal

contribution of suburban residents increased sharply with educational attainment ranging from \$2,495 among high school dropouts, to \$9,420 among high school graduates with no postsecondary education, to \$14,533 among adults with college education below the bachelor’s level, to \$27,385 among college graduates with a bachelor’s or a higher academic degree.

The net fiscal impact can also be presented as the ratio of mean annual tax payments to the annual mean value of transfers and annual institutionalization costs. We have computed these net fiscal contribution ratios for each of the four educational subgroups of adult residents in Philadelphia city and suburbs and presented the findings in Chart 10. The values of these ratios rose sharply with education in Philadelphia city— from just 0.39 among adults who did not complete high school, to 2.64 among high school graduates, and 8.67 among adults with a bachelor’s or a higher academic degree.

**Chart 10:**  
The Ratios of Mean Annual Tax Payments to the Combined Value of Cash and In-Kind Transfers and Institutionalization Costs (Net Fiscal Contribution Ratios) of 18-64 Year Old Residents of Philadelphia City and Philadelphia Suburbs by Educational Attainment



These ratios reveal that a high school dropout paid only \$0.39 for every \$1 received in the form of transfers and institutionalization costs. In contrast, an adult resident of the city who is a high school graduate without any further education contributed \$2.64 in taxes for every \$1 of transfers and institutionalization costs. Those with a bachelor's degree or higher level of education contributed \$8.67 for every \$1 received for transfers and institutionalization costs. Across all education levels, residents of Philadelphia city contributed \$2.50 for every \$1 of transfer income and institutionalization costs.

The net fiscal contribution ratio in suburban Philadelphia for all 18- to 64-year old adults was considerably higher than it was in the city. On average, a suburban resident contributed \$8.12 in the form of tax payments for every \$1 that he or she received in the form of cash or in-kind transfer benefits or the per capita costs that were incurred to institutionalize those involved in the criminal justice system. In sharp contrast, the net fiscal contribution ratio among city residents was only 2.50 (\$2.50 paid in taxes for every \$1 in received in transfer benefits or spent on institutionalization costs). Underlying this difference in the net fiscal contribution ratio between city and suburban residents is the larger tax payments and smaller transfer benefits of suburban residents in each educational subgroup of the population, and the considerably better education levels of suburban residents.

Within each educational subgroup of the population, the net fiscal contribution ratios in the suburbs ranged from 1.45 among high school dropouts, to 3.33 among high school graduates without any postsecondary education, to 9.88 among college graduates with a postsecondary education below the bachelor's degree level, and 29.50 among those with a bachelor's or a higher academic degree.

### **The Mean Lifetime Net Fiscal Contributions of the Residents of Philadelphia City and Suburbs by Educational Attainment**

The net fiscal contributions presented in the previous section represent annual amounts of net fiscal impacts. The cumulative amounts of these annual fiscal impacts over the entire work life of each non-elderly adult resident could be sizable. We have

converted the estimates of the mean annual net fiscal contributions of 18-64 year old adults in each educational subgroup into estimates of lifetime net fiscal contributions. Our estimates of lifetime net fiscal contributions are derived by multiplying the annual net fiscal contribution estimates by the total number of years in the work life of each educational group.

The work life of each educational subgroup was based on assumptions about the age at which they would begin their work life—which is the age when they are typically earn their educational credentials. We have assumed that a high school graduates would receive a diploma at age 18, a bachelor’s degree would be earned at age 22, and a master’s degree at age 24. The work life span—the number of years between the age at which they complete their education and age 64 -- was thus computed as 47 year period for high school dropouts, 45 years for high school, 43 years for those with some college, 41 years for Bachelor degree holders, and 38 years for those with a Master’s or a higher degree.<sup>34</sup>

The lifetime net contributions of adult residents of Philadelphia city rose strongly with their education. The negative annual net fiscal contribution of adults who failed to complete high school would cumulate into a negative net fiscal contribution of -\$319,000 per adult over their working lives. Each high school dropout in the city is expected to cost \$319,000 more in the form of transfer benefits and institutionalization costs than the amount tax payments over their entire working lifetimes. In contrast, a high school graduate (without any college education) is estimated to contribute a net amount of \$261,000 to the budgets of the federal, state, and local governments. The mean lifetime net fiscal contributions of adults with some college, and with a bachelor’s or a higher academic degree are estimated, respectively, at \$260,000 and \$623,000.

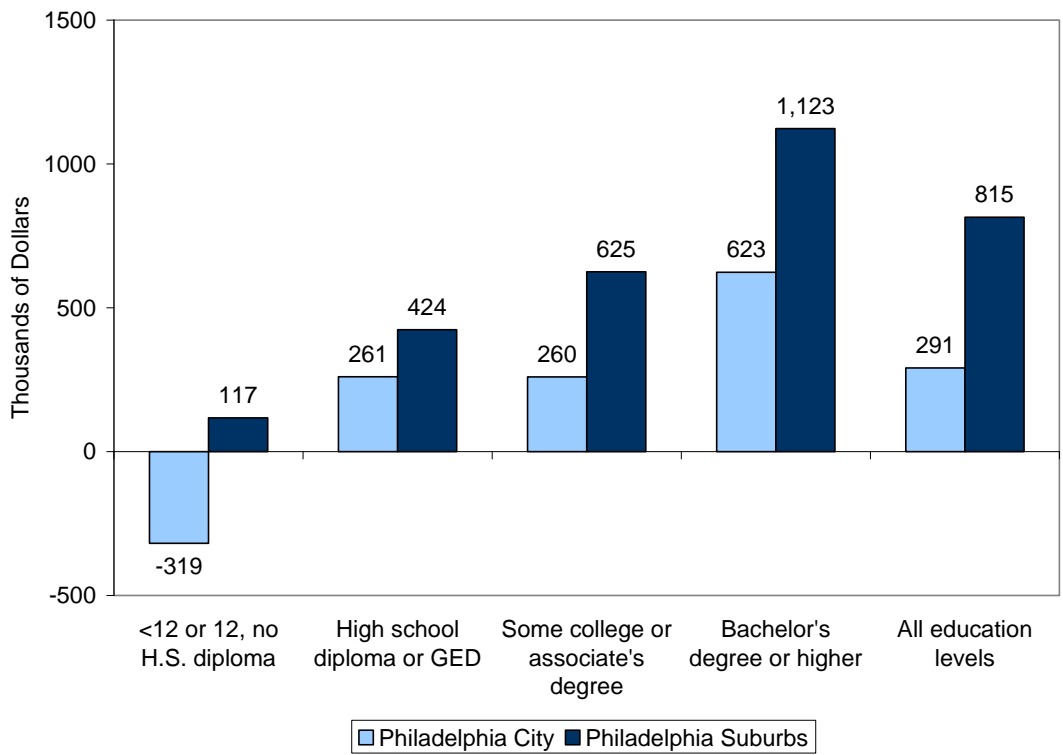
What would be the total impact of assisting a high school dropout to return to school and complete high school? If a resident completes high school and is removed from the dropout category to the high school graduate category, the fiscal impact is

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<sup>34</sup> Estimates of the lifetime fiscal impacts of residents with a bachelor’s or a higher college degree were computed as a sum of the lifetime fiscal impacts of those who had earned just a bachelor’s degree (based upon a working lifespan of 41 years) and those who had earned a Master’s or a higher degree (based upon a working lifespan of 38 years).

twofold: a the removal of the negative net fiscal contribution of the high school dropout and the addition of the positive net fiscal impact of a high school graduate. Each high school dropout in Philadelphia city is estimated to impose a lifetime cost (net fiscal impact) of \$319,000 due to their smaller tax payments higher government transfers and institutionalization costs. Each high school graduate (without any college education) is expected to make a net positive fiscal contribution of \$261,000 over their working lives.

**Chart 11:**  
The Lifetime Net Fiscal Contributions of Adults (18-64) in Philadelphia City and Suburbs by Educational Attainment, 2004-2006 Averages (in Thousands of Dollars)



Reducing one high school dropout in Philadelphia city would save the \$319,000 lifetime cost. Converting this high school dropout to a high school graduate would increase the number of high school graduates in the city by one and result in a lifetime contribution of \$261,000. The sum of the two (a saving of \$319,000 plus an additional contribution of \$261,000 or \$580,000 represents the potential gain to the federal, state,

and local governments for each successful graduation from a Philadelphia city high school of a student who would have otherwise dropped out of high school.

As noted in the sections discussed above, residents in the suburban Philadelphia area have performed better than their city wide counterparts on the fiscal ledger with higher tax payments and lower cash and in-kind transfer benefits in each educational subgroup as well as among all non-elderly suburban Philadelphia residents. The net fiscal benefits among different educational subgroups of suburban Philadelphia residents ranged from \$117,000 among high school dropouts, to \$424,000 among high school graduates (with no postsecondary schooling) and \$623,000 among those who had completed some college below the bachelor's degree level, to \$1.123 million among college graduate residents of the suburban areas with a bachelor's or a higher college degree.

The benefits that can be expected to accrue from each successful high school graduation of a high school dropout resident of Philadelphia suburbs was also quite large, albeit not as large as that in Philadelphia city (\$580,000 in the city versus \$307,000 in the suburbs) due to the small but positive net lifetime contribution of high school dropouts (+117,000) in the suburbs versus a large negative net lifetime contribution (-\$319,000) in the city) and a smaller net positive contribution of high school graduates in Philadelphia city compared to Philadelphia suburbs (\$261,000 in the city versus \$424,000 in the suburbs).

The net cost to the public coffers of each high school dropout in Philadelphia city is sizable. The labor market attachment and the level of earnings of high school dropouts in the city are very weak resulting in low levels of per capita tax payments by them. The mean combined annual tax payments of high school dropout residents of the city was only \$4,252, a level that was only 45 percent as high as that of high school graduates and only a quarter as high as the mean annual tax payments by the best-educated city residents (with a bachelor's or a higher college degree).\

On the other side of the fiscal ledger, high school dropout residents of the city were much more dependent on cash and in-kind transfer benefits—nearly one-half reported receiving one or more cash transfer payments and 54 percent report receipt of

one or more in-kind or non-cash transfer benefits. The dollar value of the annual cash and non-cash transfer benefits and the per capital institutionalization costs of high school dropouts in the city in the 2004-2006 period was \$11,031, a level that was more than 3.1 times as high as that of high school graduate residents and 5.6 times that of college graduate residents of Philadelphia city.

The net effect is that high school dropouts in the city are estimated to impose an annual cost of \$6,779, representing the amount by which their tax payments fall short of their transfer benefits and institutionalization costs. Over their working lifespan, these annual costs balloon to \$319,000 per high school dropout resident of Philadelphia city.

A high school dropout residing in the suburbs of Philadelphia also is estimated to make smaller tax payments and receive greater transfer benefits than better educated suburban residents. However, the annual and lifetime net fiscal impacts of high school dropouts and of each educational group in the suburban areas are considerably better than those of their city counterparts.

Clearly, working age adults who fail to complete high school impose very high costs upon the public coffers in the form of low tax payments, high rates and amounts of receipt of government transfer costs and high institutionalization costs. These external costs are in addition to the sizable personal costs of dropping of high school that are borne by the individuals themselves. The large gap between the lifetime net fiscal contributions of high school dropouts and their counterparts with just a high school education indicate that the monetary benefit of each successful high school graduation to the public coffers is indeed very large. Although the components in the net fiscal contributions estimated in this report encompass a wide array of taxes and transfers and costs, these estimates are still very conservative since they do not include non-quantifiable personal costs, health costs, and social costs of high school dropouts and the transmission of these costs to future generations through diminished resources available to their children.

## **Appendix A: Estimating the Annual Federal and State Income Taxes Paid by Husbands and Wives in Married Couple Families**

In computing the annual federal and state income tax payments of adults in the March CPS Annual Social and Economic Supplement, the U.S. Census Bureau adopts a different practice for husbands and wives in married couple families than it does for all other individuals with incomes during the year. For married couple families, the U.S. Census Bureau adopts the assumption that the couple files a joint federal and state income tax return. Research staff then estimated the federal and state income tax liability for the married couple and assigned the entire federal and state income tax liability to the head of the married couple family. The householder of this married couple family can be either the husband or the wife. In approximately 85 percent of the cases, the householder in a non-elderly married couple family is the husband.<sup>35</sup> For all other individuals, whether living in families or in non-family households, the federal and state income tax liability appears on their personal record. Given the above practice in assigning income tax liabilities to the head of a married couple family, we cannot identify from the existing March CPS records the specific federal and state income tax liability of the husband and spouse in a married couple family. To avoid exaggerating the income tax payments of the heads of married couple families and severely underestimating the income tax payments of the spouses in such families, we developed a set of computer programming instructions with the SPSS statistical package that allowed us to generate separate estimates of the federal and state income tax liability of husbands and wives.

The procedures used to estimate husband/wife income tax liability can be summarized as follows. We first calculated the percentage shares of joint husband/wife earnings during the year that were earned by the family head and the spouse. The family head's percentage share of earnings (e.g., 70%) was then multiplied by the estimated joint federal income tax liability of the married couple to estimate his (her) federal income tax payments. Suppose that the married couple's federal income tax liability was \$20,000 and the head obtained 70% of the combined earnings during the year. The head's federal income tax liability was computed to be  $\$20,000 * .70 = \$14,000$ . The remaining \$6,000

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<sup>35</sup> Our definition of a non-elderly family is one whose head is an individual under the age of 65.

in federal income tax liability was then assigned to the spouse.<sup>36</sup> The same statistical procedures were used to compute the state income tax payments of the husband and wife.

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<sup>36</sup> In a married couple family, the spouse can be either the husband or wife depending on which of the two was classified as the family householder.

## **Appendix B: Estimating Median and Mean Values of Homes and Annual Property Taxes Paid by Householders**

The 2006 American Community Survey (ACS) collected data on the characteristics of the homes occupied by responding households, including ownership status, the home’s estimated market value, the year when the house was built, and annual property tax payments. Both the data on estimated home prices and property tax payments were collected in a categorical form rather than in continuous form. For example, the respondent was asked to identify the estimated value of their home from 24 pre-assigned categories, ranging from under \$10,000 to over \$1 million. Similarly, the household was asked to choose from over 68 categories the size of their annual property tax payments ranging from \$0 to \$10,000 or more.

Using these categorical data on home price and property tax payments, we calculated mean/median home prices and property tax payments for householders in each of the four educational categories appearing in our analysis. We used the following two formulas to estimate mean and median values of homes and annual property tax payments appearing in our analysis. The mean values of homes and property tax payments are likely somewhat underestimated due to the absence of upper limits for the top category. For example, the property value of homes in the top category was \$1,000,000 or more and for property tax payments it was \$10,000 and over. However, there were very few cases in these upper housing value and property tax categories. The estimated mean and median values of the two variables were calculated as follows:

$$\text{Mean} \cong \frac{\sum_{j=1}^c m_j f_j}{n} \text{-----(1)}$$

Where, c = number of income classes in the frequency distribution

$m_j$  = mid point of home prices or property tax payments in the  $j^{\text{th}}$  class

$f_j$  = frequency of the observations in the  $j^{\text{th}}$  income class

n = number of households who owned their home

$$\text{Median} \cong l + \frac{h}{f} \left( \frac{N}{2} - C \right) \text{-----}(2)$$

Where,  $l$  = lower bound of the response category containing the median value of homes or property taxes (in dollars)

$h$  = width of the median response category (in dollars)

$f$  = frequency of the median category

$N$  = (Total number of sample cases)

$C$  = Cumulative frequency preceding the median category

## Appendix C: Estimating State Sales Tax Payments for Individuals

The U.S. Census Bureau does not provide any estimates of annual state sales tax payments for persons interviewed during the March CPS survey. In our fiscal impact analyses, we have estimated state sales tax payments for individual adults in Pennsylvania by using a combination of personal income data from the 2006 ACS survey and sales tax tables for Pennsylvania published annually by the U.S. Department of Treasury’s Internal Revenue Service (IRS). In our analysis of state sales taxes, we applied a single person exemption to each individual respondent between the ages of 18 and 64 years with a positive income. For each person in our analysis, we assigned Pennsylvania state sales tax payment equal to the IRS sales tax deduction for a person in Pennsylvania with their annual income in 2006. Below is a sample table of the allowable sales tax deductions for residents of Pennsylvania in 2006.

Appendix Table C-1:  
Optional State Sales Tax Tables, Pennsylvania, 2006

<b>Income</b>		<b>Exemptions</b>					
At least	But less than	1	2	3	4	5	Over 5
\$0	\$20,000	\$194	\$209	\$219	\$226	\$232	\$239
\$20,000	\$30,000	\$341	\$367	\$384	\$396	\$406	\$419
\$30,000	\$40,000	\$420	\$452	\$473	\$488	\$500	\$516
\$40,000	\$50,000	\$489	\$527	\$551	\$568	\$582	\$601
\$50,000	\$60,000	\$553	\$596	\$623	\$642	\$658	\$679
\$60,000	\$70,000	\$612	\$660	\$689	\$711	\$728	\$752
\$70,000	\$80,000	\$669	\$721	\$753	\$776	\$795	\$821
\$80,000	\$90,000	\$722	\$778	\$812	\$838	\$858	\$886
\$90,000	\$100,000	\$773	\$832	\$870	\$897	\$919	\$948
\$100,000	\$120,000	\$841	\$905	\$946	\$975	\$999	\$1,031
\$120,000	\$140,000	\$935	\$1,007	\$1,051	\$1,084	\$1,111	\$1,146
\$140,000	\$160,000	\$1,018	\$1,096	\$1,145	\$1,181	\$1,210	\$1,248
\$160,000	\$180,000	\$1,102	\$1,187	\$1,239	\$1,278	\$1,309	\$1,351
\$180,000	\$200,000	\$1,179	\$1,269	\$1,326	\$1,367	\$1,400	\$1,445
\$200,000 or More		\$1,572	\$1,691	\$1,766	\$1,821	\$1,865	\$1,924

Source: Internal Revenue Service, “State and Local General Sales Taxes”, Publication 600: 2006, [www.irs.gov](http://www.irs.gov).

## Appendix D: Estimating the Annual Average Costs of Medicaid

The U.S. Census Bureau collects data on the Medicaid/Medicare recipient status of respondents in a supplement to the March CPS survey. Based on the family's annual income, the cost of its food and housing needs, and the market value of the medical benefits, the Bureau applies a fungible value approach to estimate the family's values of the health services provided by Medicaid.<sup>37</sup> However, for individual member of the households, the Bureau estimated the market value of Medicaid. The actual cost of providing Medicaid services is higher than the U.S. Census Bureau fungible or market value estimates. The actual annual fiscal outlays on Medicaid recipients vary considerably by age group and disability status. For example, for all adults (18-64), the mean value of Medicaid services based on the Census Bureau's market value approach was only \$653. This estimated value of Medicaid services was about 39% lower than the costs we estimated using March CPS and Health and Human Services administrative data on Medicaid expenditures (Appendix Table D-1).

Appendix Table D-2 illustrates the methodology that was used by the Center for Labor Market Studies to estimate the average annual per capita cost of providing Medicaid to non-elderly adults in the U.S. Based on the March CPS supplement data; we first estimated the distribution of adult Medicaid recipients by their disability status. In the U.S. nearly 60% of the Medicaid recipients were classified as disabled adults and the remaining 40% were non-disabled adults (Appendix Table D-2, first row). According to the Medicaid administrative office, the costs of providing Medicaid services for disabled and non-disabled adults in 2006 were \$13,524 and \$2,102, respectively (Appendix Table

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<sup>37</sup> The U.S. Census Bureau describes fungible value as follows: "The fungible approach for valuing medical coverage assigns income to the extent that having the insurance would free up resources that would have been spent on medical care. The estimated fungible value depends on family income, the cost of food and housing needs, and the market value of the medical benefits. If family income is not sufficient to cover the family's basic food and housing requirements, the fungible value methodology treats Medicare and Medicaid as having no income value. If family income exceeds the cost of food and housing requirements, the fungible value of Medicare and Medicaid is equal to the amount which exceeds the value assigned for food and housing requirements (up to the amount of the market value of an equivalent insurance policy (total cost divided by the number of participants in each risk class))."  
<http://www.census.gov/hhes/www/income/histinc/redefs.html>

Appendix Table D-1:  
Difference Between the Estimates of CPS Market Value of Medicaid and the CLMS Estimates for All 18-64 Year Old Adults in the U.S., 2004-2006

	(A)	(B)	(C)
Education	CPS Market Value of Medicaid	CLMS Estimates Based on Medicaid Costs of Adults and CPS Data	% Difference (B/A)-1
<12 or 12, No HS Diploma	\$1,663	\$2,118	27%
HS Graduate or GED	\$815	\$1,124	38%
1-3 Years of College	\$487	\$718	47%
Bachelor's Degree	\$189	\$320	70%
Master's or Higher	\$117	\$223	91%
All education levels	\$653	\$907	39%

D-2, second row). We calculated annual average Medicaid costs by multiplying the share of each Medicaid recipient group that was disabled by \$13,524 and the share of adults that were non-disabled by \$2,102 (Appendix Table D-2, third row). The annual average expected cost of Medicaid was estimated to be \$8,101 for disabled adults and only \$843 for non-disabled adults (Appendix Table D-2, fourth row). We then summed the cost of Medicaid for disabled and non-disabled adults to obtain the total average annual cost of

Appendix Table D-2:  
Estimates of the Mean Annual Per Capita Cost of Providing Medical Care to Non-Elderly Medicaid Recipients (18-64 Year Old) in the U.S. in 2004-2006

Variable	Disabled	Non-Disabled
(A) % Distribution of Medicaid Recipients by Disability Status <sup>(i)</sup>	59.9%	40.1%
(B) Annual Average Cost of Providing Medicaid (Administrative Data) <sup>(ii)</sup>	\$13,524	\$2,102
(C) Annual Average Costs of Providing Medicaid (A * B)	\$8,101	\$843
(D) Sum of Costs (Disabled and Non-Disabled)	\$8,944	
(E) % Who Received Medicaid		10.1%
(F) Average Annual Per Capita Cost of Medicaid (D* E)		\$907

Source: (i) March 2005, 2006 and March 2007 CPS surveys, Work Experience and Income Supplement, public use files, tabulations by authors;  
(ii) The Urban Institute and Kaiser Foundation Commission on Medicaid and the Uninsured estimates are based on data from Medicaid Statistical Information System (MSIS) reports from the Centers for Medicare and Medicaid Services (CMS), 2007, web site, <http://www.statehealthfacts.org/comparetable.jsp?ind=183&cat=4>

providing Medicaid for adults (Appendix Table D-2, fifth row). The total cost of providing Medicaid services to U.S. adults was estimated to be \$8,994. Finally, to estimate the taxpayer cost of providing Medicaid coverage to adults in the U.S., we multiplied the average annual cost of providing Medicaid coverage to recipients of Medicaid by the percent of the members of the 18-64 year old adult population that were Medicaid/Medicare recipients (Appendix Table D-2, sixth row). Thus, the mean annual per capita costs of Medicaid for adults (18-64 years old) in the U.S. was \$907. We repeated this process for each of the four educational subgroup of adults used in our analysis (Appendix Table D-1). We then replaced the estimated fungible value of Medicaid on the March CPS survey with this value to estimate taxpayer costs of providing Medicaid.

## **Appendix E: Estimating Jail/Prison Cost of Adults (18-60)**

To estimate rates of institutionalization among the non-elderly adult population of the state of Pennsylvania in 2006, we analyzed the findings of the 2006 American Community Surveys, which interviewed residents of group quarters for the first time during that year. The ACS survey identified the institutionalization status of each adult respondent. This group includes those persons who were under supervision in correctional facilities (jails/prisons), nursing/skilled nursing facilities, mental (psychiatric) hospitals, in patient hospice facilities, and group homes for juveniles. The public use files for the ACS survey unfortunately do not identify the specific type of institution in which these individuals were living at the time of the survey. Nationally, the U.S Census Bureau’s publication of institutionalization data from the 2006 ACS survey revealed that a substantial majority (over 89 percent) of the members of the institutionalized population between the ages of 15 and 64 were inmates of correctional facilities. Since our analysis of the costs of incarceration are restricted to adults under age 60, the share of institutionalized population that was in correctional facilities is expected to be larger than 89 percent since older adults who are institutionalized are more likely to be in nursing homes and less likely to be in correctional facilities.

The U.S. Bureau of Justice Statistics estimated the annual per state prison inmate costs for the entire nation in 2001. Adjusting this per inmate cost for inflation between 2001 and 2006, the cost per inmate for 2006 was derived. By multiplying the institutionalization rate for each educational group of adults from the 2006 American Community Survey by the per inmate cost, we can estimate the average annual costs of institutionalization per adult in each educational attainment group.

Appendix Table E-1:  
Mean Annual Costs of Maintaining 18-60 Year Old  
Pennsylvania Adults in Institutions, 2006

(A) 2006 Institutionalization Rate	1.3%
(B) Cost of Incarceration in 2006	\$36,313
Average Annual Cost of Incarceration (A*B)	\$477

## **Appendix F: The Mean Lifetime Net Fiscal Contributions Adults by Educational Attainment**

The estimates of the mean annual net fiscal contributions of 18-64 year old adults in each educational attainment group can be converted into mean work-life estimates by multiplying them by the number of years over the work-life. For dropouts, we used a 47 year period, for high school graduates 45 years, for those with some college 43 years, for Bachelor degree holders 41 years, and 38 years for those with a Master's or higher degree.<sup>38</sup>

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<sup>38</sup> We assumed that an average high school graduate would receive a diploma at age 18, a bachelor degree holder would earn the degree at age 22 and a Master's degree holder would earn the degree at 24.

## Appendix G: Estimating Per Capita City Wage Tax for Philadelphia

One of the components of our fiscal analysis ledger for Philadelphia and Philadelphia suburbs is the city of Philadelphia wage tax<sup>39</sup>. Philadelphia City taxes all types of earned income, wage and salaries, commissions and other forms of compensation paid to workers.<sup>40</sup> There are two city tax rates- one for Philadelphia residents regardless of their place of work and the other is for non-residents of Philadelphia who commute to work in Philadelphia city. Philadelphia city residents are taxed at a higher rate on their earned incomes than their non-resident counterparts. For example, in 2006, city wage tax on earned income for Philadelphia residents was 4.33% versus only 3.77% for non-resident workers. (Table A).

Table A:

Philadelphia City Wage Tax Rate for 2005 and 2006

<u>Tax Rate Type</u>	<u>2005</u>	<u>2006</u>
Resident Tax Rate	4.30	4.33
Non-Resident Tax Rate	3.82	3.77

Source: Revenue Department, City of Philadelphia, web site,  
<http://www.phila.gov/Revenue>.

We applied these tax rates for resident and non-resident workers of Philadelphia city on their earnings reported in 2005 and 2006 American Community surveys. In 2006, the aggregate earnings of Philadelphia residents (18-64, excluding 18-22 years old students) regardless of the place of work was \$20.4 billion. Applying resident city wage tax rate of 4.33% on these earnings yield gross tax revenue of \$883.3 million for the city. Since our measure is per capita tax payment measure, we divided this gross tax revenue by the 18-64 years old resident population of Philadelphia, yielding a per capita city wage tax of \$1,096.<sup>41</sup> We repeated this calculation for each of the five educational subgroups in our analysis. We also repeated these sets of calculations to estimate per capita wage tax paid by residents of Philadelphia suburbs who worked in city of Philadelphia.

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<sup>39</sup> The city wage tax is the continuation of the Pennsylvania General Assembly Act passed in 1932 that authorized the city of Philadelphia to impose taxes on wages. This particular act was passed to help city of Philadelphia to financially cope with the economic depression.

<sup>40</sup> The city wage tax is not levied on unearned income.

<sup>41</sup> We took 2-year averages (ACS 2005 and 2006) in our analysis.