

The Lifetime Employment and Earnings Consequences of Dropping Out of High School in Philadelphia

Presented to the Philadelphia Workforce Investment Board

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Introduction

Over the past half dozen years, a number of observers of the Philadelphia schools system have voiced concern about what they perceive as a dropout crisis in the city's school system. Part of this concern has been fueled by several important studies that examine the size and characteristics of the city's high school dropout population and provide insights into early identification of students most likely to leave school.¹ Most recently newly elected Mayor Michael Nutter has made a reduction in the city's high school dropout rate a top priority for his administration, and has hired new educational leaders well versed in dropout prevention policy and strategies.²

Estimates of the number and rate of dropouts in the city of Philadelphia and in Pennsylvania as a whole vary somewhat based on the specific measure that is employed. Only in recent years has a systematic effort been organized to define and measure dropouts. However, not all states employ the same methods and even within states the estimation of the number and rate of dropouts is not consistent across school districts. Indeed as part of its national education reform support work, the Data Quality Campaign (DQC) is working with states to develop uniform student unit record systems. These systems have the capacity to track individual students across school districts within a state that would, among other things provide more accurate and consistent information about both student retention and separation from a state's public school system.³ A total of 36 states (including Pennsylvania) reported to DQC that they have met the standard that can provide information to measure dropout and graduation rates of a cohort of students who enter high school in a given year.⁴

¹ Ruth Curran Neild, *The Unfulfilled Promise: The Dimensions and Characteristics of Philadelphia's Dropout Crisis, 2000-2005*, Project U-Turn, Philadelphia, 2006 and Ruth Curran Neild, Robert Balfanz and Lisa Herzog, "An Early Warning System," *Education Leadership*, Vol. 65, No. 2, October, 2007

² Susan Snyder, "Educators Hail Nutter's 'Call to Arms' on Dropouts," *Philadelphia Inquirer*, January 8, 2008 and Susan Snyder, "Nutter Appoints Pair as his Education Team," *Philadelphia Inquirer*, January 29, 2008

³ DQC is a project of the Gates, Casey and Lumina Foundation that is managed by the National Center for Educational Accountability. 49 States in the nation have met at least one of the ten data standards developed as part of the DQC.

⁴ (1) *Measuring What Matters: Creating a Longitudinal Data System to Improve Student Achievement*, Data Quality Campaign, Washington, DC, Update, 2007

(2) *The 10 Essential Elements in Detail for 2007-08 Data Quality Campaign*, Washington, DC, http://www.dataqualitycampaign.org/survey_results/elements.cfm

Despite continued national efforts to develop improved measures of high school retention and separation, no single measure of dropout or graduation rates has been adopted as a standard. The National Governor’s Association organized a task force that developed a measure of graduation rate called the “adjusted cohort graduation rate” that could be adopted by every state including those who have yet to develop student unit record data warehouses.⁵ The National Center for Education Statistics organized a task force during 2004-05 to make recommendations for standard measures of graduation and dropouts across states and communities. Currently, the Commonwealth of Pennsylvania produces estimates of the annual average number students who were reported as dropouts by their school districts. However, beginning with the entering 9th grade class of 2006-07, the Department of Education will begin a longitudinal tracking program that will produce estimates of the National Governor’s Association’s measure of cohort graduation rates.⁶

Estimates of the size of the dropout problem in Philadelphia can differ considerably on the basis of the both the data used and the measure employed to produce these estimates. For example, Mayor Nutter referred to a dropout rate of 45 percent in Philadelphia. At the higher end, the District Report Card for the 2006-07 school year reported a graduation rate of 67 percent for the Philadelphia school district yielding a 33 percent dropout rate. In 2003, Jay Greene and Marcus Winters of the Manhattan Institute estimated Philadelphia’s graduation rate at 58 percent. Utilizing the Cumulative Promotion Index methodology developed by Christopher Swanson of the Editorial Projects in Education, in June 2006 Education Week reported a graduation rate for the Philadelphia city that was considerably lower—55 percent, yielding a dropout rate of 45 percent.

Different methodologies yield different estimates of graduation rates. For the Philadelphia school district, estimates of graduation rates range from 55 percent to 67 percent, yielding a range of dropout estimates from 45 percent to 33 percent. While varying in size, all estimates of dropout rates in Philadelphia city including the most optimistic estimates point to a dropout crisis in the city. Far too many youth in

⁵ Task Force of the National Governor’s Association on State High School Graduation Data, *Graduation Counts*, National Governor’s Association, Washington, DC, 2005

⁶ Joanne R. Bobek, *Public Secondary Dropouts in Pennsylvania, 2005-06*, Report to the General Assembly, Pennsylvania Department of Education, Harrisburg, 2007

Philadelphia city quit school without earning a diploma. Dropping out of high school has several serious consequences that are borne by the individual who has dropped out as well as the community in which he/she resides. This paper focuses on one such consequence—the low employment levels and earnings of high school dropouts. High school dropouts are considerably less likely to be employed than their better-educated counterparts. Furthermore, when they do find employment high school dropouts are more likely to work in low skill jobs that pay low wages. Over their entire working lifetime, these employment and earnings disadvantages accumulate into large lifetime employment and earnings deficits among high school dropouts.

Data Sources and Methods

This paper presents estimates of the lifetime employment and earnings impacts of dropping out of high school for residents of Philadelphia. The current estimates were developed by the Center for Labor Market Studies, Northeastern University based on data derived from the American Community Survey (ACS) of the U. S. Bureau of the Census. The ACS is a large scale population survey designed to produce accurate estimates of a wide variety of population characteristics at the national, state and selected local levels on an annual basis. The ACS survey in Pennsylvania was completed by more than 104,000 responding households during 2006, while 7,700 households provided usable responses in the city of Philadelphia. Respondents to the ACS completed a detailed questionnaire about the demographic, social, and economic characteristics of household members including information on their educational attainment, current school enrollment status, and labor market activities in the last year as well as income and earnings experiences of each person residing in the household. High school dropouts in this study are defined as those persons aged 18 to 64 years who failed to earn either a regular high school diploma or a similar type of equivalency award such as a GED and who were not currently enrolled in school.⁷

⁷ Respondents to the ACS survey were asked to identify whether they were enrolled in school at any time in the three month period 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 are assigned to the high school graduate category if they did not complete any years of post-secondary schooling.

The population group we have included in our analysis includes the cross section of the resident Philadelphia and Pennsylvania population aged 18 to 64 years (non elderly adults) who lived households, excluding those persons aged 18 to 22 who reported that they were enrolled in high school or college at the time of the ACS survey. This age-school enrollment group includes persons who are most likely to be engaged in the labor market, either through employment or through actively seeking employment. The primary activities of persons under age 18 and over age 64, as well as those aged 18 to 22, who are enrolled in school) are typically not job market related and are therefore excluded from our analysis.

Work Activities of Philadelphia Residents by Educational Attainment

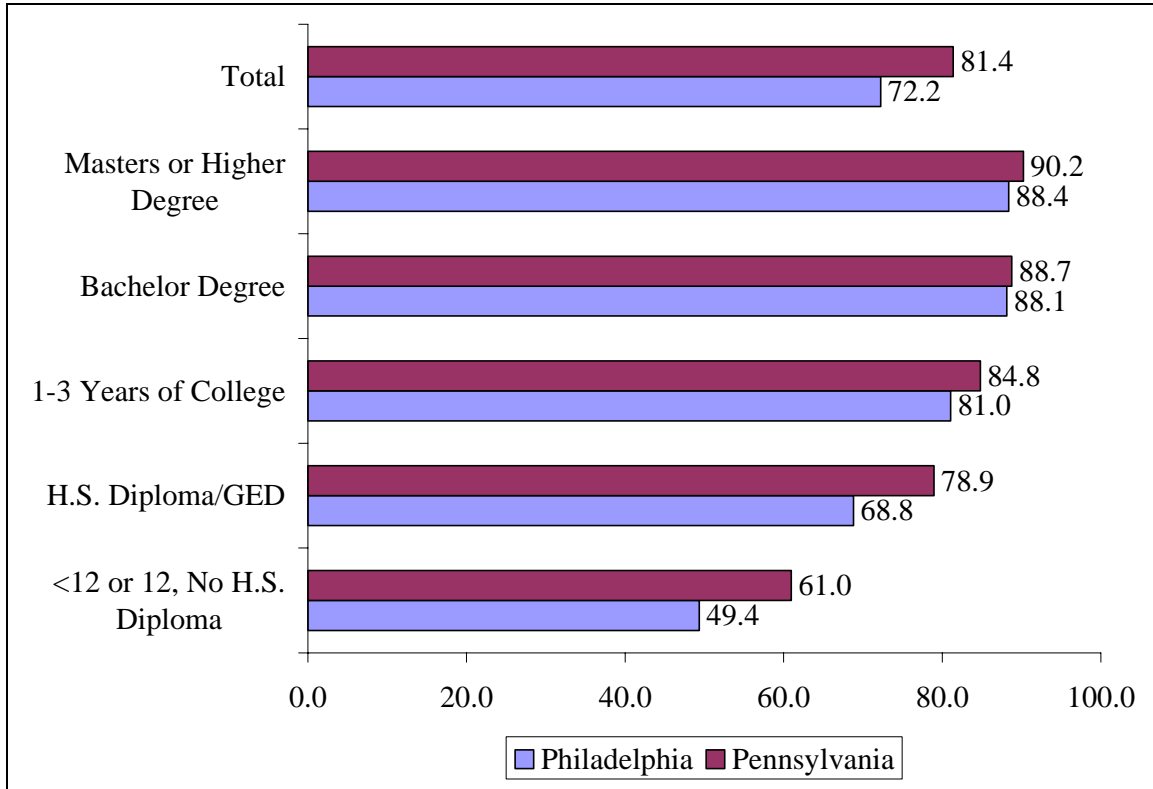
Access to employment is a fundamental determinant of the degree of economic success that an individual can achieve. *A Tale of Two Cities*, a recent publication of the Philadelphia Workforce Investment Board, details the growing income gap in Philadelphia between those who have access to employment and those who don't and the central role that educational attainment plays in providing increased employment access to individuals and groups in the city.⁸ Our analysis of the 2006 American Community reveals that both in the city of Philadelphia as well as the state of Pennsylvania as a whole, a strong relationship exists between access to work and levels of educational attainment. The findings in Chart 1 examine the incidence of work among the adult population in the city of Philadelphia and the state over a 12 month period of time.

The incidence of work is a measure of the number of persons in a given population group who reported that they were employed at least one week during the prior 12 months.⁹ For both the city and the state the likelihood that a resident worked over the previous 12 months rose sharply by educational attainment. At the master's degree and higher level the data reveal that about 9 out of 10 residents in both the city

⁸ *A Tale of Two Cities*, Philadelphia Workforce Investment Board, Philadelphia 2007, See also Neeta P. Fogg and Paul E. Harrington, *The Education Deficit in Philadelphia: Opportunities to Expand Labor Supply, Reduce Unemployment and Increase Earnings Through the Investment in Education*, Research Monograph Prepared for the Philadelphia Workforce Investment Board, Center for Labor Market Studies, Northeastern University, Boston, December, 2005

⁹ The employment measures includes all individuals who worked for pay or profit or individuals who worked without pay in a family business or farm for 15 hours or more per week at any time during the 12 months preceding the ACS survey.

Chart 1: The Incidence of Work over the Year of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia and Pennsylvania, By Level of Educational Attainment, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

and the state reported that they had worked in the prior year. Similarly, among those with a bachelor’s degree, 88 percent of the residents of Philadelphia and Pennsylvania reported that they had worked in the prior year. However, the data reveal that as the level of educational attainment falls two patterns emerge: First, for the city and the state, the chances that a person is employed falls with their level of educational attainment. Second, as the level of educational attainment declines a gap in employment access develops between city residents and their statewide counterparts and the size of that gap increases as the level of educational attainment falls.

While about 9 out of ten persons aged 18 to 64 in both the city and the state report that they worked in the prior twelve months, this work rate is somewhat lower for those with finished high school and had some college, but did not earn a bachelor’s degree.

Statewide about 85 percent of those who had some post secondary schooling, but who did not earn a bachelor's degree reported some work activity in the previous 12 months. In contrast, city residents with the same level of schooling were modestly less likely to report working. About 81 percent indicated that they had some work activity in the past year, yielding a relative work deficit of 5 percent compared to their statewide counterparts.

Among high school graduates with no college, work rates are considerably lower compared to persons with some post-secondary schooling. Statewide, the work rate of those with a high school diploma, but no college, falls to about 79 percent; however, among city residents this rate is much lower with to just 69 percent reporting any work activity in the previous 12 months. City residents with a high school diploma had an annual work rate equal to just 85 percent of that of city residents with some college, but no bachelor's degree. Worse still, high school graduates in the city were considerably less likely to work than their counterparts in the state, with the city's high school graduate work rate equal to just 87 percent of the state-wide high school graduate work rate.

High school dropouts had the lowest work rate among the population of adults aged 18 to 64. Across the state, 61 percent of all high school dropouts reported some work activity in the prior year, a work rate that is about one quarter below that of their high school graduate counterparts and is actually somewhat below that of high school dropouts in the nation as a whole.¹⁰ The job access for high school dropouts in Philadelphia is exceptionally poor. Indeed, the data reveal that the majority of high school dropout residents of Philadelphia did not work at all during the entire year. Dropout residents of the city had an annual work rate of just 49.4 percent, a rate of work that was 30 percent below that of their high school graduate counterpart residents in the city, and sadly, 19 percent lower than the work rate of high school dropout residents of Pennsylvania.

¹⁰ Nationally, the 12 month work rate for this population of dropouts was 65.2 percent, a relative work rate advantage of 7 percent for dropouts in the nation compared to their counterparts in Pennsylvania. See: Neeta Fogg, Paul Harrington and Ishwar Khatiwada, *The Long Term Labor Market Consequences of Dropping Out of High School in Pennsylvania*, Philadelphia Workforce Investment Board, October 2007.

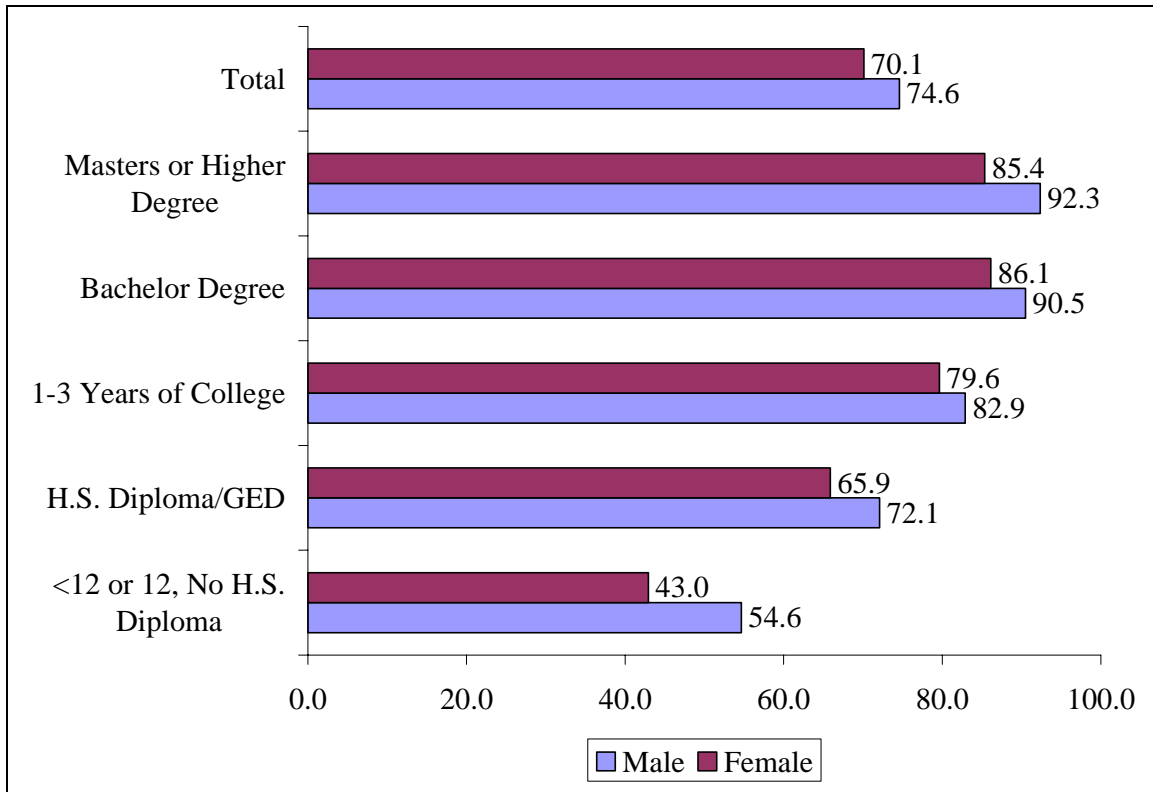
A major consequence of the very low work rates of those with fewer years of schooling among Philadelphia residents is a low overall work rate for the city as a whole. Despite the fact that city residents with a bachelor's degree or higher have annual work rates that are essentially identical to those of state residents, the state's annual work rate of adults between 18 and 64 years old—81.4 percent—is much higher than the 72.2 percent work rate of their counterparts who reside in the city. Almost all of the differences between the city and state work rates are attributable to the relatively poor job access of high school graduates (with no college) and extraordinarily low work rate of adult dropouts in the city. The result is a city with very large excess supplies of labor among persons with low levels of educational attainment at the same time as labor shortages manifest themselves at the bachelor's degree and higher levels in specific occupation and industry sectors in the city. Low levels of educational attainment can act as labor supply constraints that can ultimately retard new job creation in the city.¹¹

Gender Differences in Work Rates

The probability that an adult will work is closely and positively associated with the levels of educational attainment for both men and women. However, differences in work rates exist between men and women, even within the same educational attainment levels. Within the city of Philadelphia, women are less likely to work than are their male counterparts at every level of educational attainment, but the size of this gap is especially large for high school dropouts. The overall work rate for males aged 18 to 64 in Philadelphia was 74.6 percent during 2006, compared to 70.1 percent for women, a relative difference of 6 percent. Among persons with a bachelor's degree the male work rates were about 5 to 8 percent higher than those of highly educated women. Among those with some college and without a bachelor's degree, the work rate gap between men and women in the city was only about 4 percent in relative terms. The gender gap in annual work rates among high school dropout residents in the city, however, was quite large. Men who had failed to earn a high school diploma or its equivalency and lived in the city at the time of the ACS survey had an annual work rate of 54.6 percent. Women

¹¹ Op cit *A Tale of Two Cities*.

Chart 2: The Incidence of Work over the Year of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia, By Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Table 1:
Absolute and Relative Differences between Males and Females (18 to 64 year Old Civilian, Non-Institutional) in the Annual Incidence of Work in Philadelphia, By Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)

Educational Attainment	Male	Female	Absolute Difference	Relative Difference
<12 or 12, No H.S. Diploma	54.6	43.0	-11.7	-21%
H.S. Diploma/GED	72.1	65.9	-6.2	-9%
1-3 Years of College	82.9	79.6	-3.2	-4%
Bachelor Degree	90.5	86.1	-4.4	-5%
Masters or Higher Degree	92.3	85.4	-7.0	-8%
Total	74.6	70.1	-4.5	-6%

Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

who had dropped out had an annual work rate of just 43 percent, yielding a relative difference in work rates of 21 percent. Women who drop out of high school in Philadelphia can expect to spend considerably more years with household incomes that are below the official poverty line, than their male counterparts, in part because they have much less access to employment.¹²

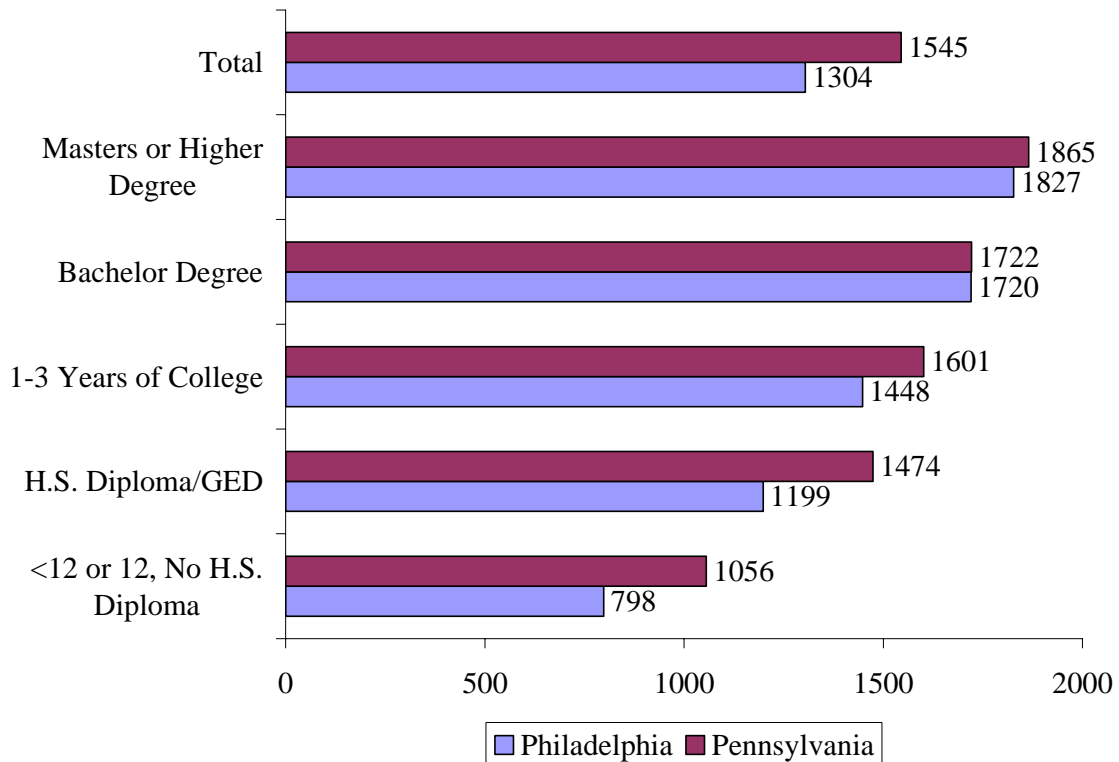
Hours of Work

The annual work rate is among the most fundamental measures of the potential for an individual or group to achieve success in the labor market. A second key factor influencing labor market success and the level of personal earnings is the intensity of work activity over the course of a year. Just as work rates vary systematically by level of educational attainment, so do the number of annual hours of work individuals are willing and able to supply in the labor market. The findings provided in this section of the report are based on ACS survey reports of the cumulative hours of work by 18 to 64 year old adults (excluding 18- to 22-year old persons enrolled in school) in each educational attainment group.

The average non elderly adult in Pennsylvania who was employed at some point during the prior year worked about 1,545 hours over the year, almost exactly the same number of annual hours of work as that among their national counterparts (1,542 hours). Similar to the pattern observed in work rates, there was a strong positive connection between education and hours of work. Those with fewer years of schooling worked much less while persons with higher levels of educational attainment worked many more hours each year. In the city of Philadelphia, those who were employed in the previous 12 months worked substantially fewer hours during that year than their counterparts in the state. Philadelphia residents who reported work in the prior year, worked an average of just 1,304 or about 16 percent fewer hours than their statewide counterparts. Most of the gap in hours worked during the year was concentrated among those with fewer years of schooling, with an especially large difference between the annual hours of work among high school dropout

¹² Neeta Fogg, Paul Harrington and Ishwar Khatiwada, *Poverty and Income Inadequacy over the Lifetime of High School Dropouts in Philadelphia*, Philadelphia Workforce Investment Board, forthcoming

Chart 3: Mean Annual Hours of Work of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia and Pennsylvania, By Level of Educational Attainment, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

residents in the city and the state. Employed residents of both Philadelphia and the state with a college degree supplied a large number of annual hours of work. These individuals worked on average, between 1,720 and 1,865 hours in the prior year, a level equivalent to that of a working year round in a full-time job. College graduates in both the city and the state worked considerably more hours over the course of the year than their high school graduate counterparts.

Statewide, high school graduates, with no college, worked an average of 1,474 hours per year, about 14 percent less than their counterparts with a bachelor’s degree. In the city, those with a high school diploma (only) worked even less, supplying on average only about 1,200 hours of work per year, a rate of work more than 500 hours or about 30 percent below the annual hours of work supplied by city residents with a bachelor’s degree. High school dropout residents of both the state and the city worked the fewest

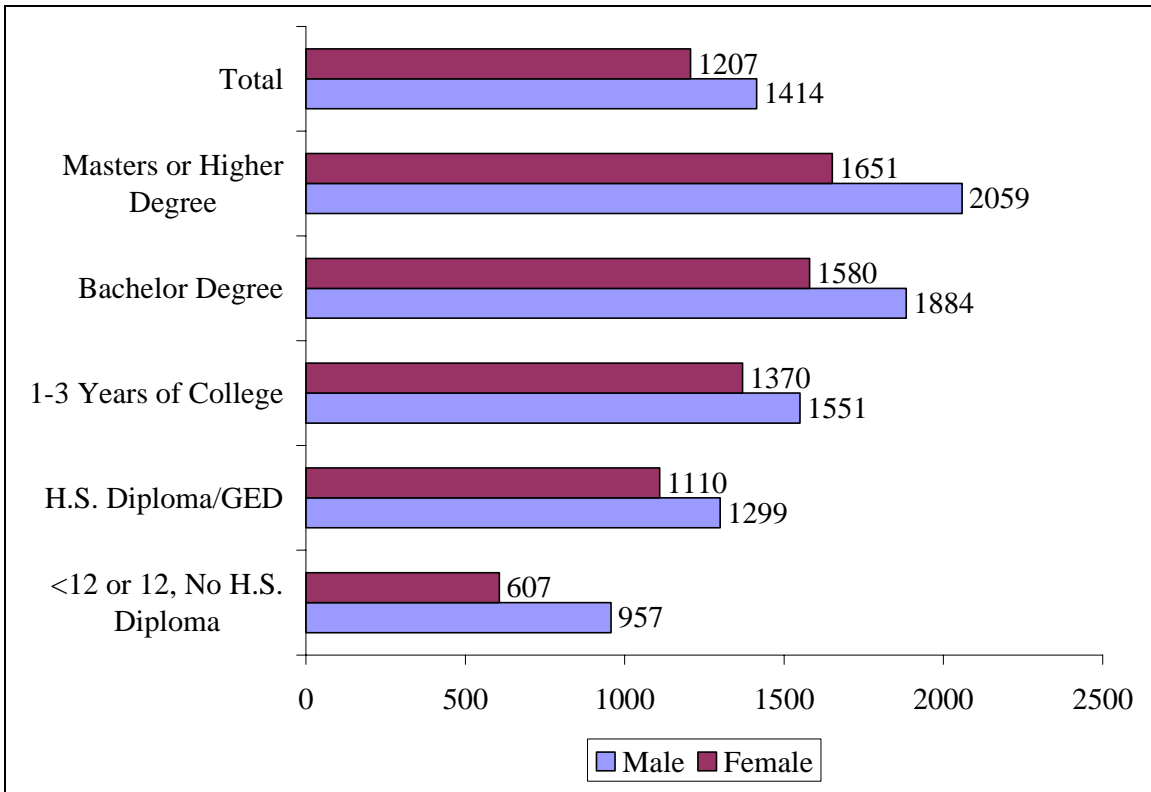
number of hours per year. State residents who were dropouts worked 1,056 hours representing 400 fewer hours than their high school graduate counterparts or a difference of 28 percent. Dropouts in Philadelphia who were able to work in the previous 12 months supplied comparatively few hours of over the course of the year. Dropout residents of Philadelphia worked, on average just under 800 hours during the prior year, one quarter fewer hours than the labor supply of dropouts statewide and one-third fewer hours than were supplied by high school graduate residents of the city.

Table 2: Absolute and Relative Difference in the Mean Annual Hours of Work of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia and Pennsylvania, By Level of Educational Attainment, 2006 (Excluding 18 to 22 Year Old Students)

Educational Attainment	Pennsylvania	Philadelphia	Absolute Difference	Relative Difference
<12 or 12, No H.S.				
Diploma	1,056	798	-258	-24.4%
H.S. Diploma/GED	1,474	1,199	-275	-18.7%
1-3 Years of College	1,601	1,448	-153	-9.6%
Bachelor Degree	1,722	1,720	-2	-0.1%
Masters or Higher Degree	1,865	1,827	-37	-2.0%
Total	1,545	1,304	-241	-15.6%

Annual hours of work also varied considerably by gender within the city of Philadelphia. Women who were employed in the prior year worked an average of 1,207 hours during that year while men worked 1,414 hours, representing a difference of 15 percent. The size of the difference in the number of hours worked between men and women in the city was considerable across all educational attainment groups. For example women with a master’s degree or higher worked about 20 percent fewer hours per year than their male counterparts, while women with a high school diploma only worked about one sixth fewer hours during the year compared to men with a diploma only. However, the size of the male/female hours of work gap was much larger for high school dropouts in the city. Female dropout residents of Philadelphia worked just over

Chart 4: Mean Annual Hours of Work of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia by Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Table 3: Absolute and Relative Difference between Men and Women in their Mean Annual Hours of Work (18 to 64 year Old Civilian, Non-Institutional Population) in Philadelphia By Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)

Educational Attainment	Male	Female	Absolute Difference	Relative Difference
<12 or 12, No H.S. Diploma	957	607	-350	-36.6%
H.S. Diploma/GED	1,299	1,110	-189	-14.6%
1-3 Years of College	1,551	1,370	-181	-11.7%
Bachelor Degree	1,884	1,580	-303	-16.1%
Masters or Higher Degree	2,059	1,651	-408	-19.8%
Total	1,414	1,207	-207	-14.7%

Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

600 hours per year, more than one third fewer hours than male dropouts. Women with some college worked more than twice as much as did dropouts and college graduate women supplied almost 2.7 times as many hours as did women who had dropped out of high school.

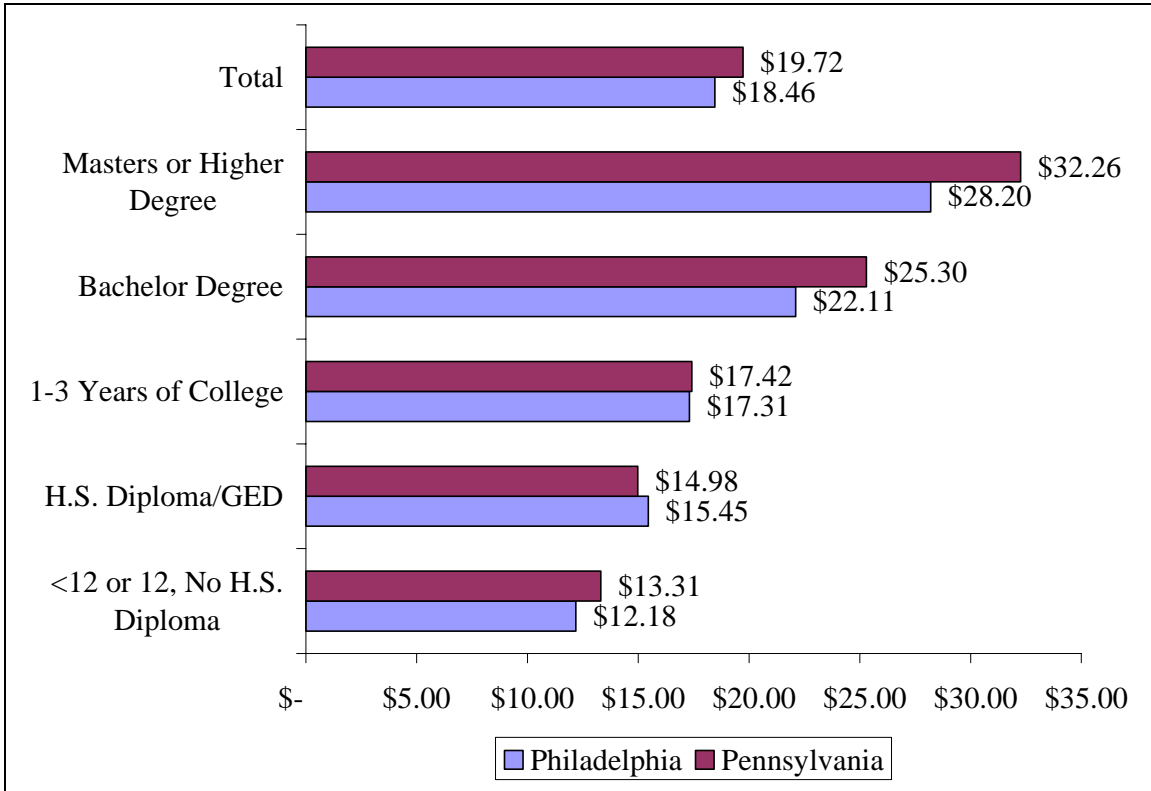
Hourly Rate of Pay

The hourly rate of pay is the third fundamental determinant of the level of annual and lifetime earnings. Together with the work rate and annual hours of work, the hourly rate of pay is the basis upon which the annual earnings of workers are determined. We have already observed that the chances that an individual works at all over the course of a given year and the number of annual hours of work among workers are closely connected to their level of educational attainment. Similar to the work rate and hours of work, the hourly rate of pay of individuals is also closely connected to their level of educational attainment. Individuals with higher levels of education earn a higher hourly rate of pay than those with lower levels of education.

In the state of Pennsylvania, persons with a master's degree had an average rate of pay of just over \$32.00 per hour, while those with a bachelor's degree had earnings of about \$25.00 per hour. High school graduates had hourly pay rates that averaged about \$15.00, a rate of pay that was 40 percent below the pay rate of those with a bachelor's degree. High school dropouts had the lowest hourly wage rate of \$13.30 per hour, about 11 percent less than the wage of high school graduates and 47 percent below the earnings of those with a bachelor's degree.

Like their statewide counterparts, the hourly pay rates of Philadelphia residents were also closely associated with their levels of educational attainment. Resident adults aged 18 to 64 with a college degree had hourly rates of pay that were between 43 percent and 82 percent higher than those with a high school diploma only. High school dropouts had hourly earnings that averaged \$12.18, a rate of pay about 21 percent less than that of employed high school graduates within the city.

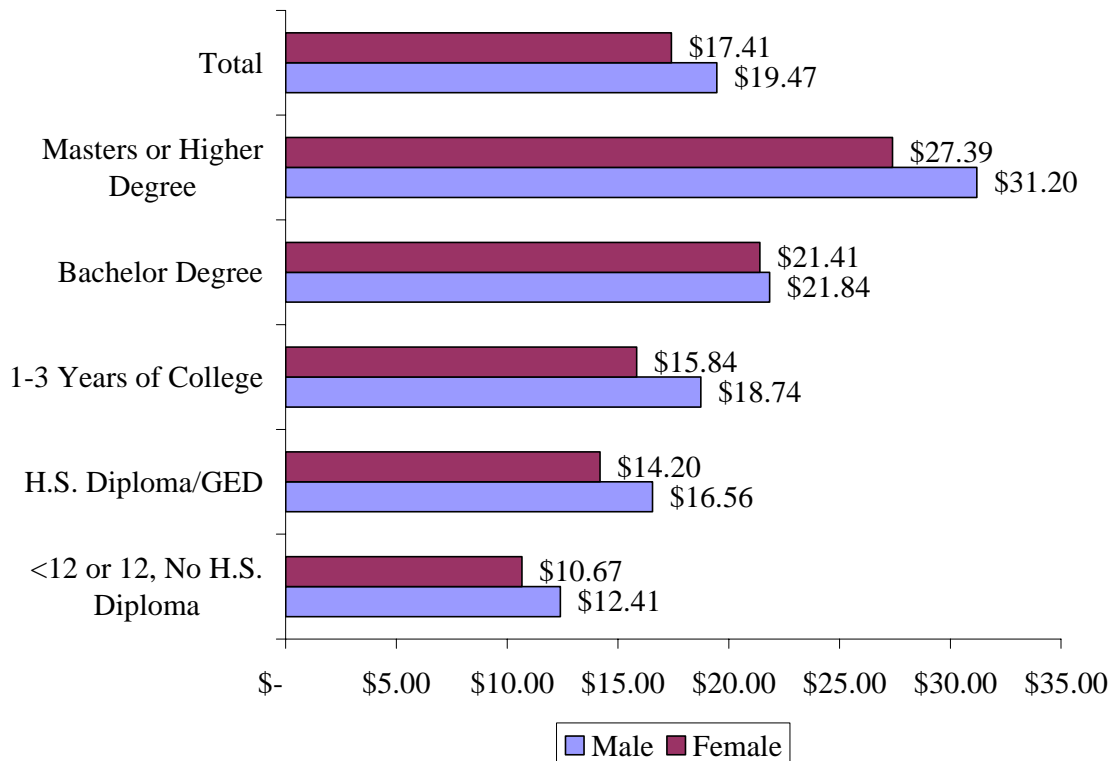
Chart 5: Mean Annual Hourly Pay of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia and Pennsylvania, By Level of Educational Attainment, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Women residents of Philadelphia had hourly rates of pay of \$17.46 per hour while men earned an average of 19.47 per hour, representing difference of about 10 percent. While women generally earn somewhat less per hour than men within each educational attainment category, a strong positive relationship exists between hourly pay and educational attainment among the male as well as female residents of the city. High school graduate males and females both had hourly earnings advantages of about one third compared to high school dropouts. Men with a bachelor’s degree earned 76 percent more per hour relative to their high school dropout counterparts who resided in Philadelphia. Women with a bachelor’s degree earned more than double their dropout

Chart 6: Mean Annual Hourly Pay of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia by Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Table 4: Mean Annual Hourly Pay Advantage of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia in each Educational Group Relative to Dropouts, by Gender, 2006 (Excluding 18 to 22 Year Old Students)

Educational Attainment	Male	Female
<12 or 12, No H.S. Diploma	100%	100%
H.S. Diploma/GED	133%	133%
1-3 Years of College	151%	148%
Bachelor Degree	176%	201%
Masters or Higher Degree	251%	257%
Total	157%	163%

counterparts. Both men and women with master's degrees or higher had hourly pay rates that were more than 2.5 times those earned by their high school dropout counterparts.

Educational Attainment and Expected Lifetime Earnings

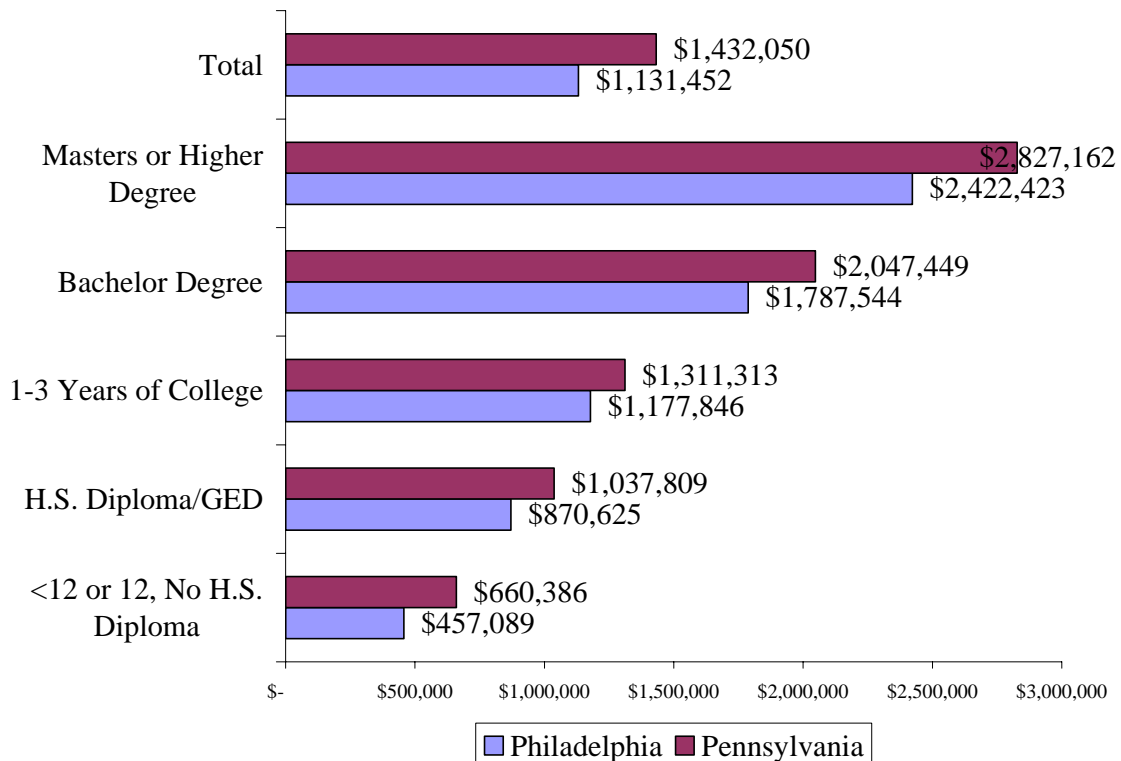
Annual earnings are the most comprehensive measure of labor market success, the mean annual earnings of an individual is the product of their rate of work, their annual hours of work and their hourly wage rate. In the previous section of this paper we found large and systematic differences by educational attainment in these three measures. For each measure we found strong positive relationships with educational attainment. As the level of educational attainment rose we found that:

- the likelihood that an individual would work over the course of a year increased sharply,
- that the number of hours they worked increased rapidly, and
- that hourly wages rose substantially.

Our findings reveal that high school dropouts, especially in the city of Philadelphia fared quite poorly on each of these three fundamental measures of labor market outcomes. Worse still the long term earnings outlook for high school dropouts remains quite poor. To illustrate the potential lifetime impact of the labor market deficits associated with dropping out of high school we have calculated the expected lifetime earnings of residents of Philadelphia by the level of their educational attainment. In order to produce these lifetime estimates we constructed age-earnings profiles that examine the annual earnings of residents for single ages between the ages of 18 and 64. These annual earnings estimates are then aggregated over the 47 year time period to produce the expected mean lifetime earnings of city residents by their level of educational attainment. These cross-sectional lifetime earnings estimates assume that the current age earnings profiles of individual will remain unchanged in the future. However, this assumption is somewhat optimistic from the perspective of dropouts in the city. Indeed, as a subsequent section of this paper will reveal, the earnings history of dropouts in Philadelphia since the end of the 1970s has been one of large and continuing declines in annual and lifetime earnings.

Based on this analysis we have produced estimates of the expected lifetime annual earnings of individuals in the city of Philadelphia and the state, by the level of their educational attainment. We have also produced tabulations of expected lifetime earnings by education separately for men and women adult residents of the city. The findings in Chart 7 reveal that adult residents of Philadelphia can expect to have lifetime earnings of \$1.131 million while their Pennsylvania counterparts have expected lifetime earnings of \$1.432 million, representing a difference in lifetime earnings of 27 percent. In each educational subgroup, residents of Philadelphia have lower expected lifetime earnings than their statewide counterparts. The largest gap between the lifetime earnings of Philadelphians and all Pennsylvanians was estimated for high school dropouts. Over their working life between the ages of 18 and 64, a high school dropout resident of Pennsylvania is expected to earn \$660,400 or 44 percent more than the expected lifetime earnings of \$457,100 among high school dropout residents of the city.

Chart 7: Expected Lifetime Earnings of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia and Pennsylvania, By Level of Educational Attainment 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Within the city, there were sizable gaps by education between the expected lifetime earnings of residents. The largest gap in lifetime earnings existed between the high school dropout and high school graduate residents of the city. The lifetime earnings of high school graduate residents of Philadelphia were more than 90 percent higher than that of their high school dropout counterparts (\$870,600 versus \$457,100). Why do high school graduates earn so much more than high school dropouts in Philadelphia? The answer is associated with the very large differences in the annual work rate, annual hours of work, and the hourly wage rate between high school graduates and dropouts in Philadelphia city.

The work rate during the previous year was 69 percent among all resident high school graduates, compared to just 49 percent among the city's dropout residents. **High school graduate residents of the city were 40 percent more likely to work than their high school dropout counterparts.** When high school graduate residents of Philadelphia were employed they worked an average of about 1,200 hours per year. Resident dropouts in the city were not only much less likely to work, but when they did they worked considerably fewer hours. Employed adult dropouts in the city worked only about 800 hours per year. **Employed high school graduates worked 50 percent more hours over the course of the year than their high school dropout counterparts.** Hourly pay rate differences between high school graduate residents of the city and their high school dropout counterparts also contribute considerably to the large difference in expected lifetime earnings between the two groups of city residents. **The mean hourly wage rate of high school graduates in Philadelphia of \$15.45 is 27 percent higher than the hourly wages of employed dropout residents.**

Adult residents of Philadelphia with a college degree have far better lifetime earnings prospects in comparison to high school dropouts. Philadelphia residents with a bachelor's degree can expect to earn about \$1.787 million over their working lives, a level of earnings that is 3.9 times that of high school dropouts in the city. Those residents with a graduate or professional degree in the city have expected lifetime earnings of \$2.422 million, a level of earnings that is in excess of five times that of the expected

earnings of high school dropouts in the city. Lifetime earnings differences of this magnitude suggest fundamentally different life experiences for residents of the city based at least in part on their ability to persist in high school and into the post secondary system. A better understanding of income and earnings fairness issues in Philadelphia begins with an understanding of the extraordinary power that educational attainment exerts on the expected lifetime earnings of adults.

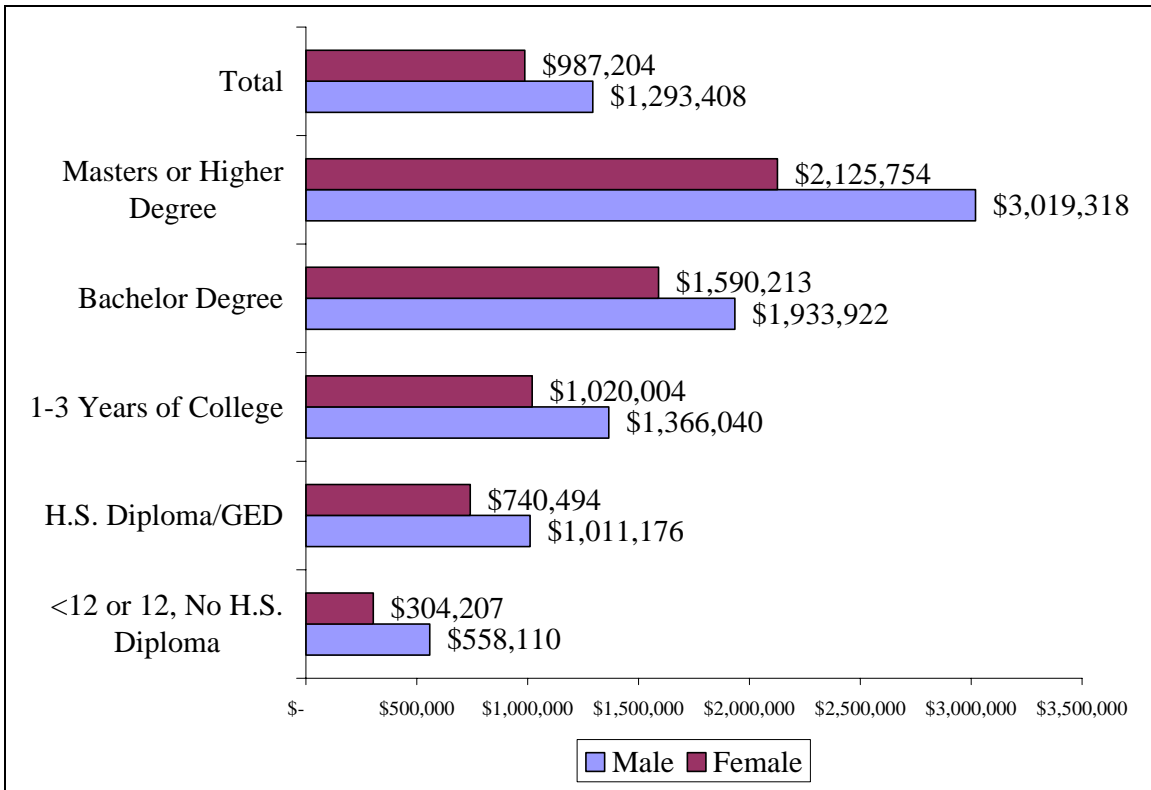
As noted above, Philadelphia dropout earnings are also much lower than even those of adult dropout residents of Pennsylvania as a whole. Dropout residents of the state have expected lifetime earnings of \$660,386, a level of expected lifetime earnings that is 45 percent higher than those of adult dropout residents of Philadelphia. If we ask why do Philadelphia dropouts have earnings that are so much lower than dropouts in Pennsylvania in general? The answer, of course centers of the same three factors: Philadelphia dropouts are less likely to work than are dropouts statewide (49.4 percent vs. 61.0 percent). They work fewer hours than dropouts statewide (798 vs. 1,056) and city residents who dropped out of high school are paid 9 percent less per hour of work than the hourly rate of pay of dropouts statewide.

Philadelphia labor markets assign very low value to the potential productive capacities that dropout residents bring to the job market. Dropouts fare worse in Philadelphia by a wide margin compared to the state with respect to their long term employment and earnings experiences. The job content of the city's labor market is very heavily weighted toward occupations and industries that demand workers with high levels of educational attainment. The staffing structures of the industries that make up the city employment base require comparatively few workers with low basic skills proficiencies and few years of schooling. Moreover, the job content of the city has changed over time such that employer requirements for workers with higher levels of educational attainment have increased sharply while the demand for workers with fewer years of schooling has fallen during the same time period.

The expected lifetime earnings of adults in Philadelphia are provided separately for men and for women in Chart 8, by the level of their educational attainment. Male high school dropout residents in the city can expect to earn about \$558,000 over their working

lives, while men who earn a high school diploma will earn 80 percent more than this amount with expected lifetime earnings of over \$1.01 million. Women high school dropouts in the city are left with extremely poor lifetime earnings potential. Dropout female residents in Philadelphia can expect to earn just \$304,000 over their working

Chart 8: Expected Lifetime Earnings of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia, By Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

lives, whereas a female with a high school diploma or GED can expect lifetime earnings of \$740,500, representing a lifetime earnings advantage of 140 percent among women who were able to complete their high school education. The earnings advantages to women who complete a bachelor’s program are extraordinarily high in comparison to those of a dropout. College graduate women have expected lifetime earnings of \$1.590 million, a level of earning that is more than 5 times as high as that of high school dropout

women. Expected earnings differences of this magnitude suggest fundamental differences in the life pathways and experiences of these two groups of women.

Trends in Expected Lifetime Earnings in Philadelphia, 1979 to 2006

Powerful long-term changes in the industrial and occupational structure of the Greater Philadelphia economy have resulted in a rise in the level of demand for persons with post secondary levels of educational attainment while substantially diminishing demand for workers with fewer years of schooling. A basic measure of the declining labor market fortunes of high school dropouts in the city can be found in Table 9 that presents data on the expected lifetime earnings of adult residents of Philadelphia for four different time periods dating back to 1979. The estimates provided in the table are derived from our analysis of the decennial census public use data files from the 1980, 1990 and 2000 censuses along with our analysis of the 2006 ACS files for Philadelphia. These historical data paint a quite different picture of the living standards of high school dropout residents in the city at the end of the 1970's in comparison with today.

The expected earnings of adult residents of Philadelphia have increased modestly over the past quarter of a century, rising from \$1.01 million during 1979 to \$1.13 million by 2006, a real (inflation adjusted) increase of 12 percent over that period of time. A closer look at the data reveals sharply different trends in expected earnings depending on the level of educational attainment of individuals. Between 1979 and 2006, high school dropouts experienced an extraordinarily large decline in their expected lifetime earnings. During 1979 dropout residents in the city had expected lifetime earnings of about \$667,000, but this figure declined to \$457,000 by 2006, representing a loss in inflation adjusted terms of more than \$200,000 or a 31 percent relative decline in the lifetime earnings power of high school dropout residents of Philadelphia.

Over the same time period, the expected lifetime earnings of high school graduate residents in the city declined from \$983,200 to \$872,600 yielding an 11 percent loss over the period. Although the lifetime earnings of the city's high school graduates declined, the rate of decline was much larger among the city's high school dropouts. These trends resulted in a sharp increase in the lifetime earnings advantage to completing high school in the city. In 1979, the lifetime earnings of high school graduates in Philadelphia were

48 percent higher than that of high school dropouts. In 2006, the expected lifetime earnings advantage of high school graduates relative to high school dropouts increased to 90 percent.

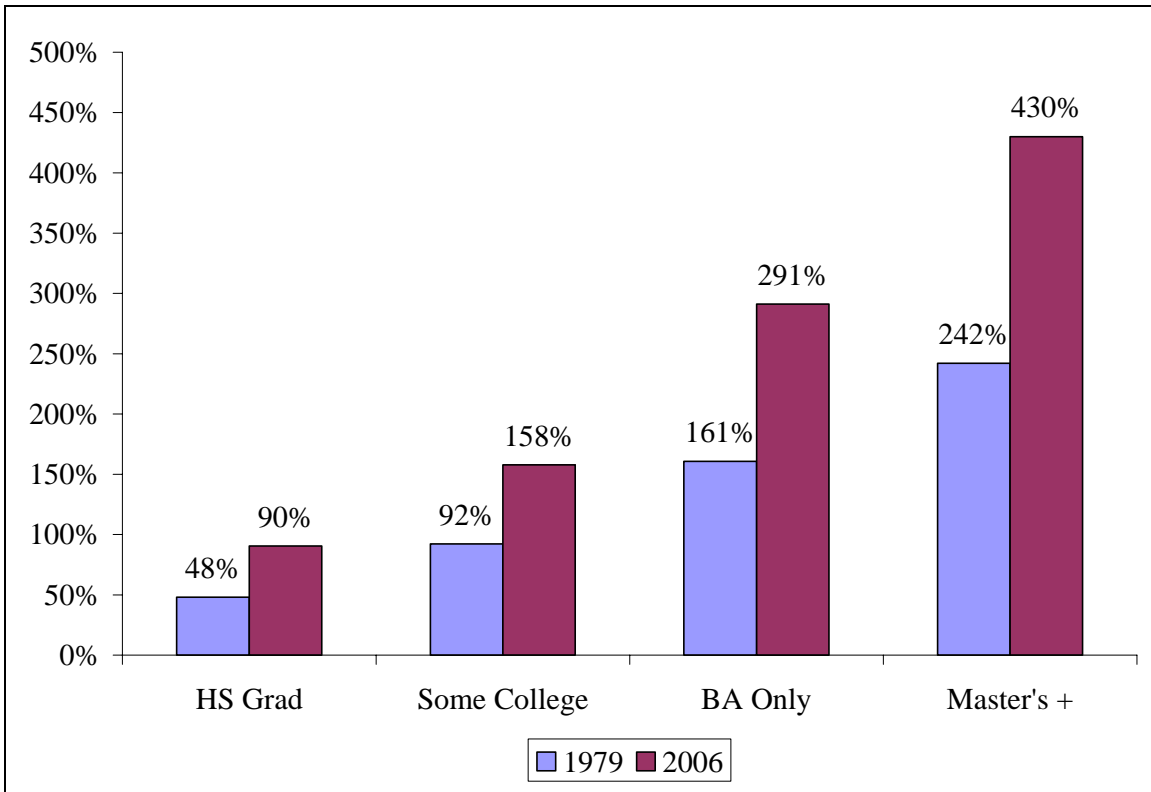
Table 5: Trends in Expected Lifetime Earnings of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia and Pennsylvania, By Level of Educational Attainment and Gender, 2006 (Excluding 18 to 22 Year Old Students)
(in 2006 constant dollars)

Educational Attainment	1979	1989	1999	2006	Relative Change (1979-06)
<12 or 12, No H.S. Diploma	\$663,667	\$636,668	\$586,295	\$457,089	-31%
H.S. Diploma/GED	983,238	1,034,636	994,457	870,625	-11
1-3 Years of College	1,275,479	1,395,296	1,295,649	1,177,846	-8
Bachelor Degree	1,730,482	1,806,320	1,785,050	1,787,544	3
Masters or Higher Degree	2,269,765	2,490,922	2,598,470	2,422,423	7
Total	1,009,445	1,161,262	1,189,666	1,131,452	12

Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University and Decennial Census Public Use Data Files, 1980, 1990, and 2000, Tabulations by the Center for Labor Market Studies, Northeastern University

Dropout's expected lifetime earnings experiences have declined at an exceptional pace over the last two and one half decades relative to the lifetime earnings of other educational subgroups of city residents. During 1979, college graduates could expect to earn about 160 percent more over their working lives than dropouts, but by 2006 the earnings advantage to earning a bachelor's degree jumped to 290 percent. At the master's plus level the earnings advantage relative to a high school dropout in the city had increased from an already very large 240 percent in 1979 to 430 percent by 2006. These findings suggest a widening gap in the distribution of earnings among Philadelphia residents with a major part of the growing earnings disparities among city residents associated with disparities in the level of their educational attainment.

Chart 9: Trends in the Expected Lifetime Earnings Differences between High School Dropouts and Those with Higher Levels of Educational Attainment in Philadelphia, 1979 to 2006



Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006 and Decennial Census Public Use Data Files, 1980, 1990, and 2000, Tabulations by the Center for Labor Market Studies, Northeastern University

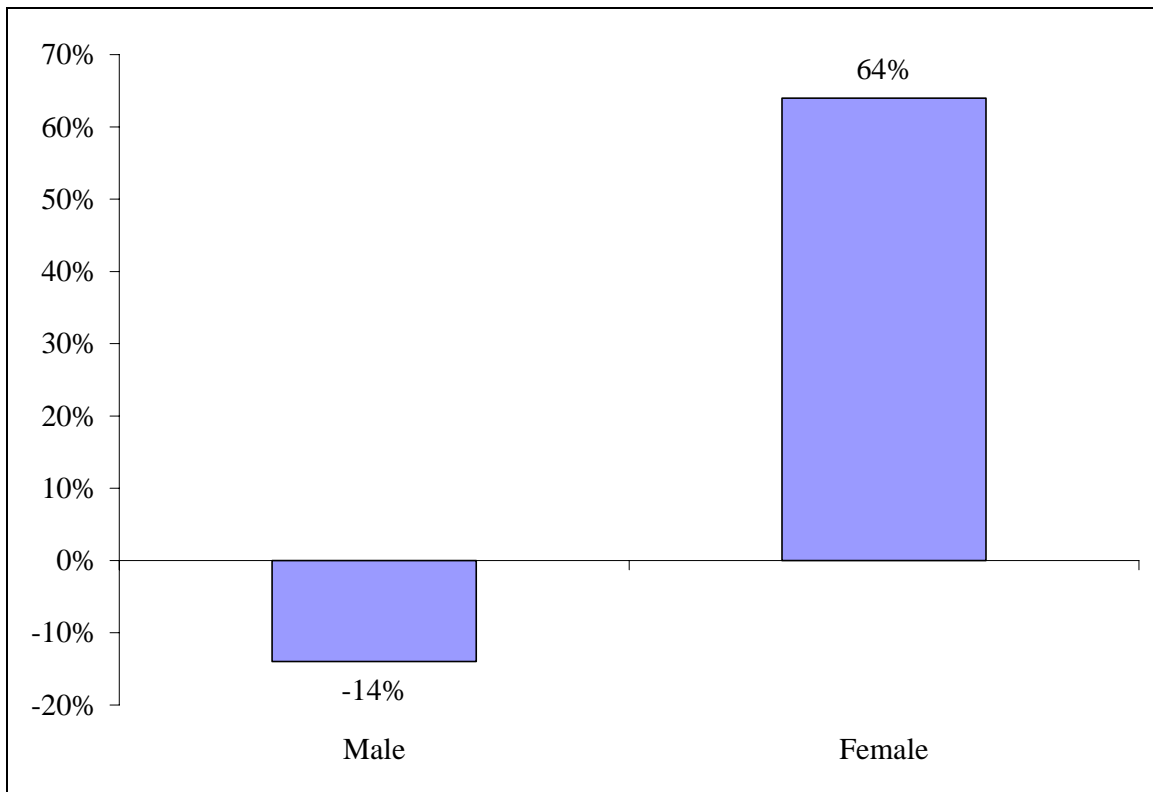
Trends in the Expected Earnings of Men in Philadelphia

The long term trends in expected lifetime earnings of men in Philadelphia have been much different than that observed for women. Men in the city, had an average expected lifetime earnings level of about \$1.5 million during 1979. At that time blue collar dominated industries were important source of employment for Philadelphia men, who frequently had access to full-time year round jobs, even without high levels of educational attainment. However, long term losses in manufacturing, wholesale trade and other blue collar industries meant a deterioration in job access for high school dropouts and high school graduates (as measured in decline work rates for these groups) as well as a sharp reduction in annual hours of work for those who did find work. Among those with a college diploma job access remained strong as did hours of work over the 1979 to

2006 period, but at the bachelor's degree level, the hourly wage rate declined considerably. The consequence of these changes was that the expected lifetime earnings of adult male residents of Philadelphia fell to just under 1.3 million by 2006, a 14 percent fall in expected lifetime earnings.

Philadelphia women have experienced large increases in their expected lifetime earnings since 1979. At that time adult women residents of Philadelphia had expected lifetime earnings on average of about \$603,000. By 2006 their expected lifetime earnings had increased by nearly two thirds to \$976,500—the product of a sharp increase in the work rate of adult women, a very large increase in their annual hours of work and a relatively large increase in the hourly rate of pay of women. Furthermore, the share of women with a post secondary level of educational attainment (the group with the highest expected lifetime earnings) increased as well.

Chart 10: Relative Change in the Real Expected Lifetime Earnings of Men and Women Adult Residents of Philadelphia, 1979 to 2006



The nature of change in expected lifetime earnings of men in Philadelphia varied widely by level of educational attainment. Men who had dropped out of high school saw their expected lifetime earnings fall by nearly one half from \$1.074 million during 1979 to \$558,000 by 2006. This enormous reduction in the real earnings of adult men who

Table 6: Trends in Expected Lifetime Earnings of 18 to 64 Year Old Civilian, Non-Institutional Male Population of Philadelphia and Pennsylvania, By Level of Educational Attainment, 2006 (Excluding 18 to 22 Year Old Students)
(in 2006 constant dollars)

Educational Attainment	1979	1989	1999	2006
Males				
<12 or 12, No H.S. Diploma	\$1,074,288	\$ 908,067	\$ 755,468	\$ 558,110
H.S. Diploma/GED	\$1,534,353	\$ 1,394,012	\$ 1,248,152	\$ 1,011,176
1-3 Years of College	\$1,714,242	\$ 1,695,460	\$ 1,513,900	\$ 1,366,040
Bachelor Degree	\$2,185,523	\$ 2,100,188	\$ 2,035,153	\$ 1,933,922
Masters or Higher Degree	\$2,725,912	\$ 2,925,350	\$ 3,054,893	\$ 3,019,318
Males Total	\$1,499,968	\$ 1,497,117	\$ 1,443,103	\$ 1,293,408

Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University and Decennial Census Public Use Data Files, 1980, 1990, and 2000, Tabulations by the Center for Labor Market Studies, Northeastern University

dropped out of high school was the result of a sharp reduction in their work rates, reduced annual hours of work and declining real hourly rate of pay. The findings in Table 7 reveal that between 1979 and 2006 the share of all dropout men aged 18 to 64 who reported any work activity fell by 14 percentage points from 68.7 percent to just 54.6 percent, representing a relative decline of 20 percent.¹³ Since 1979 poorly educated adult men living in Philadelphia have become much less likely to work at any time over the course of a year. These declines in the work rates of the city's male residents have placed considerable downward pressure on their annual and expected lifetime earnings.

Annual hours of work also fell for adult male high school dropout residents of the city. Employed male dropouts in Philadelphia worked about one fifth fewer hours during 2006 than they did during 1979. By 2006 employed dropout males in the city worked an average of just 957 hours during the year, compared to 1,213 hours during 1979. This

¹³ The incidence of work, annual hours of work, and hourly pay rate of all, men, and women non-elderly adults in Philadelphia in each educational subgroup in 1979, 1989, 1999, and 2006 are presented in Appendix A.

reduction in hours worked placed further downward pressure on the expected lifetime earnings as fewer hours of work over the course of a year yields reduced annual earnings for the employed.

The decline in expected lifetime earnings of male dropouts in the city was also the product of a sharp reduction in the real hourly rate of pay. Since 1979 the real hourly rate of pay for male dropouts in the city fell \$18.84 to \$12.41, a loss of more than one third in the hourly pay rates. Together the 20 percent reduction in work rates, the 21 percent decline in annual hours and the 34 percent reduction have all contributed to the 48 percent reduction in the expected lifetime earnings of male dropouts in the city.

Table 7 :1979-2006 Change in the Expected Lifetime Earnings, Work Rates, Annual Hours of Work and Hourly Rate of Pay of the 18 to 64 year Old Civilian, Non-Institutional Male Population of Philadelphia By Level of Educational Attainment (Excluding 18 to 22 Year Old Students)

Educational Attainment	Expected Lifetime Earnings Change		Work Rate Change		Annual Hours Change		Hourly Rate of Pay Change	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Males								
<12 or 12, No H.S. Diploma	-516,177	-48%	-14.0	-20.4%	-256	-21%	\$-6.43	-34%
H.S. Diploma/GED	-523,177	-34%	-11.3	-13.6%	-16	-1%	\$-4.48	-21%
1-3 Years of College	-348,202	-20%	-3.8	-4.4%	-4	0%	\$-3.73	-17%
Bachelor Degree	-251,601	-12%	0.1	0.1%	18	1%	\$-7.24	-25%
Masters or Higher Degree	293,406	11%	-3.7	-3.9%	2	0%	\$2.39	8%
All	-206,560	-14%	-5.3	-6.6%	-4	0%	\$-2.25	-10%

Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University and Decennial Census Public Use Data Files, 1980, 1990, and 2000, Tabulations by the Center for Labor Market Studies, Northeastern University

A closer look at the summary data in Table 7 and the accompanying detail in Appendix Tables A1, A2 and A3 reveal that men with higher levels of educational attainment also posted reductions in expected lifetime earnings. The data reveal that male residents with a bachelor’s degree or less all experienced considerable reduction in their expected hourly rates of pay. For example while dropout rates of pay fell by 34 percent, the hourly pay rate for men with a college degree fell by 25 percent over the same time period. Yet the expected lifetime earnings of college educated men in the city fell by only

12 percent compared to 48 percent for dropouts. The explanation for this large difference in the rate of expected earnings decline between the two groups is primarily the result of sharply different trends in work rates and annual hours of work. While dropouts experienced large relative reductions in work rates and annual hours of work, the work rates and annual hours of work among college graduates remained unchanged. College graduates were able to maintain their work intensity over time, albeit at a lower relative rate of pay, while the work intensity of dropouts declined precipitously, along with their hourly wages.

Trends in the Expected Earnings of Women in Philadelphia

Trends in the expected lifetime earnings of women in Philadelphia present an overall picture of strong long term growth, with the exception of females who failed to graduate from high school. Overall the expected lifetime earnings of female residents of Philadelphia increased by \$383,000 between 1979 and 2006, representing a relative increase of about two thirds. This increase is primarily a result of increases over time in the job market attachment of women in Philadelphia. Between 1979 and 2006, the work rate of adult women in the city increased sharply with one quarter more women working during 2006 than during 1979 (Table 9). This sharp increase in women's work rates

Table 8: Trends in Expected Lifetime Earnings of 18 to 64 Year Old Civilian, Non-Institutional Female Population of Philadelphia and Pennsylvania, By Level of Educational Attainment, 2006 (Excluding 18 to 22 Year Old Students)
(in 2006 constant dollars)

Educational Attainment	1979	1989	1999	2006
Females				
<12 or 12, No H.S. Diploma	\$ 315,236	\$ 370,363	\$ 427,287	\$ 304,207
H.S. Diploma/GED	\$ 610,491	\$ 767,808	\$ 788,756	\$ 740,494
1-3 Years of College	\$ 845,743	\$ 1,130,500	\$ 1,136,222	\$ 1,020,004
Bachelor Degree	\$1,158,504	\$ 1,423,019	\$ 1,550,149	\$ 1,590,213
Masters or Higher Degree	\$1,524,865	\$ 2,027,022	\$ 2,083,397	\$ 2,125,754
Female Total	\$ 603,729	\$ 868,585	\$ 976,499	\$ 987,204

exerted a strong upward pressure on their expected lifetime earnings. The mean hours of work supplied by women increased by about 5 percent over the 1979-2006 period further contributing to the rise in expected lifetime earnings over the same time period. Women's hourly pay rates increased by about one-sixth over the period contributing considerably to the sharp rise in the real expected lifetime earnings of women that occurred in Philadelphia over the past two and one half decades.

Table 9 :1979-2006 Change in the Expected Lifetime Earnings, Work Rates, Annual Hours of Work and Hourly Rate of Pay of the 18 to 64 year Old Civilian, Non-Institutional Female Population of Philadelphia By Level of Educational Attainment (Excluding 18 to 22 Year Old Students)

Educational Attainment	Expected Lifetime Earnings Change		Work Rate Change		Annual Hours Change		Hourly Rate of Pay Change	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Females								
<12 or 12, No H.S.								
Diploma	-11,029	-3.5%	5.4	14.4%	10	2%	-1.53	-13%
H.S. Diploma/GED	130,003	21.3%	6.2	10.5%	21	2%	0.08	1%
1-3 Years of College	174,262	20.6%	6.1	8.4%	22	2%	-0.15	-1%
Bachelor Degree	431,708	37.3%	3.0	3.6%	27	2%	1.65	8%
Masters or Higher Degree	600,889	39.4%	-3.9	-4.4%	16	1%	4.69	21%
All	383,475	63.5%	14.0	24.9%	41	5%	2.36	16%

Source: U.S. Bureau of the Census, American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University and Decennial Census Public Use Data Files, 1980, 1990, and 2000, Tabulations by the Center for Labor Market Studies, Northeastern University

The experiences of women who failed to complete high school or earn a GED however, are different than other women in the city. Female high school dropout residents of Philadelphia experienced a modest loss in their already very low level of expected lifetime earnings. During 1979 female high school dropouts had expected lifetime earnings of \$315,000; by 2006 their expected lifetime earnings had declined to \$304,000, representing a loss of 3 percent in real terms. All of this loss was associated with a reduction in their real hourly rates of pay. The findings in Table 9 reveal that the work rate of high school dropout women in the city increased between 1979 and 2006 as did their annual hours of work. These two developments by themselves would have led to a considerable rise in the expected lifetime earnings of dropout women in Philadelphia.

Yet a reduction in the hourly rate of pay more than offset these gains. Women dropouts in Philadelphia saw their hourly rate of pay fall from a mean of \$12.20 to 10.67, a 13 percent reduction.

Summary of Key Findings

The dropout crisis in Philadelphia city is real. Reliable dropout estimation methodologies have placed the city's dropout rate at 45 percent. Even the most optimistic estimates of the dropout rates in the city assert that at least one-third of youth in the city's public schools leave school without earnings a high school diploma or a GED certificate. On his inauguration day, Mayor Nutter called a 45 percent dropout rate in Philadelphia unacceptable and stated that reducing the city's dropout rate was an economic, educational, and moral imperative.

Dropping out of high school is associated with serious negative labor market outcomes. Dropouts have a weaker attachment to the labor market, are less likely to find employment, work for fewer hours when they do find employment, and earn lower wages than better-educated individuals. Moreover, changes in the industrial structure of jobs, particularly in Philadelphia, has reduced the jobs available to poorly educated individuals and exacerbated the negative labor market consequences associated with dropping out of high school. Most dropouts are unable to attain the level of economic success that is accomplished by their better educated counterparts. In this paper we have presented the sharp differences in key labor market outcomes between Philadelphians who dropped out of school and those with high school diploma or higher levels of education, and the impact of these negative labor market outcomes on the lifetime employment and earnings prospects of dropouts.

Work Rate: High school dropouts were least likely to have worked at all during the entire year. Across the state, 61 percent of all high school dropouts had worked at some time during the prior year, compared to 79 percent of high school graduates, and 90 percent of college graduates. In Philadelphia, the job access for high school dropouts was exceptionally poor. The majority of high school dropout residents of Philadelphia did not work at all during the entire year. Dropout residents of the city had an annual work rate of just 49 percent; a rate of work that was considerably lower than the work rate among the

city's high school graduates (69 percent) and college graduates (88 percent). The work rate among female dropout residents of the city was only 43 percent.

Hours of Work: There was a strong positive connection between the level of education and the hours of work among employed individuals. Those with fewer years of schooling worked much less intensively while persons with higher levels of education worked many more hours each year. In the city of Philadelphia the average annual hours of work among employed dropout residents was less than 800 hours representing one-quarter fewer hours than the labor supply of dropouts statewide and one-third fewer hours than were supplied by high school graduate residents of the city. In contrast, employed residents of both Philadelphia and the state with a college degree worked on average, between 1,720 and 1,865 hours in the prior year, a level equivalent to that of a working year-round in a full-time job.

Hourly Rate of Pay: The hourly pay rates of Philadelphia residents were also closely associated with their levels of educational attainment. Resident adults with a college degree had hourly rates of pay that were between 43 percent and 82 percent higher than those with a high school diploma only (\$28.20 among persons with a master's degree or higher, \$22.11 among bachelor's degree holders, versus \$15.45 among high school graduates). High school dropouts had hourly earnings that averaged \$12.18, a rate of pay about 21 percent less than that of employed high school graduates within the city.

Expected Lifetime Earnings: On each of the three measures of labor market outcomes high school dropouts in the city of Philadelphia fared quite poorly. The cumulative impacts of these poor labor market outcomes are evident in the sharply lower expected lifetime earnings of the city's dropout residents compared to high school graduates and other better-educated residents of the city. The lifetime earnings of the city's high school graduate residents were more than 90 percent higher than that of their high school dropout counterparts (\$870,600 versus \$457,100). Underlying this wide gap between the lifetime earnings of the city's dropout residents and high school graduates are the gaps between their work rates, hours of work, and hourly pay rates. High school graduate residents of the city were 40 percent more likely to work during the year, work

for 50 percent more hours over the course of the year, and earn a 27 percent higher hourly rate of pay than high school dropouts.

Trends in Expected Lifetime Earnings: Not only are the lifetime earnings of dropouts considerably lower than those of better-educated Philadelphians, but over time dropouts have seen an extraordinarily large decline in their expected lifetime earnings. Between 1979 and 2006, the lifetime earnings of dropout residents of the city declined from \$667,000 to \$457,000, representing a loss of more than \$200,000 or 31 percent. The lifetime earnings of high school graduates declined by 11 percent whereas the city's college graduate residents saw an increase in their expected lifetime earnings of 3 to 7 percent. As a result, the gaps between the lifetime earnings of dropouts and other educational groups in the city increased sharply.

Trends in Lifetime Earnings of Men and Women: Men and women residents of Philadelphia have seen divergent trends in their lifetime earnings. Between 1979 and 2006, the lifetime earnings of the city's male residents declined by 14 percent whereas those of female residents increased by 64 percent. Male lifetime earnings declines are mainly attributable to a 7 percent decline in their work rate and a 10 percent reduction in their hourly rate of pay. The annual hours of work of male residents remained constant over the 27-year time period. Male dropouts in the city witnessed a 48 percent decline in their lifetime earnings attributable to a 20 percent decline in their work rate, 21 percent reduction in their annual hours of work, and a sharp 34 percent decrease in their hourly rate of pay. Underlying the 64 percent increase in the lifetime earnings of the city's female residents is a 25 percent increase in their work rate, 16 percent increase in their hourly rate of pay, and a 5 percent increase in their annual hours of work. Dropouts are the only educational group of female city residents that saw their lifetime earnings decline between 1979 and 2006. Despite a 14 percent increase in their work rate and a 2 percent increase in their annual hours of work, the expected lifetime earnings of this least educated group of the city's female residents declined by 3.5 percent. The entire decline is attributable to the 13 percent reduction in their hourly rate of pay.

Clearly, high school dropouts especially in the city of Philadelphia fared quite poorly on each of the four fundamental measures of labor market outcomes presented in

this report. Furthermore, the long term earnings outlook for high school dropouts remains quite poor. Philadelphia labor markets assign a very low value to the potential productive capacities that dropout residents bring to the job market. Dropouts fared worse in Philadelphia by a wide margin compared to the state on their employment and earnings experiences. The job content of the city's labor market is very heavily weighted toward occupations and industries that demand workers with high levels of educational attainment and require comparatively few workers with low basic skills proficiencies and few years of schooling. Moreover, the job content of the city has changed over time such that employer requirements for workers with higher levels of educational attainment have increased sharply while the demand for workers with fewer years of schooling has fallen. These trends have exacerbated the economic misfortunes of dropout residents of the city. Unfortunately, these trends are expected to continue resulting in a continued deterioration of the labor market outcomes of the city's dropout residents and a further widening of gaps between the labor market outcomes of dropouts and their better-educated counterparts.

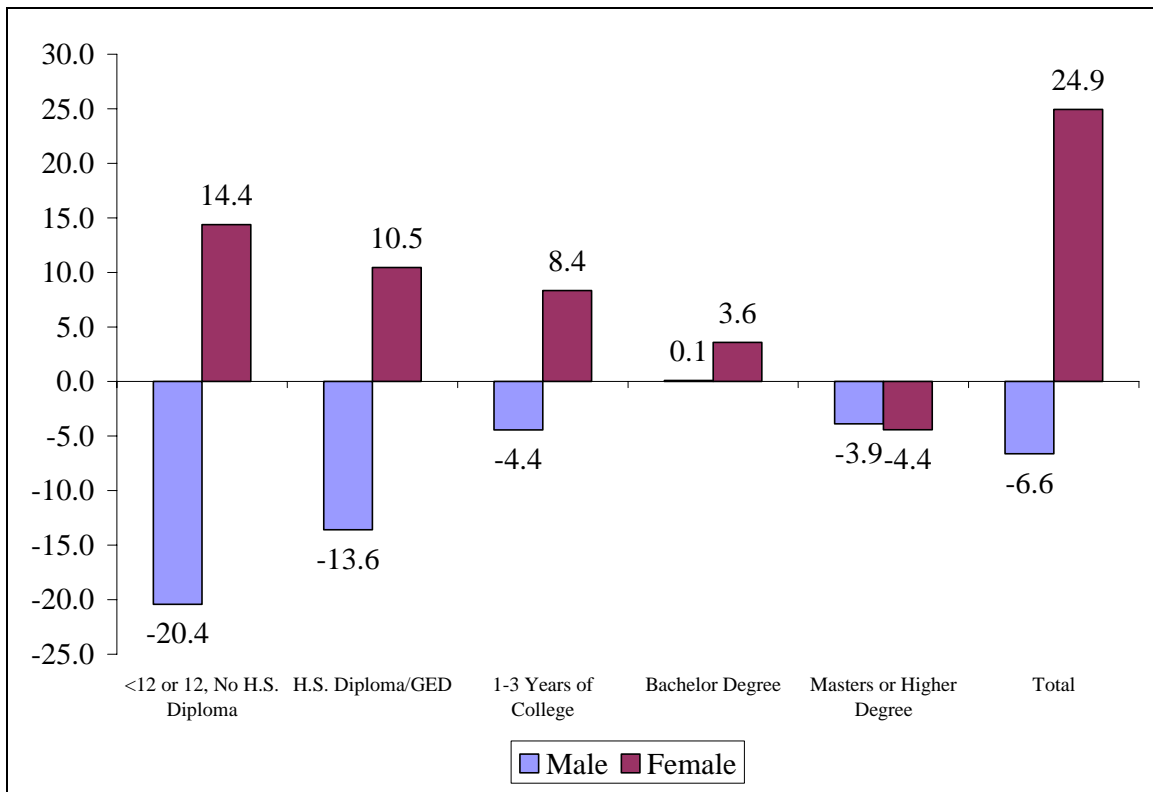
Appendix A:
**The Incidence of Work, Annual Hours of Work, and Hourly Rate of
Pay Among Non-Elderly Adults in Philadelphia, 1979, 1989, 1999, and
2006.**

Table A1: Trends in the Expected Mean Annual Incidence of Work over the Year of the
18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia By Level of
Educational Attainment and Gender, 1979 to 2006
(Excluding 18 to 22 Year Old Students)

Gender	Educational Attainment	1979	1989	1999	2006	% Change, 1979-2006
All	<12 or 12, No H.S. Diploma	52.0	52.9	51.4	49.4	-5.1
	H.S. Diploma/GED	69.6	74.8	72.5	68.8	-1.2
	1-3 Years of College	79.8	86.1	83.3	81.0	1.5
	Bachelor Degree	87.0	89.2	88.4	88.1	1.3
	Masters or Higher Degree	93.3	90.6	89.8	88.4	-5.2
	Total	67.1	73.6	73.2	72.2	7.7
Male	<12 or 12, No H.S. Diploma	68.7	63.4	57.0	54.6	-20.4
	H.S. Diploma/GED	83.4	82.7	78.3	72.1	-13.6
	1-3 Years of College	86.7	89.8	84.9	82.9	-4.4
	Bachelor Degree	90.4	89.6	89.8	90.5	0.1
	Masters or Higher Degree	96.1	91.7	91.4	92.3	-3.9
	Total	79.9	79.9	76.8	74.6	-6.6
Female	<12 or 12, No H.S. Diploma	37.6	42.4	45.9	43.0	14.4
	H.S. Diploma/GED	59.6	68.5	67.5	65.9	10.5
	1-3 Years of College	73.5	82.9	82.1	79.6	8.4
	Bachelor Degree	83.1	88.7	87.1	86.1	3.6
	Masters or Higher Degree	89.3	89.4	88.2	85.4	-4.4
	Total	56.1	67.9	70.0	70.1	24.9

Source: U.S. Bureau of the Census, 1980, 1990, 2000 Decennial Census, Public Use Micro Data Files, and American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Chart A1: Relative Change in the Work Rate of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia, By Level of Educational Attainment and Gender, 1979 to 2006 (Excluding 18-22 Year Old Students)



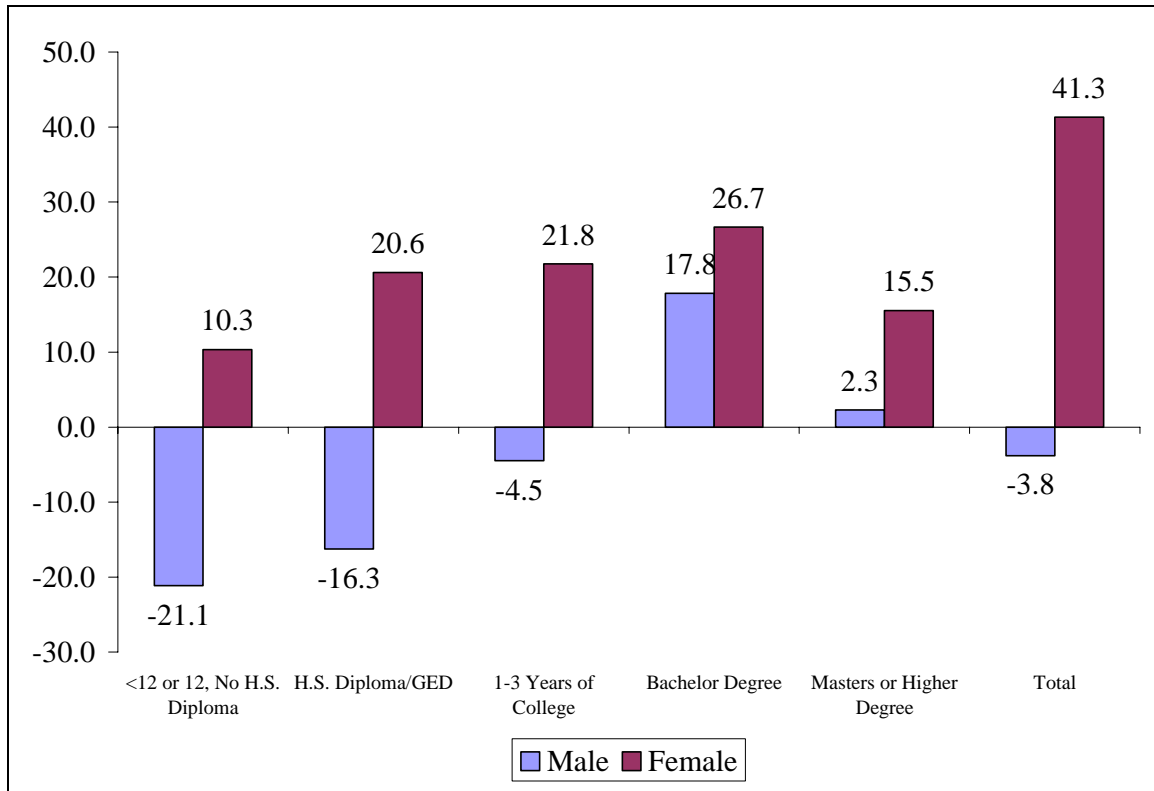
Source: U.S. Bureau of the Census, 1980 Decennial Census, Public Use Micro Data Files, and American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Table A2: Trends in Mean Annual Hours of Work over the Year of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia By Level of Educational Attainment and Gender, 1979 to 2006 (Excluding 18 to 22 Year Old

Gender		1979	1989	1999	2006	Relative Change, 1979-06
All	<12 or 12, No H.S. Diploma	858	852	825	798	-7.0
	H.S. Diploma/GED	1185	1305	1285	1199	1.2
	1-3 Years of College	1363	1574	1529	1448	6.2
	Bachelor Degree	1436	1632	1662	1720	19.8
	Masters or Higher Degree	1771	1807	1856	1827	3.2
	Total	1137	1302	1321	1304	14.7
Male	<12 or 12, No H.S. Diploma	1,213	1,092	988	957	-21.1
	H.S. Diploma/GED	1,551	1,541	1,486	1,299	-16.3
	1-3 Years of College	1,623	1,753	1,649	1,551	-4.5
	Bachelor Degree	1,599	1,761	1,807	1,884	17.8
	Masters or Higher Degree	2,013	1,972	1,987	2,059	2.3
	Total	1,470	1,508	1,475	1,414	-3.8
Female	<12 or 12, No H.S. Diploma	550	613	668	607	10.3
	H.S. Diploma/GED	920	1,114	1,112	1,110	20.6
	1-3 Years of College	1,125	1,422	1,436	1,370	21.8
	Bachelor Degree	1,248	1,503	1,540	1,580	26.7
	Masters or Higher Degree	1,429	1,634	1,732	1,651	15.5
	Total	854	1,117	1,187	1,207	41.3

Source: U.S. Bureau of the Census, 1980, 1990, 2000 Decennial Census, Public Use Micro Data Files, and American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Chart A2: Relative Change in the Mean Annual Hours of Work of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia, By Level of Educational Attainment and Gender, 1979 to 2006 (Excluding 18 to 22 Year Old Students)



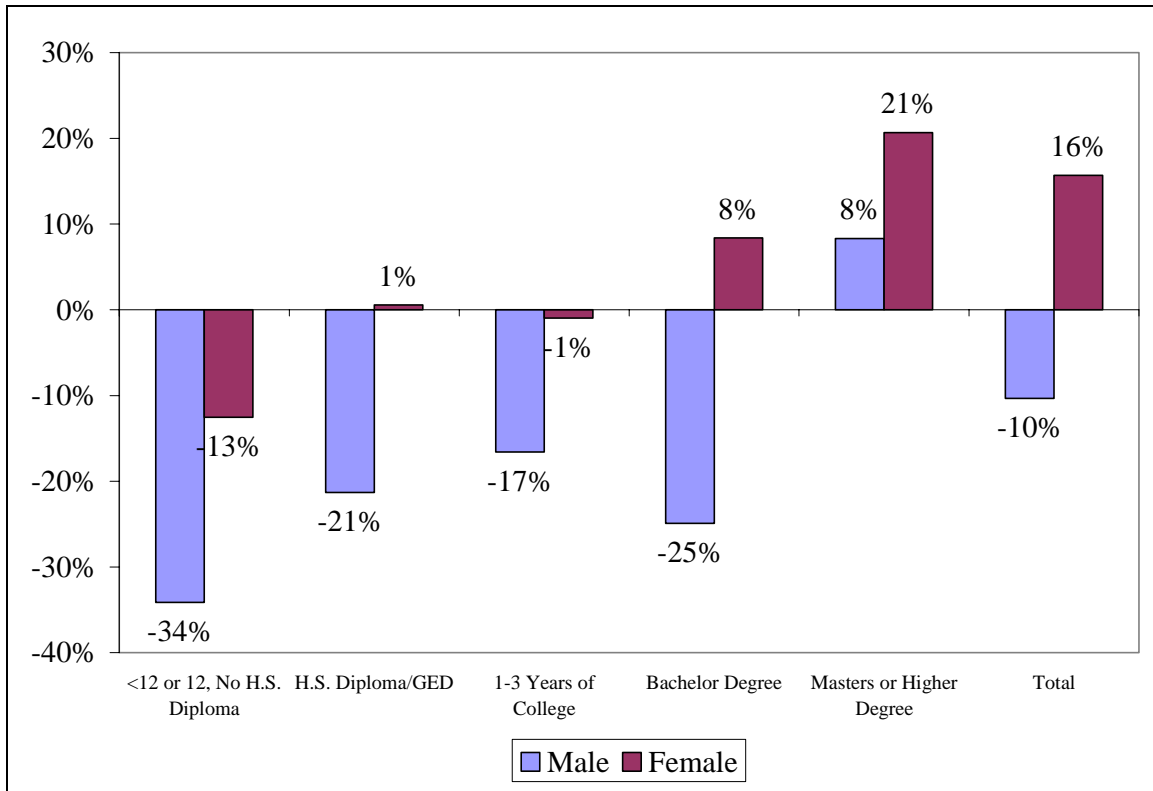
Source: U.S. Bureau of the Census, 1980 Decennial Census, Public Use Micro Data Files, and American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Table A3: Trends in Mean Hourly Earnings of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia, By Level of Educational Attainment and Gender, 1979 to 2006 (Excluding 18 to 22 Year Old Students)

Gender		1979	1989	1999	2006	Relative Change, 1979-06
All	<12 or 12, No H.S. Diploma	\$16.45	\$15.90	\$15.12	\$12.18	-26.0
	H.S. Diploma/GED	\$17.66	\$16.87	\$16.47	\$15.45	-12.5
	1-3 Years of College	\$19.92	\$18.86	\$18.03	\$17.31	-13.1
	Bachelor Degree	\$25.63	\$23.55	\$22.86	\$22.11	-13.7
	Masters or Higher Degree	\$27.27	\$29.32	\$29.78	\$28.20	3.4
	Total	\$18.89	\$18.97	\$19.17	\$18.46	-2.3
Male	<12 or 12, No H.S. Diploma	\$ 18.84	\$ 17.70	\$16.28	\$12.41	-34.1
	H.S. Diploma/GED	\$ 21.04	\$ 19.25	\$17.87	\$16.56	-21.3
	1-3 Years of College	\$ 22.47	\$ 20.58	\$19.53	\$18.74	-16.6
	Bachelor Degree	\$ 29.09	\$ 25.37	\$23.97	\$21.84	-24.9
	Masters or Higher Degree	\$ 28.81	\$ 31.56	\$32.72	\$31.20	8.3
	Total	\$ 21.71	\$ 21.12	\$20.82	\$19.47	-10.3
Female	<12 or 12, No H.S. Diploma	\$ 12.20	\$ 12.86	\$13.61	\$10.67	-12.5
	H.S. Diploma/GED	\$ 14.12	\$ 14.67	\$15.09	\$14.20	0.6
	1-3 Years of College	\$ 15.99	\$ 16.91	\$16.84	\$15.84	-0.9
	Bachelor Degree	\$ 19.76	\$ 20.15	\$21.42	\$21.41	8.4
	Masters or Higher Degree	\$ 22.70	\$ 26.40	\$25.60	\$27.39	20.7
	Total	\$ 15.05	\$ 16.55	\$17.50	\$17.41	15.7

Source: U.S. Bureau of the Census, 1980, 1990, 2000 Decennial Census, Public Use Micro Data Files, and American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University

Chart A3: Relative Change in the Mean Hourly Earnings of the 18 to 64 year Old Civilian, Non-Institutional Population of Philadelphia, By Level of Educational Attainment and Gender, 1979 to 2006 (Excluding 18 to 22 Year Old



Source: U.S. Bureau of the Census, 1980 Decennial Census, Public Use Micro Data Files, and American Community Survey, Public Use Micro Data Files, 2006, Tabulations by the Center for Labor Market Studies, Northeastern University