ECONOMIC BENEFITS OF THE GED

PREPARED FOR THE

TENNESSEE DEPARTMENT OF HUMAN SERVICES

BY

GAIL COPE

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CENTER FOR LITERACY STUDIES

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# Economic Benefits of the GED

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**ECONOMIC BENEFITS OF THE GED**

**Executive Summary**

The key to long-term self-sufficiency for welfare recipients is improving their basic literacy skills and ultimately increasing their educational levels. Approximately 50% of welfare recipients do not have a high school diploma nor a GED. One approach in moving welfare recipients toward self-sufficiency is to broaden and expand opportunities for improving and upgrading their skills through adult basic education and attaining a GED. The attainment of a GED credential is often referred to as a second-chance opportunity for increasing the success of welfare recipients in acquiring stable employment and providing greater economic benefits in the form of increased earnings.

This literature review was undertaken to

- Examine the relationship between educational attainment, earned income, and employment;
- Provide comparisons of earnings between individuals who have earned their GED and dropouts who have not attained their high school equivalency; and
- Report on a shift taken by states in emphasizing educational and training opportunities for welfare recipients.

Research studies abound that document the direct, positive relationship between educational attainment and earnings; and this same relationship exists between educational attainment and employment. To examine the relationship between educational attainment and earnings for GED recipients, research studies that examine earnings differences between GED
recipients and dropouts without a GED were reviewed. Early studies focused primarily on males, while many recent studies have focused on research with female populations.

In general, results and conclusions of these research studies are mixed. Some studies reported no significant wage differences, but other studies reported as much as a 33% to 43% higher earnings level for GED recipients when compared to dropouts. Boesel, Alsalam, and Smith (1998) suggested that, in the short term, GED recipients had no earnings advantage over dropouts but that earnings differences increased over time. Boudett, Murnane, and Willett (2000) supported the use of longitudinal studies and recommended use of this research design to provide a more comprehensive and meaningful measure of the GED’s impact on wages.

A research synthesis, *Educational and Labor Market Performance of GED Recipients* (Boesel et al., 1998), offered two important conclusions that have far-reaching implications for the welfare population:

1. It is worthwhile for a high school dropout to earn the GED because it increases access to postsecondary education and training, which result in higher earnings.

2. Those who pass the GED should understand that the credential is primarily a stepping stone and that additional earnings gains can be increased dramatically by completing postsecondary education and training programs.

Due to the crucial shift that is occurring at the state level in increasing allocations of TANF surpluses to education and training, welfare recipients should be encouraged now more than ever to complete their high school education or earn their GED and participate in postsecondary education to increase their opportunities for success in acquiring stable employment, enjoying greater lifetime earnings, and permanently attaining economic self-sufficiency.
ECONOMIC BENEFITS OF THE GED

Introduction

Many state legislatures characterize the three goals of welfare reform as helping families move (a) off welfare, (b) into jobs, and (c) toward self-sufficiency. This literature review suggested that the key to long-term self-sufficiency for welfare recipients is for them to improve their basic literacy skills and ultimately increase their educational levels. Approximately 50% of welfare recipients do not have a high school diploma or GED. One approach in helping them become self-sufficient is to broaden and expand opportunities for them to upgrade their skills and attain a GED through adult basic education. Other opportunities include off-the-job training, on-the-job training, and postsecondary education. All of these avenues have the potential to increase the success of welfare recipients in acquiring stable employment, gaining greater economic benefits in the form of increased earnings, and, thus, increasing self-sufficiency.

This report is divided into four major sections:

1. Introduction
2. Literature Review
3. Summary
4. Implications for Tennessee’s Families First Program
Literature Review

The first part of the review presents statistics that illustrate how educational attainment, particularly attainment of a GED, impacts earnings and employment rates. Comparisons are made of earnings and employment rates between recipients of the GED credential and dropouts without a GED or high school diploma.

The second part of the review discusses studies of welfare leavers and what is known about the role education plays in helping welfare recipients move toward self-sufficiency. The correlation of educational attainment with earnings of former welfare recipients who acquire employment will be examined.

The review concludes with a discussion describing a crucial shift being made by some states to emphasize skill enhancement of welfare recipients through education and training opportunities.

Educational Attainment, Employment, and Earnings

Research studies abound that document the direct, positive relationship between educational attainment and earnings; and this same relationship exists between educational attainment and employment rates (American Council on Education, 2000; Boesel et al., 1998; Boudett et al., 2000; Kerckoff, Raudenbush, & Glennie, 2001; National Center for Educational Statistics, 2000). A large percentage of welfare recipients are women; and several recent studies have specifically analyzed women’s educational attainment, employment, and earnings. Bowler (1999), in an article for Monthly Labor Review, analyzed educational attainment and earnings data, and found that
1. Earnings were substantially higher for women with more education,

2. Earnings gains were the greatest for the increasing numbers of women who had achieved higher levels of education, and

3. Women without a high school diploma experienced a 15% decline in real earnings from 1979 to 1998.

A similar relationship exists between educational attainment and employment rates. From 1971 to 1998, employment rates of females ages 25–34 increased across all educational levels (National Center for Educational Statistics, 2000). For each of these years, employment rates increased with increased educational levels. Table 1 shows the 1998 employment rates of 25- to 34-year-old women by educational attainment.

Table 1

1998 Comparison of Women’s Educational Attainment With Employment Rates

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>Employment Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 9–11</td>
<td>47.3%</td>
</tr>
<tr>
<td>High school diploma (or GED)</td>
<td>69.5%</td>
</tr>
<tr>
<td>Some college</td>
<td>76.2%</td>
</tr>
<tr>
<td>Bachelor’s or higher</td>
<td>83.8%</td>
</tr>
</tbody>
</table>


Three theories have emerged—human capital theory, signaling theory, and expectation theory—of how and why participation in education and training activities has impacted earned income (Boudett et al., 2000). According to human capital theory, an individual who participates in educational activities will increase and enhance his or her skills that ultimately lead to improved productivity. This skill upgrading then commands a higher wage. Signaling theory
Economic Benefits of the GED

Economic Benefits of the GED says that attaining a certification, such as a GED, provides a “signal” to employers that the individuals attaining the certification have higher motivation to succeed and are, therefore, more desirable and valuable as employees and deserving of higher earnings. *Expectation theory* explains how participation in an educational program could boost an individual’s self-esteem and self-confidence, raise their expectations of what they can achieve, and ultimately result in improved earnings potential.

Boudett et al. (2000) used these theories as the basis for describing various second-chance opportunities available to young, female dropouts that result in increases in earned income. The most common avenue is pursuit of the GED credential. Other educational investments include off-the-job training offered by proprietary schools; on-the-job training, such as formal, job-specific training programs offered by an individual’s employer; and higher education offered by community colleges and four-year colleges. The next section discusses the GED as a second-chance opportunity for young, female dropouts to have a greater chance of success in the labor market.

**The GED: What Difference Does It Make?**

Increasing numbers of research studies have examined earnings differences between GED recipients and dropouts without a GED. Early research studies focused primarily on males, while many recent studies have focused on research with female populations. Early researchers for male populations included Cameron (1994), who attributed one half of the differences in wages of male GED recipients and dropouts to the additional education and training pursued by GED holders.

Recent studies that examine earnings differences for female populations include Murnane, Willett, and Tyler (2000), who found that the acquisition of a GED for females is
associated with a 10–19% increase in earnings as compared to female dropouts. They added that the impact of a GED on women’s earnings is initially modest but grows over time. They also stressed that researchers who evaluate the effectiveness of GED programs should allow “several years to measure the impact of those programs” and suggested that “a larger time horizon may be needed to capture meaningful results.” Some of the largest earnings differences for female populations were reported by Bos (1995) who found that women who attained a GED had between a 33% and a 43% higher monthly earnings than women without a GED.

Boudett et al. (2000) emphasized that the GED is a viable choice for women without a traditional high school diploma to increase their earnings. Their analysis concludes with

Ten years after dropping out of school, obtaining a GED in the third year after dropping out is associated with an earnings gain of approximately 25%; a GED and a year of off-the-job training or college boosts income by nearly 50%. (p. 27)

Boudett et al. add that, although the guidelines in the Workforce Investment Act of 1998 suggest measuring employment outcomes within one year of completion of an adult education program, longitudinal studies would offer a more meaningful measure of the GED’s impact on wages.

Educational and Labor Market Performance of GED Recipients

A major research synthesis developed by Boesel, Alsalam, and Smith (1998), *Educational and Labor Market Performance of GED Recipients*, compared research studies that examined performance of male and female GED recipients in postsecondary education, the labor market, and the military. The report provided detailed analyses and summarized both cross-sectional and longitudinal studies. Results of most of the studies indicated that female GED holders have earnings advantages over dropouts who have not attained their GED. Appendix A
provides a summary of research results for female populations and compares hourly wages and annual earnings for females who attained a GED with hourly wages and annualized earnings of dropouts. Research studies compared in Appendix A indicated that individuals in these studies who attained the GED earned hourly wages that were from 1.7% to 12.6% higher than individuals who did not obtain the GED. Annual earnings advantages of GED recipients ranged from 5.2% to 29.1% higher than individuals without a GED certification.

**Cross-sectional Studies.** The Boesel et al. (1998) research synthesis of the cross-sectional studies included an examination of the correlation of attainment of a GED credential with several variables, including labor force participation and employment status, wages, time spent working, and annualized earnings. Boesel drew the following conclusions for each of these variables:

1. **Labor Force Participation and Employment Status:** In controlled comparisons, the GED credential was positively associated with gains in full-time employment but had little effect on labor force participation.

2. **Wages:** In controlled analyses for female populations, wages of GED recipients were up to 13% higher than for those of dropouts. For female and male populations, GED recipients’ wages were 5–11% higher than dropouts.

3. **Time Spent Working:** In controlled comparisons for female populations, female recipients of the GED spent more time working than dropouts, while male GEDs spent less time working than dropouts. In simple comparisons, female GEDs experienced less job turnover than dropouts, while male GEDs had higher turnover rates than dropouts.
4. **Annualized Earnings**: GED recipients earned more than dropouts in both simple and controlled analyses. GED recipients had no earnings advantage over dropouts in the short term; however, their relative earnings grew over time.

Boesel et al. (1998) described differences in simple and controlled comparisons as follows:

Simple comparisons are ones that make no adjustment for differences between the groups in characteristics that could influence labor market outcomes. The controlled comparisons make statistical (regression) adjustments for (i.e., control for) variables such as race, parents’ education, and so forth. (p. 133)

Also in the Boesel publication were analyses of several key variables associated with the GED credential, including cognitive ability, years of schooling, and participation in postsecondary education. These variables may explain most of the GED effect on wages.

**Longitudinal Studies.** The Boesel et al. (1998) report also provided a synthesis of longitudinal studies that examined the performance over time of the same sample of GED recipients before and after the receipt of the credential. Although most of the longitudinal studies in the Boesel synthesis focused primarily on male populations, several studies, such as Cameron (1994) and Bos (1995), focused on female populations. The report categorized studies into (a) those using the National Longitudinal Study of Youth (NLSY) data, (b) evaluations, and (c) evidence from GED follow-up studies. Findings were mixed concerning the GED’s impact on earnings. Cameron and Heckman (1993) found no significant difference in wages for males before and after attainment of the GED. For female populations, Cameron (1994) found that GED recipients had earned 10.8% more than dropouts before earning the GED and 12.1% more
after earning the GED. Appendix B provides a summary of the analyses and their findings and conclusions.

Using data from studies including Murnane, Willet, and Boudett (1995) and Tyler, Murnane, and Willett (2000), Boesel et al. (1998) concluded that the GED yields economic benefits and these benefits increase over time, and suggested that the GED may work through additional education and training and job search to increase compensation.

In addition to describing monetary and non monetary benefits of attainment of a GED, Boesel et al. (1998) offered two important conclusions that have far-reaching implications for the welfare population:

1. It is worthwhile for a high school dropout to earn the GED because it increases access to postsecondary education and training, which will result in higher earnings.

2. Those who pass the GED should understand that the credential is primarily a stepping stone and that additional earnings gains can be increased dramatically by completing postsecondary education and training programs.

Welfare Leavers and Self-Sufficiency

Recent studies of families that have left welfare, also referred to as leaver studies, provided information about “life after welfare” and often included employment and earnings data for former welfare recipients who attained employment. Parrott (1998) synthesized results of numerous leaver studies across the United States and reported the following:

1. Employed former recipients and recipients who combined work and welfare earned less than $8 per hour, and a substantial number earned less than $6 per hour.
2. On an annual basis, recipients who attained employment earned between $8,000 and $10,800, which is well below the poverty line for a family of three.

3. Most recipients who acquired employment did not receive benefits, such as health insurance, vacation leave, or sick leave.

4. Recipients who had a high school diploma or a GED had quarterly earnings from 19 to 29% higher than individuals without a high school diploma or GED.

5. Many families found it necessary to use a combination of earnings, cash, child support, and government income support to meet their basic needs.

Parrott recommended that states provide incentives to encourage and support welfare recipients in upgrading their skills through additional education and training rather than continue with the work-first approach that encourages immediate employment.

Carnevale and Desrochers (1999) reported on results of the National Adult Literacy Survey (NALS), which found that women on welfare were distributed into approximate equal thirds according to three, broad skill levels, and provided recommendations for helping each group improve their earnings potential. The most skilled women, or 32% of the women in the survey, were categorized in the “advanced/competent” skill level, which is defined as “similar to people with at least some postsecondary education.” With this group, 7% fell into the advanced group and 25% fell into the competent group. Thirty-seven percent of recipients were found to have basic skills similar to high school graduates in the lower half of their class. Thirty one percent of the recipients possessed minimal skills similar to school dropouts. In general, Carnevale and Desrochers found that women on welfare possessed substantially lower skill levels than women in the general population. Table 2 shows the skill levels, estimated
educational equivalent, equivalent average earnings levels, and an estimate of the additional education or training hours needed to advance to the next level.

Table 2

**Welfare Recipients’ Skill Levels With Corresponding Earnings and an Estimate of Time**

**Investment Required for Advancement**

<table>
<thead>
<tr>
<th>Skill level</th>
<th>Similar equivalent education</th>
<th>Similar equivalent average earnings</th>
<th>hours needed to advance 1 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced (7%)</td>
<td>Bachelor’s level</td>
<td>&gt;$30,000</td>
<td>200a</td>
</tr>
<tr>
<td>Competent (25%)</td>
<td>High school diploma/GED or some postsecondary education</td>
<td>~$23,000</td>
<td>200</td>
</tr>
<tr>
<td>Basic (37%)</td>
<td>High school diploma/GED (lower half of class)</td>
<td>$15,000-$20,000</td>
<td>200</td>
</tr>
<tr>
<td>Minimal (31%)</td>
<td>High school dropouts</td>
<td>&lt;$15,000</td>
<td>&gt;900</td>
</tr>
</tbody>
</table>


*aAn investment of up to 200 hours of education or training could result in advancing to jobs that pay up to $10,000/year more.*

Carnevale and Desrochers (1999) further suggested that effective strategies in helping welfare recipients achieve self-sufficiency will require flexibility in developing a customized education, training, and employment plan that is based on the unique needs and skill levels of individuals and matched to appropriate job opportunities. They offered strategies for each of the three skill levels:

1. Workers with **competent skills** should be encouraged to not take “any” job, but to find a job that takes best advantage of their abilities and offers the prospect
of training and advancement. Nevertheless, many of these recipients would almost certainly benefit from additional education or training before they enter the workforce—an approach that, in the long run, will help them to qualify for higher paying jobs.

2. Workers with **basic skills** also should seek employment in jobs that offer training on the job. While these recipients only have skills that afford them access to jobs with limited training and earnings potential, locating these possibilities provides greater opportunities for increased earnings and advancements. Off-the-job training could be beneficial if it is directly linked to employment.

3. Workers with **minimal skills** pose the most difficult problem—a problem that is likely to become more acute in the next decade because the U.S. economy is creating relatively fewer low-skilled jobs. To provide education and training for this group would be extremely costly. A more effective approach might be to provide minimally skilled workers with the counseling and support services they need to find—and keep—a job. This could, at least, help break the vicious cycle of low-skilled workers drifting between welfare and low-paying jobs. (Carnevale & Desrochers, 1999, p. 34)

A recent study by Ziegler and Ebert (1999), combining what was known from published research studies about the length of time it takes to make learning gains in adult basic education classes with data from Tennessee adult basic education participants, documented that “participating in adult basic education does result in measurable gains for adult students, and that more time in the programs results in greater gains in measured skills” (p. 27). Ziegler and Ebert’s synthesis of available research studies made the estimate that it takes approximately 90
instructional hours to advance one grade level. Tennessee ABE participants who entered at Level 1 (the lowest skill level) needed a median of 202 days of instruction to pass the GED test.

The Crucial Shift: Skill Enhancement Through Education and Training

Early welfare reform policies and practices at the state level adopted a work-first philosophy that encouraged welfare recipients to move off welfare by getting a job—any job. Considering the low skill levels of a large portion of this population, most of the employment opportunities available are low-wage, temporary jobs with no benefits and little or no promise of advancement or stability.

A widely documented finding (Carnevale et al., 2000; Kaye & Nightingale, 2000; Parrott, 1998) was that in accepting the first job available, many former welfare recipients simply moved from welfare into the nation’s working poor. In their recent report, A Piece of the Puzzle: How States Can Use Education to Make Work Pay for Welfare Recipients, Carnevale et al. (2000) urged new investments in education and training at the federal and state levels. The authors also reported on a recent trend in states and communities that are taking a renewed interest in education and training for the welfare population. Carnevale attributed this to the “changing policy equation” and noted that political and administrative pressures for welfare recipients to move into the workforce have subsided. With decreased welfare caseloads, large TANF surpluses have resulted at the state level, and some of these funds could be allocated to education and training. In addition, states and colleges are discovering and developing creative and practical ways to recruit and attract welfare recipients into postsecondary educational opportunities.
Many state legislatures characterize the three goals of welfare reform as helping families move (a) off welfare, (b) into jobs, and (c) toward self-sufficiency. Jack Tweedie (2000), a policy analyst for the National Conference of State Legislatures, reported that states have been successful in helping families move off welfare and that considerable progress is being realized as more welfare recipients are finding jobs. However, much progress is yet to be made in attaining the ultimate goal for former welfare recipients to become self-sufficient. Tweedie notes that policymakers are beginning to examine ways to strengthen the connection between education and work and mentioned one promising strategy adopted by many state legislatures—allowing qualified participants to enroll in two- and four-year college degree programs. He noted that, ironically, it is the states’ emphasis on work that has prompted the renewed interest in education.

Carnevale and Sylvester (2000) also reported on the renewed emphasis on education:

The tide may be beginning to turn. At least six states now use their own funds to send welfare recipients to college for two years or more, and nine other legislatures are considering the idea. The new emphasis on education cuts across partisan lines. (p. B-6)

On a larger scale, a report issued by the Urban Institute in 2000 (Kaye & Nightingale) provided several macro level policy options to help low-wage workers improve their wage, employment, and economic self-sufficiency outcomes. These recommendations included:

1. Policies and programs to improve access to employment by attracting, recruiting, and retaining workers formerly on welfare. Specific programs could include job networking, providing labor market information to job seekers, and career planning and counseling.
2. Policies and practices to encourage and support occupational mobility and job advancement through information networks, clearly articulated and accurate job and skills qualifications for entry-level jobs, and on-the-job training.

3. Policies aimed at raising incomes of low-wage workers, such as public and community service jobs, minimum- and living-wage policies, and earned income tax credits.

Summary

The issues of self-sufficiency for welfare recipients have been addressed by numerous credible research studies. The preponderance of studies support these conclusions concerning the relationships among education, employment, and earnings:

1. For both men and women, there is a direct, positive relationship between educational attainment and earnings.

2. For both women and men, there is a direct, positive relationship between educational attainment and employment rates.

3. Educational attainment makes a bigger difference in earnings and employment rates at the upper levels of educational attainment, and the difference is even more pronounced for women than for men.

4. For women, acquisition of the GED credential is associated with an initially modest increase in earnings, but earnings increases grow substantially over time.

5. Attainment of the GED (for women) is also associated with more time working, less job turnover, and additional education and training.

The following conclusions about welfare recipients, skills, and education are also supported:
1. Workers (welfare leavers) with low skills typically earn less than $8 per hour with no health insurance, vacation leave, or sick leave.

2. Welfare recipients have widely varying skills levels. About one third have skill levels equivalent to college graduates or college students, the skills of another one third are equivalent to high school graduates, and the remaining recipients have minimal skills.

3. For those welfare recipients in the upper two thirds of skill levels, investments of 200 hours in training, education, or both can often result in advancement to the next higher skill level and corresponding earning potential.

4. For welfare recipients at the lowest level, the number of hours of education or training needed to advance to the next level varies widely, possibly up to 900 hours.

5. Jobs available for workers with minimal skills are low-wage, temporary jobs with no benefits and little or no promise of advancement or stability. Workers with low skills are not likely to become self-sufficient.

6. Renewed interest in education and training for the welfare population is reported by several states and communities. States are beginning to send welfare recipients to college to increase their likelihood of becoming self-sufficient.

**Implications for Tennessee’s Families First Program**

Tennessee’s approach to welfare reform efforts uses work, job search, training, education, or some combination of these in helping welfare recipients become self-sufficient and independent of welfare. The state’s emphasis on education and training relates to human capital theory discussed earlier. It is expected that, as welfare recipients participate in educational activities to enhance their skills, they will experience a higher earnings potential.
A 1999 study of former and current Families First participants conducted by the Bureau of Business and Economic Research at the University of Memphis reported the following:

1. For those employed, the average hourly wage range was $5.50 per hour to $6.21 per hour.

2. The primary occupational and employment areas included food and beverage preparation and service, entry-level clerical jobs, packaging and materials handling, and miscellaneous personal services.

3. A vast majority, nearly 73%, had only a high school diploma, GED, or less.

The report further stated that women with less than a high school education (which applies to 24.6% of the sample in this study) will continue to experience low earnings and that their earnings will decline exponentially over time. Thus, the importance of encouraging the completion of high school or earning a GED and providing additional educational and training incentives and opportunities beyond high school is paramount in helping welfare recipients increase their earnings potential, thereby enabling them to permanently attain economic self-sufficiency.
References


## Appendix A

### Table A 1

*Research Synthesis of Simple and Controlled Comparisons of Female GED Recipients’ and Dropouts’ Hourly Wages*

<table>
<thead>
<tr>
<th>Research</th>
<th>Reported hourly wages of dropouts versus GEDs$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simple comparisons</strong></td>
<td></td>
</tr>
<tr>
<td>Alsalam and Conaty (1989)</td>
<td>-12.6</td>
</tr>
<tr>
<td>Cameron (1994)</td>
<td>-11.1</td>
</tr>
<tr>
<td>Cameron (1992)</td>
<td>-9.7</td>
</tr>
<tr>
<td>Maloney (1993)</td>
<td>-10.7</td>
</tr>
<tr>
<td>Smith et al. (1995)</td>
<td>-1.7</td>
</tr>
<tr>
<td>Reder (1992)</td>
<td>-9.9</td>
</tr>
<tr>
<td><strong>Controlled comparisons</strong></td>
<td></td>
</tr>
<tr>
<td>Cameron (1994)</td>
<td>-7.8</td>
</tr>
<tr>
<td>Garet, Jing, and Kutner (1996)</td>
<td>+2.4</td>
</tr>
<tr>
<td>Reder (1994)</td>
<td>-10.5</td>
</tr>
</tbody>
</table>


$^a$Dropouts’ hourly wages are a certain percentage less than GED hourly wages for all studies reported here except Garet, Jing, & Kutner (1996).
Table A 2

*Research Synthesis of Simple Comparisons of Female GED Recipients’ and Dropouts’ Annual Earnings*

<table>
<thead>
<tr>
<th>Research</th>
<th>Reported annual earnings of dropouts versus GEDs&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alsalam et al. (1993)</td>
<td>-29.1</td>
</tr>
<tr>
<td>Alsalam et al. (1993)</td>
<td>-17.1</td>
</tr>
<tr>
<td>High School &amp; Beyond (1991)</td>
<td>-28.7</td>
</tr>
<tr>
<td>Smith et al. (1995)</td>
<td>-5.2</td>
</tr>
<tr>
<td>Cave and Bos (1995)</td>
<td>-27.1</td>
</tr>
<tr>
<td>Sum (1996)</td>
<td>-21.1</td>
</tr>
</tbody>
</table>


<sup>a</sup>Dropouts’ annual earnings are a certain percentage less than annual earnings for GED recipients for all studies reported here.
## Appendix B

Table B  
Synthesis of Longitudinal Studies Examining Performance Over Time of GED Recipients Before and After Their Receipt of the GED Credential

<table>
<thead>
<tr>
<th>Report</th>
<th>Population</th>
<th>Findings and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameron and Heckman (1993)(^a)</td>
<td>107 males</td>
<td>Wages increased from $6.18 per hour before GED to $6.36 per hour after GED (not significantly different).</td>
</tr>
<tr>
<td>Cameron (1994)(^a)</td>
<td>females</td>
<td>GED graduates earned an average of 10.8% more than dropouts before getting a GED and 12.1% more afterwards.</td>
</tr>
<tr>
<td>Murnane (1995)(^a)</td>
<td>males</td>
<td>GED had a positive effect on the rate of wage growth. There was no initial effect; but, over time, GED wages grew more rapidly than they would have if GED was not attained.</td>
</tr>
<tr>
<td>Bos (1995)(^b)</td>
<td>2000 high school dropouts below 8(^{th})-grade reading level</td>
<td>Attainment of GED was associated with $47.37 higher monthly earnings for males and females combined.</td>
</tr>
<tr>
<td>Bos (1996)(^b)</td>
<td>New Chance Demonstration Project for mothers on welfare</td>
<td>Attainment of GED was associated with $29.24 higher monthly earnings.</td>
</tr>
<tr>
<td>Kroll and Qi (1995)(^c)</td>
<td>GED examinees</td>
<td>Wages of GED recipients increased more after the test than those of GED examinees who did not pass the tests. In general, these findings and others from GED follow-up surveys support the conclusion that attainment of a GED results in increased employment opportunities.</td>
</tr>
</tbody>
</table>

\(^a\)Reports utilizing National Longitudinal Survey of Youth (NLSY) data. \(^b\)Reports based on longitudinal evaluations. \(^c\)Report based on evidence from GED follow-up studies.*