

**Public Assistance Programs: How Much Could Be Saved with Improved Education?**

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In modern economies, adequate education is a prerequisite for full participation in the labor market and for achieving a basic standard of living. Individuals who fail to achieve sufficient educational attainment are put at greater risk for reliance on safety net programs. While there are individuals who will complete high school but still be in need of public assistance, ensuring that all Americans are educated to at least the high school degree level will lead to significant reductions in the reliance on income tested or safety net welfare state programs.

In this chapter we explore how three areas of the safety net portion of the welfare state – cash assistance, food assistance, and housing assistance – are affected by the failure to prepare future citizens to adequately participate in society. We begin by describing the basic methodology that we use to calculate our estimates and then apply this methodology to each of the areas of public assistance. We then present a series of cost estimates and comparative statistics that illustrate the magnitude of the savings that could be generated by providing every student with at least a high school degree.

## **Methodology**

It is well-established that adults who lack a high school degree are at elevated risk of being on some form of public assistance. The largest literature pertains to “welfare”, i.e. cash assistance provided to (primarily) single mothers through what used to be the AFDC program and what is now the TANF program, and so we will use the cash assistance example to present our methodology.

Studies consistently have found that single mothers who lack a high school degree are much more likely to be on welfare than women who have a high school degree or more (see, for

example, Bane and Ellwood, 1994). If we look at program data for TANF, we can see that indeed women who are high school dropouts are over-represented in the caseload (Table 1). Of the approximately 1.2 million single mothers on TANF in 2002 (the latest year for which detailed program data are available), over 500,000 (nearly half) are high school dropouts. When we consider participants as a share of all high school dropout single mothers, we can see that this group is participating in TANF at a rate much higher than other education groups: 27% of all single mothers who are high school dropouts are on TANF, compared to only 17% of those with a high school degree, and less than 1% of those with more than a high school education.

However, we need to be cautious in concluding on the basis of this evidence that the lack of a high school degree accounts for *all* the differences in welfare use between high school dropouts and more educated mothers. Women who lack a high school degree may differ from more highly educated women in other ways, and those other differences may predispose them to have higher levels of welfare receipt even if they had gotten more education.

In a scientifically ideal world, the basis for our estimates of the effect of being a high school dropout on welfare receipt would be derived from randomized experiments in which children were assigned to either complete high school or drop out from high school. Since we cannot, ethically or practically, randomly assign students to high school completion or high school dropout, we must rely on second best estimates from multivariate regression models that control for as many confounding characteristics as possible, in an attempt to yield the *ceteris paribus* (all else equal) effect of being a high school dropout. We use these regression estimates to calculate *ceteris paribus* differences in the probability of utilizing each of three forms of public assistance -- cash welfare, food stamps, and housing assistance -- associated with whether an individual has less than a high school education, a high school degree, or more than a high

school degree. As we discuss in detail below, we use regression estimates from the literature where available, but in most instances, current estimates are not available and therefore we conduct our own estimates using data from the March 2003 Current Population Survey (which provides data on public assistance receipt for the prior year, 2002).

We begin with projections of the impact of moving high school dropouts to high school graduates. Following the computation of the probability of welfare receipt for those with a high school degree relative to high-school dropouts, we then apply this estimated probability to the total population of high school dropouts to determine the estimated effect on public assistance receipt of providing the target population – high school dropouts -- with a high school education. The reasoning for this is best illustrated by considering an extreme case. Assume that the entire TANF population consists of individuals with less than a high school education, and that the probability that someone with a high school degree is on TANF is zero. If the entire population were to receive a high school education, then the expected reduction in TANF participation would be 100%, as their risk of being on welfare would fall from the baseline probability to zero. In reality, the distribution is not so extreme; some high school graduates are on public assistance, but their risk of being on assistance is less than that of high school dropouts. So, in each of the three areas we examine, the percent of the target population is between 0 and 1, and thus we calculate an expected effect only on those individuals who would otherwise lack a high school degree.

The estimates just described will understate the effects of increased education if some current high school dropouts who benefit from improved education to graduate from high school go on to obtain more education. Thus, we also conduct some estimates where we assume that some current high school dropouts go on to obtain more than a high school degree. Among the

current US population of single mothers (the main group we focus on in this paper), 56% of those with a high school degree have at least some college or indeed a college degree or more, while only 44% have no more than a high school degree (see figures in Table 1). Thus, it is reasonable to assume that some single mothers who were given the chance to graduate from high school might go on to obtain more education. At the same time, it is likely that those who currently are dropping out from high school have on average less inclination to go on in school than those currently graduating. Thus, in our estimates that move high school dropouts to high school or beyond, we conservatively estimate that the majority of the dropouts (roughly 2/3) who benefit from improved education will obtain no more than a high school degree, and that only 1/3 will go on to obtain more than a high school education.

The expected effect of increased education on the target population will not eliminate all the participants in each program. Therefore, to calculate a percentage reduction in the participation rates for each program, we multiply the new participation rate by the total target group to compute the overall reduction in each program area.

Once a reduction in programs caseloads is estimated, program savings are determined based on per participant costs. Using program administrative data, we calculate a per participant cost of each program by dividing the total cost of the program by the number of beneficiaries. Multiplying the participant cost by the reduction in the number of beneficiaries provides for a bottom line estimate of the total program savings.<sup>1</sup>

Unless otherwise noted, all our program, participation, and cost data are from 2002 (the most current year for which detailed information was available). When we use the March CPS,

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<sup>1</sup> We treat all cases as having the same average cost. If single mother family cases receive more benefits than child-only or two parent family cases, then we will under-estimate the savings associated with moving the single mother off benefits, and the reverse for the others.

we use data from the 2003 survey, which collects information about public assistance receipt in the prior year, 2002.

### **Results: Reduction in Welfare (TANF) Costs Associated with Increased Education**

Over the last decade, participation in welfare has declined dramatically. From its historic high in 1994, the total number of participants on welfare has declined by 60 percent (US Department of Health and Human Services, 2004). During this time thousands of individuals have left welfare or not enrolled, motivated by a combination of changes in federal and state welfare, increases in the earned income tax credit, child care, and child support enforcement, improvements in the economy, and possibly changes in cultural norms regarding work, motherhood, family obligations and personal responsibility. Many of the individuals who have left welfare or were diverted from the program are not as disadvantaged as those who remain on welfare, because better educated parents are more likely to find employment, retain their positions, and advance in the labor market, and to receive child support relative to their less educated counterparts (Miller, 2002; Seefeldt, 2004). Despite changes in welfare over the past decade, thousands of families and children continue to rely on the program for assistance. Improvements in the educational attainment of American students hold the potential to sustain the declines in welfare utilization and produce significant savings to the public.

We begin by determining the probability of an individual participating on welfare in the first place. We conduct two sets of estimates. For our first set of estimates, we turn to the literature and use results presented by Jayakody, Danziger and Pollock (2000) from analyses of a sample of 2,728 single mothers from the 1994–1995 National Household Survey of Drug Abuse, an annual national cross-sectional survey of the civilian, non-institutionalized population.

Employing a logistic (logit) regression model that controls mother's age, number of children under 12, mother's marital status, race/ethnicity, residence in an urban area, region of the country, as well as mother's health, mental health, and use of substances including cocaine, alcohol and cigarettes, Jayakody et al. (2000) find that single mothers with a high school education are 55 percent less likely to be on welfare than those who are high school dropouts. These results provide us with an estimate of the change in welfare use that would result if women who are high school dropouts had a high school degree instead.

A drawback of this estimate is that it is taken from the period prior to the implementation of the major welfare reform legislation – the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996. A primary purpose of PRWORA was to reduce the dependence of single mothers on welfare by encouraging employment. Theory does not necessarily predict whether PRWORA would have increased or decreased the greater likelihood of individuals with less than high school education to be on welfare. On the one hand, less educated women could be more likely than more educated women to respond to welfare reform by reducing their participation on welfare (whether through increased employment or through fertility-related behavioral changes). On the other hand, if welfare reform results in “creaming off” the more educated welfare recipients, individuals with less education may be at a greater risk of being on welfare than they were in the past.

For this reason, we take the estimate based on Jayakody et al. (2000) as a baseline approximation and compare the results to a second set of estimates, which we conducted ourselves using post-welfare reform data. Specifically, we constructed a sample consisting of all single mothers from the March 2003 Current Population Survey, a large nationally representative survey which has very detailed data on both family demographics and public assistance use. We

estimated logit models for TANF participation and used these to determine the effect of being a high school dropout, relative to having a high school degree. The results indicated that those with a high school degree are 24 percent less likely to be on welfare than those who are high school dropouts. This is obviously a much lower differential than was found in the Jayakody et al. (2000) study, suggesting that perhaps welfare reform has disproportionately affected the least educated and has reduced the elevated risk of welfare use by high school dropouts.<sup>2</sup>

Nevertheless, a sizable differential remains, and thus there is still scope for welfare savings if high school dropouts were educated to high school degree level.

With these two figures in hand for the extent to which we might reduce TANF participation by improving educational attainment, we then proceed to the next step of our analysis, which is to project the reduction in current TANF use which would result if all women who are high school dropouts instead had a high school degree. As shown in Panel A of Table 2, applying the estimates from Jayakody et al. (2000) who find that participation rates of high school graduates are only 45% as high as those of high school dropouts would reduce the welfare participation rate of single mothers who are high school dropouts by 55%, from 27% to 12%. This is a large reduction (in fact, it is larger than we would have obtained if we had simply used the unadjusted percentages in the raw data and assumed that giving high school dropouts a high school education would equate their odds of welfare receipt with current high school graduates). Reducing the participation rate for high school dropouts from 27% to 12% removes over 292,000 women from the current welfare rolls.

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<sup>2</sup> It is unlikely that differences across the two models account for the difference in estimated effects of being a high school dropout. Although we control for the same set of demographic and background variables, Jayakody et al. control for several health-related factors that we do not observe in the March CPS (use of substances including cocaine, alcohol and cigarettes, mental health, and health). Thus, if anything, omitted variable bias should lead us to find *larger* effects of being a high school dropout in the March CPS models, not smaller ones.

What does this mean in terms of reduced welfare costs? Panel B of Table 2 shows that moving high school dropouts to high school graduates would result in a very substantial reduction in welfare costs – a savings of nearly 3.5 billion dollars per year, or roughly 25% of what we currently spend on TANF cash assistance for single mother families.

When we conduct our own post-PROWRA regression estimates using data from March 2003 CPS, we find a smaller differential in the participation of high school dropouts relative to high school graduates. This is shown in Table 3. Using the same methodology, if we use our regression estimate from March CPS, the number of high school dropout women on TANF drops by about 125,000, for a savings of 1.5 billion dollars. This is a much smaller figure than we obtained using the estimate from the previous literature, and we are not able to say which figure is closer to the truth. The safest conclusion is that increasing high school dropouts' education to the level of a high school degree would result in between \$1.5 billion and \$3.5 billion in savings in TANF costs per year.

As noted earlier, both these estimates may understate the savings that might be associated with increased education, if some of the dropouts who obtain a high school degree go on to obtain more than a high school education. Therefore, we repeated these estimates assuming that increased education led 2/3 of the dropouts to obtain a high school degree, and 1/3 to obtain more than a high school education. The results of these “high school and beyond” estimates are shown in Tables 4 and 5. Table 4 uses the results from Jayakody et al. (2000), while Table 5 uses our post-PRWORA estimates from March 2003 CPS. Because women with more than a high school education have even lower odds of being TANF (than those with just a high school education), these new estimates result in larger caseload reductions and larger cost-savings. Using the Jayokody et al. (2000) figures, we find that over 322,000 single mothers are removed

from TANF, for a savings of \$3.8 billion per year. Using our own figures from March 2003 CPS, we find that 177,000 single mothers are removed from TANF, for a savings of \$2.2 billion per year.

Before moving on to the other public assistance programs, it is important to note that even these latter estimates may still understate the savings that might be associated with increased education. There are three major concerns here. The first is that we have assumed that gaining more education would have no effects on other behavioral outcomes. Yet, it is possible that as women gained more education, they would be more likely to marry, or would have fewer children, either of which would lead women to be less likely to be on welfare. Modeling these behavioral effects properly is beyond the scope of what we can do here, but future work should take these possible impacts into account. A second omission is that we have focused only on women in these estimates. But it is plausible that increases in men's education could also lead to reductions in the welfare use of low-income women. More-educated men would be in a better position to marry, or if not married, to contribute child support. Again, this is an issue that should be taken into account in future work. Third, we have considered an important, but incomplete, portion of the cash assistance caseload. Our estimates refer to single mothers receiving federally funded TANF. They do not include single mothers or others who receive assistance through "child-only" TANF benefits, state-funded cash assistance programs such as general relief or general assistance, or means-tested programs for those with disabilities, such as SSI. If we considered a broader range of cash assistance programs, and recipients other than single mothers, we could find additional savings. Because data on which to produce such estimates are lacking, we prefer to focus on TANF single-mother cases here. But we do briefly

consider other recipients of our three main public assistance programs at the end of this paper, and further work on these should also be included in a future research agenda.

Finally, there is one important reason why our estimates might overstate the savings associated with increased education. As discussed above, it is likely that high school graduates differ from high school drop-outs in other ways besides whether or not they have a high school degree. That is the rationale for controlling for race/ethnicity, age, location, and other demographic characteristics. But, it is likely that even after controlling for these differences there are unmeasured differences, such as ambition and talent, that lead both to differences in high school completion and utilization of welfare programs. Future work should utilize data sets that have such measures and thereby allow us to get purer estimates of the net impact of high school completion.

### **Results: Reduction in Food Stamp Costs Associated with Increased Education**

We carried out a similar set of estimates for the Food Stamp program, again focusing on single mothers who make up a large proportion of the caseload. Although participation in Food Stamps has declined in recent years, the Food Stamp program remains one of the largest safety net programs in the US, serving 8.2 million low-income households in the most recent program year 2002. Families with children make up 54% of the caseload; of those families with children, over 60% are headed by single mothers.

As is the case with TANF, less-educated single mothers are at greater risk of Food Stamp receipt than more-educated single mothers. But the relative over-representation of high school dropout single mothers is less pronounced than it is for TANF. As shown in Table 6, program data indicate that 38% of high school dropout single mothers in the US participate in Food

Stamps, as compared to 31% of high school graduate single mothers, and 18% of more than high school educated single mothers.

We were unable to locate a recent published study that estimated the effect of education on Food Stamp receipt among single mothers, so we produced our own regression estimates from March 2003 CPS and applied them to simulate the effects of increasing education to high school, or high school and beyond, using the same methods described above. The results are shown in Tables 7 and 8.

Table 7 presents results from estimates for the effect of moving high school dropouts to high school graduates. This scenario reduces the Food Stamp participation rate of single mother dropouts from 38% to 31%, just about even with the baseline rate for high school graduates, and results in removing over 140,000 recipients from Food Stamps, for a savings of \$353 million per year (about 5% of current program expenditures on single mother families).

Table 8 presents results from a more ambitious education improvement, which moves 2/3 of dropout single mothers to high school graduates, and 1/3 to more than high school. This scenario reduces the caseload by over 228,000 recipients, for a savings of \$655 million per year (9% of current program expenditures on single mother families).

Thus, the savings in Food Stamp costs associated with increased education for single mothers, while sizable, are less substantial than the savings in TANF costs. In large part, this is because the discrepancy in participation rates by education level is much more pronounced for TANF than it is for Food Stamps. This is seen most clearly in the figures for single mothers with more than a high school education. Fewer than 1% of this group participates in TANF, as compared with 18% who participate in Food Stamps. But even among those with just a high school degree, the participation rate in Food Stamps is markedly higher than for TANF (31% vs.

17%). Thus, increasing the education of single mothers to high school, or even high school and beyond, does not make a very substantial dent in Food Stamp receipt.

One weakness of our estimate for Food Stamps and Housing Assistance is that we had to rely upon survey data to estimate participation rates by education. But, receipt rates are under-reported in survey data like the CPS and the degree of under-reporting may vary by income or education.

### **Results: Reductions in Housing Assistance Costs Associated with Increased Education**

The final program area we examine is housing assistance. We focus on two major housing assistance programs, public housing and Section 8 vouchers/certificates. Together, these two programs offset housing costs for just over 2 million single mother families. Published program data do not indicate the break-down of these single mothers by educational status, but we are able to use survey data from the March 2003 CPS to project what share of program recipients come from our three education groups.<sup>3</sup> As shown in Table 9, the resulting figures indicate that the share of single mothers receiving housing assistance is 26.5% for high school dropouts, 24% for high school graduates, and 15% for those with more than high school. Thus, as was the case for Food Stamps, there is not as sharp a differential in participation in housing assistance by education status as there was for TANF.

We were not able to find a recent published estimate of the effects of education on housing assistance receipt among single mothers, so we carried out our own analyses using the March 2003 CPS and then used the results to estimate the effects of improved education, using the same methods described earlier. Table 10 shows the results from the scenario where high

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<sup>3</sup> Receipt of housing assistance, like other public assistance programs, is under-reported in the CPS, so we prefer to use program data for our total caseload numbers. But since program data do not provide a break-down by education, we use CPS data (on the share of reported participants who come from each education group) to divide the total caseload numbers into education groups.

school dropout single mothers are moved to high school education, which moves approximately 3,600 single mother families from housing assistance, for a savings of about \$18 million per year. Table 11 shows the results from the “high school and beyond” scenario, which has a more substantial effect, removing 63,000 single mother families from housing assistance and saving nearly \$313 million per year. But as was the case with Food Stamps, these savings are quite a bit less than those from TANF reductions, again reflecting the higher take up of housing assistance than TANF among more educated single mothers.

### **Other Potential Savings Associated with Increased Education**

As we discussed earlier, the fact that we have focused on single mother participation in TANF, Food Stamps, and housing assistance means that we have not taken into account potential savings due to reductions in single mother participation in other programs or reductions in others’ participation in public assistance programs. Although modeling such cost reductions in detail is beyond the scope of this paper, we did want to include some illustrative figures as to what the scope of such savings might be, as without including them we are surely underestimating the total savings in public assistance costs that could be generated through improved education.

Therefore, we carried out some back-of-the-envelope estimates where we assumed that the effects of improved education on the participation of groups other than single mothers would be of comparable magnitude to those for single mothers. Thus, if single mothers constitute 60% of the caseload of TANF, we assume that our estimates account for only 60% of the total reduction in costs that would result from improving education. In fact, single mothers account for 57% of the total TANF caseload, 18% of the total Food Stamps caseload, and 80% of the total non-elderly housing assistance caseload.

Table 12 presents a summary of our previous estimates for single mothers in addition to our crude back-of-the-envelope estimates for the total savings that could be gained from increased education. The first two columns present the estimated savings if all single mothers got at least a high school education, while the next two columns present the estimated savings if 1/3 of those without a high school education went on to get more than a high school education. The last two columns show our estimates of total cost savings: \$3.8 to 6.7 billion for TANF, \$3.7 billion for Food Stamps, and \$0.4 billion for housing assistance. Total cost savings for all three programs amount to from \$7.9 to 10.8 billion.

### **Conclusion**

Potential savings in public assistance costs that might be produced through improved education are substantial. When we add up all the savings we have identified, the total ranges from \$7.9 to 10.8 billion. As we have indicated, the estimates rely upon a number of simplifying assumptions and are cruder than would be ideal. Some of the assumptions are likely to lead to underestimates, while others are likely to lead to overestimates. Future research should address the limitations we have identified. It is unlikely, however, that future research will overturn our central conclusion that improved education will result in substantial savings in public assistance.

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