INVESTING IN SINGLE MOTHERS' HIGHER EDUCATION: Costs and Benefits to Individuals, Families, and Society

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Institute for Women's Policy Research
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Student Parent Success Initiative

POSTSECONDARY EDUCATION is a reliable pathway to economic security and is increasingly important to securing family-sustaining employment.

For single mothers families, who are especially likely to live in poverty, college attainment is a game changer for improving family well-being and meeting the demands of a changing economy. College credentials are associated with a host of positive outcomes, including increased earnings,[2] higher rates of employment,[3-4] improved health,[5] increased civic engagement,[6-7] and improved outcomes among the children of college graduates.[8]

Single mothers, whose families stand to gain disproportionately from the benefits of postsecondary degrees, face substantial obstacles to college completion, including financial insecurity and heavy caregiving burdens. Just 8 percent of single mothers who enroll in college graduate with an associate or bachelor's degree within six years, compared with 49 percent of women students who are not mothers.[9] The vast majority of single student mothers have low-incomes (89 percent) and no money of their own or from their families to cover college expenses. They are also likely to incur substantial student debt, in part due to the high cost of child care—which costs the equivalent of roughly one-third of working single mothers' median annual incomes[10]—and their disproportionate enrollment in for-profit institutions.[11] On average, single student mothers spend nine hours each day, or 70 hours each week, caring for their children and doing housework.[12] Child care, in addition to being expensive, can be difficult to access, and has been declining on college campuses around the country.[13-14]

Addressing the needs of single mothers in college is critical to making meaningful progress toward racial/ethnic equity in education.

Single mothers' low completion rates are particularly concerning given the high proportion who are students of color: 37 percent of Black women, 27 percent of American Indian/Alaska Native women, 19 percent of Hispanic women, and 14 percent of White women in college are single mothers.[15] Addressing their needs while pursuing college degrees is critical to making meaningful progress toward racial/ethnic equity in education.

> **"I wanted to get a bachelor's degree and be stable and be able to provide my son with a better home, with a better future… I couldn't do that with just a high school diploma."**
>
> *- Single student mother interviewed by IWPR*

To better understand the benefits of college for single mothers, and the costs of investments in supports that can improve their success, the Institute for Women's Policy Research (IWPR) estimated the economic returns to college attainment for single mothers and their families, and for society more broadly, and how those benefits compare to investments needed to promote single mother success. This report is part of a series of publications presenting findings from this cost-benefit analysis.[16]

The IWPR Study: Methods

IWPR's work to quantify the individual and societal costs and benefits of single mothers' attainment of college degrees draws on existing literature and new calculations utilizing an array of data sources. IWPR examined the costs and benefits of college attainment through an extensive review of published research, and analysis of data from the American Community Survey (ACS), the National Postsecondary Student Aid Survey (NPSAS), the Beginning Postsecondary Student Survey (BPS), the Integrated Postsecondary Education Data System (IPEDS), and other federal data sources.

IWPR also set out to understand how investing in supportive services might pay off for single mothers, and for society in the long run, when single mothers graduate from college. The study focuses on three supports that have shown evidence of improving single mother college completion: child care, targeted financial aid, and case management services. IWPR explored the costs of such investments, how they affect students' degree attainment, and how their costs compare with benefits accrued through tax contributions and savings in public benefits spending from single mother college graduates.[17]

Enormous Returns to Single Mother Graduates' College Investments

IWPR finds that earning a two- or four-year degree leads to significant net positive benefits for individual single mother graduates. Single mothers' degree attainment is associated with reduced poverty and increased annual and lifetime earnings, which yield benefits to society in the form of increased tax contributions and reduced receipt of public benefits.

College Cuts Poverty Dramatically

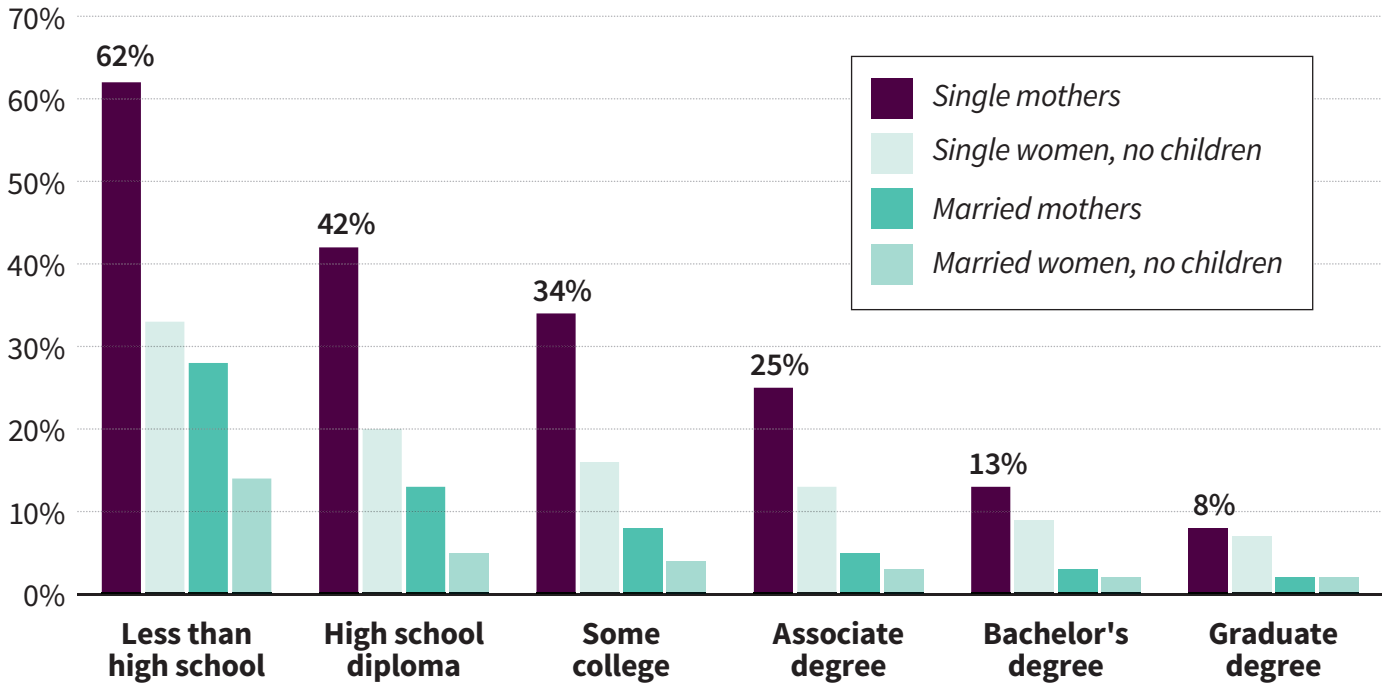
With each additional level of education, single mothers experience a roughly 32 percent average decline in their likelihood of living in poverty. Just 13 percent of single mothers with a bachelor's degree live in poverty, compared with 62 percent of single mothers with less than a high school diploma (Figure 1). Single mothers with only a high school diploma are over three times as likely to live in poverty as single mothers with a bachelor's degree.

For example, among the 1,275,413 single mothers enrolled at two- and four-year institutions in the 2011–12 academic year,[18] IWPR estimates that 21,096 will have left poverty after receiving an associate degree, and 10,550 will have left poverty after earning a bachelor's degree (a reduction in poverty of 38 percent and 68 percent, respectively; Appendix Table 1).

FIGURE 1.

SINGLE MOTHERS WITH ONLY HIGH SCHOOL DIPLOMAS ARE MORE THAN THREE TIMES AS LIKELY TO LIVE IN POVERTY AS SINGLE MOTHERS WITH BACHELOR'S DEGREES

Poverty Rates by Education Level and Marital and Parent Status among Women Aged 25 and Older, 2015



Note: Single women include those who are never married, widowed, divorced, or separated.

Source: IWPR analysis of 2015 American Community Survey microdata (Integrated Public Use Microdata Series, Version 6.0).

Graduating College Substantially Increases Single Mothers' Annual and Lifetime Earnings

Single mothers with college degrees who work full-time, full-year earn much more than those with only high school degrees (though they earn less than comparably-educated married women and single women without children). Among single mothers who work full-time, full-year, earning an associate degree leads to an earnings gain of $8,000 over the earnings of high school graduates (Figure 2). Single mothers with bachelor's degrees earn $18,500, or 62 percent, more each year than those with only high school degrees.

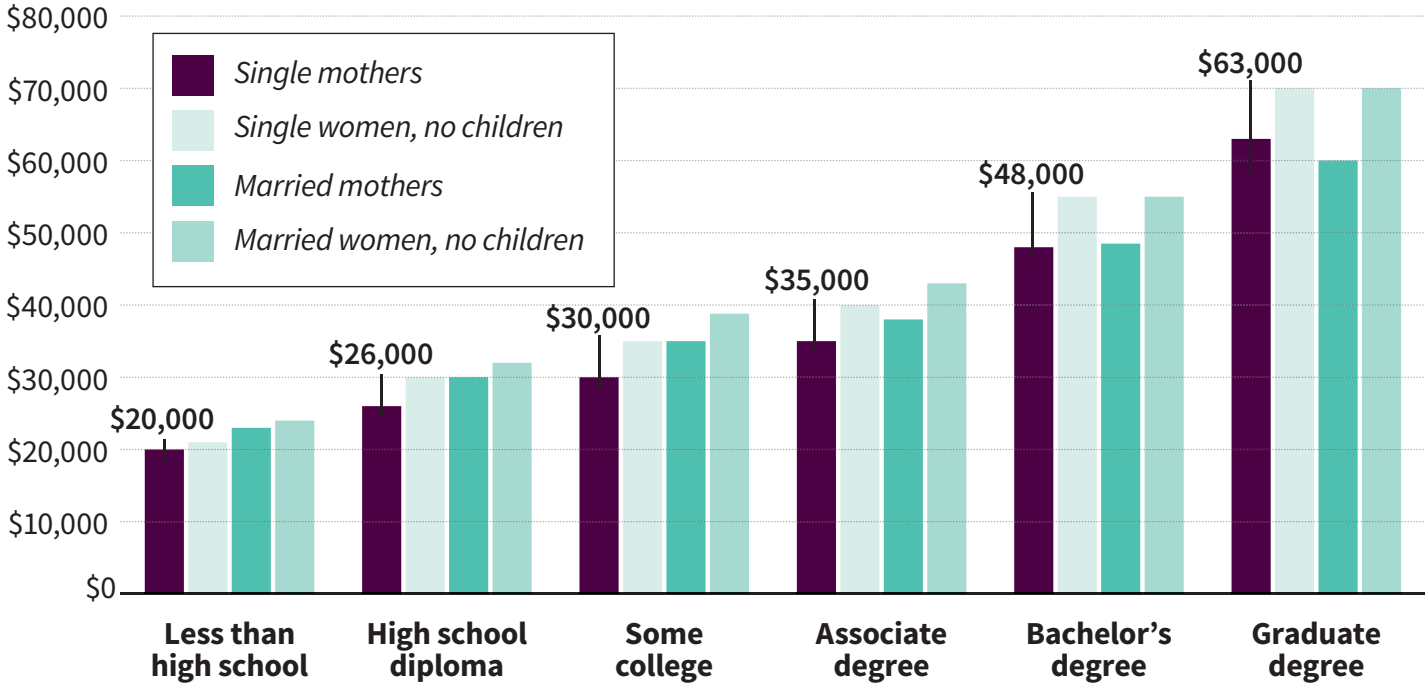
Over their lifetimes, single mother graduates with associate degrees who work full-time, full-year earn $329,498 more than those with high school diplomas, and bachelor's degree graduates earn $610,324 more than those with a high school diploma.

For all single mothers, including those who do and do not work, attaining associate degrees leads to an average of $152,927 more over their lifetimes, compared with high school graduates, and single mothers with bachelor's degrees earn $296,044 more than those with only high school diplomas (earnings gains are discounted to present value and include earnings among those who do not work, or who work less than full time, in addition to those who work full-time, full-year; Appendix Table 1).[19]

FIGURE 2.

SINGLE MOTHERS WITH A BACHELOR'S DEGREE EARN 62 PERCENT MORE ($18,500) THAN SINGLE MOTHERS WITH ONLY A HIGH SCHOOL DIPLOMA

Median Annual Earnings for Women Ages 25 and Older who Work Full-Time, Year-Round, by Education Level



Notes: Full-time year-round employment is defined as working at least 35 hours a week for at least 50 weeks per year.

Source: IWPR analysis of 2015 American Community Survey microdata (Integrated Public Use Microdata Series, Version 6.0).

For every dollar a single mother graduate spends on an associate degree, her family gets back $16.45 in increased earnings; for a bachelor's degree, each dollar invested brings her family a return of $8.50.

These increased lifetime earnings lead to substantial returns to single mother graduates from their investments in two- and four-year degree programs. Single mothers who earn associate degrees spend roughly $21,094 on tuition and fees, books and supplies, transportation, and other expenses,[20] additional child care costs (care needed as a result of being enrolled in college), in addition to their opportunity cost of not working for the time they are enrolled. For those who earn bachelor's degrees, single mother graduates spend $62,590. These costs represent the new costs to single student mothers of attending college; when including room and board (an expense that single mothers would have regardless of college enrollment), single mothers who earn associate degrees spend $51,640 and those who earn bachelor's degrees spend $119,461. (For the purposes of IWPR's cost-benefit calculations, only the new costs to single mothers of attending college are considered.) Based on these college costs, single mothers get their money back 16.45 times over (a 1,645 percent return over their lifetimes) after earning an associate degree and 8.5 times their investment (an 850 percent return) for earning a bachelor's degree. In other words, for every dollar a single mother graduate spends on an associate degree, her family gets back $16.45 in increased earnings; for a bachelor's degree, each dollar invested brings her family a return of $8.50.

IWPR's estimates take into account the distinct profile of single student mothers—including

the fact that they tend to have lower incomes compared with other comparably-educated adults and enter college at older ages than "traditional" college students, which shortens the amount of time they will experience earnings gains associated with degree attainment.[21] Single mothers are also likely to experience a gender and racial/ethnic gap in earnings upon graduation, since in addition to being women, they are disproportionately likely to belong to racial/ethnic groups with relatively low earnings.

IWPR's lifetime earnings calculations begin at age 31 for associate degree graduates, and age 33 for bachelor's degree graduates, which represent the average age of graduation for single mothers with associates degrees and bachelor's degrees, respectively. (For comparison, lifetime earnings for high school graduates are calculated using both age 31 and age 33 as starting points for comparison to associate and bachelor's degree graduates, respectively.) These increased earnings can go a long way toward paying for a child to go to college and toward a secure retirement.

Single Mothers with Degrees Make Substantial Economic Contributions to Society

Single Mothers with College Degrees Contribute Much More in Taxes than Those without Degrees

Because they earn more than high school graduates, single mother degree holders pay more in taxes than those with high school degrees only. On average, each single mother with an associate degree contributes $36,291 in additional taxes throughout her lifetime over what she would have paid with only a high school diploma; a single mother with a bachelor's degree pays roughly an additional $84,222 in taxes (increases in tax contributions are discounted to present value; Appendix Table 1). The total lifetime tax contributions made by single mother graduates who were enrolled in 2011–12 is estimated at $7.8 billion more (discounted to present value) than had they only earned high school diplomas.

The total lifetime tax contributions made by single mother graduates who we enrolled in 2011–2012 is estimated at $7.8 billion more than had they only earned high school diplomas.

College Graduates Use Fewer Public Benefits

Single mothers who earn college degrees need less public benefit assistance. Using U.S. Census Bureau data from 2009–12 to establish the rate and amount of four-year public benefit receipt by level of educational attainment, IWPR finds that on a per-person basis, each single mother graduate saves society roughly $1,838 in public benefits spending for herself and her family over a four-year period, compared with those without college degrees (Appendix Table 1). IWPR estimates that, for the single mothers enrolled in 2011–12, 24,296 fewer single mothers received public benefits following their attainment of associate and bachelor's degrees, saving a total of $309 million dollars in public benefits spending in the four years following degree attainment.[22] Though calculating the lifetime reduction in public benefits spending as a result of single mothers' degree attainment is not possible, public benefits savings would multiply throughout a single mother's life, increasing their societal contributions even further.

The Costs and Benefits of Investing in Supports for Single Mother College Students

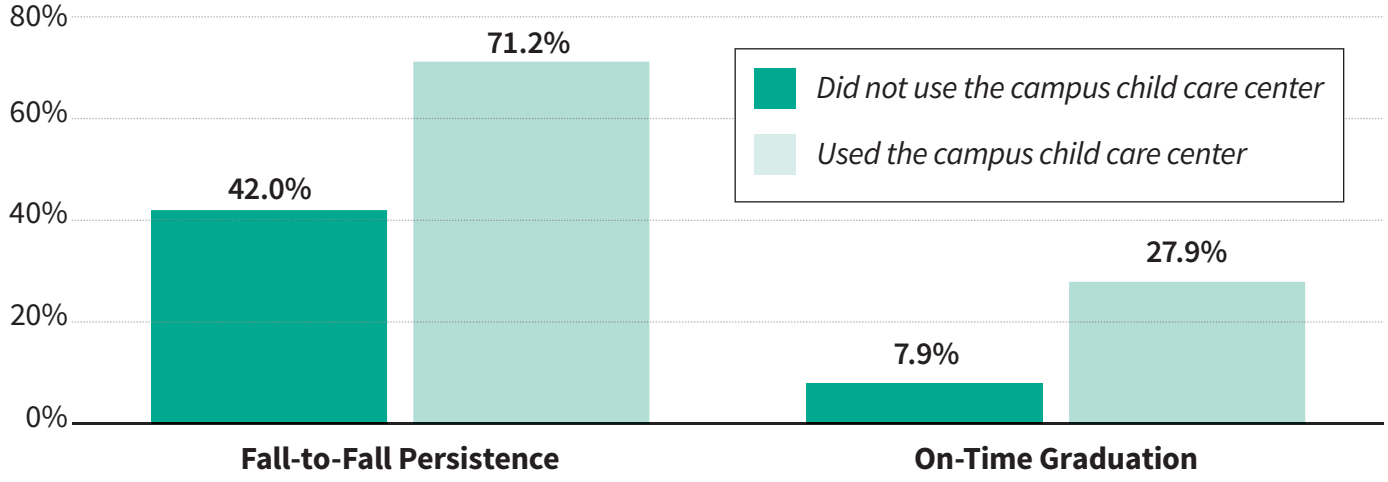
Investing in supportive services that can help single student mothers balance parenthood and higher education has the potential to improve their degree attainment, benefit their families, and contribute to a strong economy. While limited research examines the effects of specific supportive services on single student mother persistence and completion, some evidence provides a snapshot of how certain services could affect single mother college success (Table 1).

Recent analysis of institutional data from Monroe Community College in Rochester, NY, for example, finds that student parents who used campus child care center had more than *triple* the on-time graduation rate of student parents who did not use the center (Figure 3). This completion gain reflects rates of completion for single mothers who received one or more semesters of child care support. More frequent use of the campus child care center (i.e. the more semesters a single mother had her child/children enrolled in the center) was also significantly correlated with a higher likelihood of on-time graduation.[23]

FIGURE 3.

STUDENT PARENTS WHO USED CAMPUS CHILD CARE CENTER HAD *TRIPLE* THE ON-TIME GRADUATION RATE OF STUDENT PARENTS WHO DID NOT USE THE CENTER

Monroe Community College Student Parent Outcomes by Usage of the Campus Child Care Center, 2006–14



Notes: Child care participants include students who used child care for one or more semesters.

Source: Reichlin Cruse et al. 2018.

TABLE 1.

COMPLETION EFFECTS OF SUPPORTIVE SERVICE INTERVENTIONS[24]

	Completion Effect
Campus Child Care	
Data from Monroe Community College 2006-14, DeMario (2017)	20 percentage points or 253% increase in completion
Additional Financial Aid	
Franke (2014)	1.6–2.8% increase for every $1,000 in additional aid
Goldrick-Rab et al. (2016)	31.3% increase for every $3,500 in additional aid
Castleman and Long (2013)	22% increase for every $1,300 in additional aid
Case Management Services	
Evans et al. (2017)	47.1% increase through comprehensive case management services
Scrivener et al. (2015)	81.8% increase through comprehensive advising services (equivalent to case management)

IWPR obtained cost information from published research to estimate the cost of providing each support to single mothers for the time they are enrolled in college and multiplied those costs by the average number of semesters that single mothers spend completing degrees (analysis of data from the BPS finds that single mothers who attain a two-year degree are enrolled for an average of 33 months or 4.5 years; time to degree for single mothers who earn a four-year degree is an average of 49 months or 6 years; Table 2).

> **"I felt like if I don't have childcare, I'm not going to be able to obtain my degree and I'm going to stay poor and I'm going to be living in the projects for the rest of my life."**
>
> *- Single student mother interviewed by IWPR*

TABLE 2.
PER GRADUATE COSTS OF SUPPORTIVE SERVICES

Costs of Supportive Services	
Total Years to Degree for Single Mother AA Graduates (Including Time Not Enrolled)	4.5
Total Years to Degree for Single Mother BA Graduates (Including Time Not Enrolled)	6.0
Total Years Enrolled for Single Mother AA Graduates (Only Time Spent in School)	2.7
Total Years Enrolled for Single Mother BA Graduates (Only Time Spent in School)	4.0
Child Care	
Median Cost of Full-Year, Full-Time Child Care for Children 0–4	$9,247
Share of Single Mothers of Children Under 6 Needing Full-Time Child Care	78.0%
Share of Single Mothers of Children Under 6 Needing Part-Time Child Care	22.0%
Prorated Cost of a 12-Month Child Care Slot	$8,228
Total Cost of Child Care for Time to an AA Degree	**$25,253**
Total Cost of Child Care for Time to an BA Degree	**$37,419**
Financial Aid	
Average Additional Aid per Academic Year Enrolled	$2,000
Total Aid for an AA Graduate	**$7,283**
Total Aid for a BA Graduate	**$10,792**
Case Management	
Average Cost of Case Management Services per Student per Year	$1,880
Total Cost of Case Management for an AA Graduate	**$5,134**
Total Cost of Case Management for a BA Graduate	**$7,608**

Note: Child care and case management cost estimates use the average total number of months single mothers pursuing associate and bachelor's degrees are enrolled in school, excluding months not enrolled (e.g. summer months). Estimates for the cost of financial aid use the average total time to degree for single mother graduates based on the nine-month academic year ($2,000 in aid per nine-months enrolled).

Sources: Median cost of child care calculated using data from Child Care Aware (2017). Share of single mothers needing full- and part-time child care calculated using IWPR analysis of data from the U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study (NPSAS:12), 2003–04 Beginning Postsecondary Students Longitudinal Study, Second Follow Up (BPS:04/09), the Integrated Postsecondary Education Data System (IPEDS), and the 2017 Current Population Survey. Years to degree calculated from the 2003-09 BPS. Average cost of case management is from Evans et al. (2017).

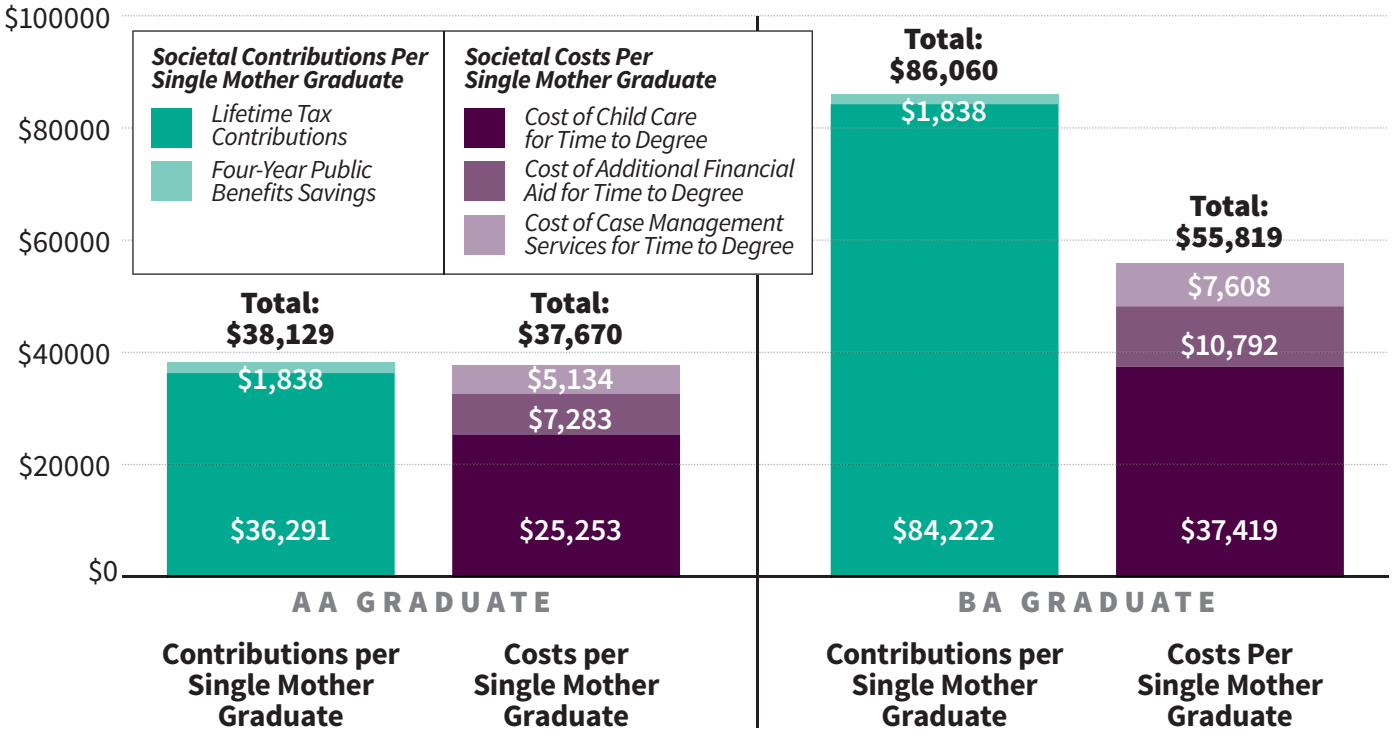
IWPR finds that investments in services for single mother graduates would more than pay for themselves in terms of lifetime tax contributions and public benefits savings (Figure 4). Based on published data from Child Care Aware, IWPR estimates that one year of full-time center-based child care for children who are infants through age four costs roughly $9,247.[25] An investment of $37,670 to provide child care services ($25,253; Table 2), additional financial aid ($7,283; Table 2), and case management services ($5,134; Table 2) for a single student mother pursuing an associate degree until degree completion is more than covered by the approximately $38,129 contributed by each single mother graduate in lifetime tax contributions (discounted to present value) and reduced public benefits receipt (Figure 4). For single mothers who graduate with four-year degrees, the costs of supportive service investments are much lower than the financial contributions made by single mother graduates: $55,819 in total support costs compared with $86,060 in tax and public benefits savings (Figure 4). While not all single mothers will graduate from college with a degree, the literature shows that this suite of supports would improve their chances tremendously, and the returns to society suggest that colleges should put much more focus and attention on improving outcomes for this population.[26]

Each single mother with an associate degree contributes $36,300 in additional taxes over her lifetime, and those with bachelor's degrees pay an additional $84,200 in taxes.

FIGURE 4.

INVESTMENTS IN SERVICES FOR SINGLE MOTHER GRADUATES WOULD MORE THAN PAY FOR THEMSELVES

Contributions and Costs to Society per Single Mother College Graduate



Note: Investments in supportive services for single student mothers would include dollars invested in single mothers that do not graduate. Increased lifetime tax contributions are discounted to their present value. Increased lifetime tax contributions and reduced public benefits spending shown in Figure 4 are only for single mothers who graduate with a degree.

Moving the Needle for Single Mother Postsecondary Success

Greater investments in supportive services that can help single mothers earn college degrees will bring substantial economic returns to individual single mothers, their children, and society as a whole. While this study did not calculate the second-generation benefits for the children of single mother college graduates, previous research suggests that those benefits are substantial: the children of college-educated parents see improved behavioral and academic outcomes in childhood and are more likely to attend college themselves as young adults.[27] In addition, those who receive high-quality early childhood education through an investment in child care for single student mothers would see well-documented benefits including increased future earnings and a reduction in crime.[28-29]

To promote single mothers' access to college and graduation, with all of the attendant benefits of reducing poverty and improving outcomes for the next generation, higher and early education systems, federal and state policy, research and advocacy, and service providers can take strategic steps toward developing the supports that single mothers need to succeed.

- Federal and state governments can utilize public funding to incentivize communities and colleges to increase degree attainment among single mothers, and track progress toward that goal.
- States should improve state child care subsidy eligibility rules to count higher education and training towards work requirements and to allow all degree types (including four-year degrees).
- Communities and higher education institutions should bridge the gap between the early and higher education systems to improve access to quality child care—for example, by expanding the number of Early Head Start/Head Start programs on college campuses or building relationships between campuses and local child care resource and referral agencies.
- Early education organizations can continue building systems to encourage parents to attain college while participating in child care and Pre-K programs, and work to form strong bonds with college systems and institutions at the national, state, and local levels.
- Researchers should conduct rigorous evaluations of student parent support and campus child care programs to better understand and identify best practices and their impact on student parents' persistence and completion rates.

Greater investments in supportive services that can help single mothers earn college degrees will bring substantial economic returns to individual single mothers, their children, and society as a whole.

- Philanthropy can lead networks and engage in design-thinking to identify, evaluate, and scale promising, affordable strategies for increasing college success for single mothers.
- Colleges and universities can:
  - Develop partnerships, programs, and interventions designed to ensure that available child care, case management, and financial aid, as well as other community and institutional supports, reach the single student mother population;
  - Collect and/or analyze institutional data on students' parent status and outcomes to better understand student parents' experiences during and after college, and to assess progress toward improving their completion;
  - Become vocal advocates for the kinds of public benefits, such as the Child Care Access Means Parents in School (CCAMPIS) program and Child Care Development Fund subsidies, that support students in college;
  - Establish family-friendly campuses to create welcoming, supporting college environments for students with children.

APPENDIX TABLE 1.

COSTS AND BENEFITS OF SINGLE MOTHER DEGREE ATTAINMENT, FOR SINGLE MOTHERS ENROLLED IN 2011–2012

Baseline Costs and Benefits of Single Mothers' Degree Attainment:		
Total Number of Single Mothers Enrolled at Two- and Four-Year Institutions, 2011–12		1,275,413
Share of Single Mothers Attaining AA & BA Degrees at All Institutions, 2003–09		8.2%
	AA Degrees	**BA Degrees**
Average Total Time to Degree for Single Student Mothers, 2003–09 (in Years)	4.5	6.0
Total Number of Single Mothers Enrolled in AA/BA Degree Programs, 2011–12	893,216	382,197
Share of Single Student Mothers at All Institutions/Programs Attaining Undergraduate Degrees, 2003–09	14.7%	9.7%
Number of Projected Single Mother Graduates at All Institutions Based on Number of Single Student Mothers Enrolled in 2011–12	131,231	36,909
Costs of Earning A Degree *(Over What a Single Mother would Spend Regardless of College Enrollment, i.e. Only New Costs)*		
Cost of Earning a Degree (Including Tuition, Fees, Books and Supplies, Transportation, and Other College-Related Expenses; Opportunity Costs; and (Nominal) Additional Child Care — Based on Current Paid Child Care Usage among Students; Estimates Do Not Include Room and Board)	$21,094	$62,590
Average Total Grants and Scholarships Received Over Time to Degree (Excluding Loans)	$11,796	$27,770
Net Average Cost to Single Mothers of Earning a Degree	$9,298	$34,820
Benefits of Earning A Degree		
Increased Earnings		
Average Annual Earnings Gain for Single Mother Graduates (Over the Annual Earnings of a Single Mother with Only High School)	$7,500	$15,000
Average Lifetime Earnings Gain (Over the Lifetime Earnings of a Single Mother with Only High School; Discounted to Present Value)	$152,927	$296,044
Total Average Lifetime Earnings for All Single Mother Graduates Enrolled in 2011–2012 (Discounted to Present Value; 168,139 Total Graduates)	$20 billion	$11 billion
Net Lifetime Benefit to Single Mother Graduates (Discounted to Present Value)	$143,628	$261,225
Return to the Individual Single Mother for Every Dollar She Spends on a Degree	$16.45	$8.50
Decreased Poverty		
Number of Single Mother Graduates Lifted Out of Poverty	21,096	10,550
Percentage Decrease in Share of Former Single Mother Former Students Living in Poverty	38.1%	67.8%
Increased Tax Contributions		
Average Increase in Lifetime Tax Contributions among Graduates (Over the Annual Lifetime Tax Contributions of a Single Mother with Only High School; Discounted to Present Value)	$36,291	$84,222
Total Additional Tax Contributions for Single Mother Graduates Enrolled in 2011–12 (Over the Total Contributions from All Single Mothers with Only High School; Discounted to Present Value)	$4.7 billion	$3.1 billion
Decreased Four-Year Public Assistance Receipt		
Per Single Mother Graduate Savings in Public Assistance Receipt		$1,838
Decrease in Public Assistance Receipt when Single Mothers Attain a Degree (for the Four Years Post-Graduation)		$309 million

Note: The net lifetime benefit to single mother graduates is calculated as the difference between the average lifetime earnings gain and the average net cost of earning a degree, excluding the cost of room and board, which does not represent a new cost associated with attending college to single student mothers.

Acknowledgements

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ENDNOTES

1 Authors are listed alphabetically.

2 Anthony Carnevale, Stephen J. Rose, and Ban Cheah. 2011. *The College Payoff: Education, Occupations, Lifetime Earnings*. Washington, DC: Georgetown University, Center on Education and the Workforce. <https://cew.georgetown.edu/wp-content/uploads/2014/11/collegepayoff-complete.pdf> (accessed March 9, 2016).

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7 Thomas S. Dee. 2004. "Are There Civic Returns to Education?" *Journal of Public Economics* 88 (9–10): 1697–1720.

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10 Lindsey Reichlin Cruse, Barbara Gault, Jooyeoun Suh, and Mary Ann DeMario. 2018. "Time Demands of Single Mother College Students and the Role of Child Care in Their Postsecondary Success." Briefing Paper, IWPR #C468. Washington, DC: Institute for Women's Policy Research. <https://iwpr.org/publications/single-mothers-college-time-use/>.

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15 Kruvelis et al. 2017. "Single Mothers in College."

16 Quotes included in this briefing paper are from Institute for Women's Policy Research interviews with single student mothers at the 2017 Student Parent Success Symposium at Endicott College.

17 A full methodological note can be found in Milli et al. forthcoming. "Methods for Investing in Single Mothers College Success." Washington, DC: Institute for Women's Policy Research.

18 Institute for Women's Policy Research (IWPR). 2018. IWPR analysis of data from the U.S. Department of Education, National Center for Education Statistics, 2011–12 National Postsecondary Student Aid Study and the Integrated Postsecondary Education Data System (IPEDS).

19 IWPR's estimates of the lifetime earnings gains for single mother college graduates are lower than other estimates for a number of reasons. IWPR's estimates reflect the difference in lifetime earnings as the result of obtaining a degree over what a single mother would have earned with only a high school diploma and assume that some single mothers will have $0 earnings as well as earnings from part-time employment to capture the full employment and earnings impact of higher education. These estimates are also for single mothers ages 31-33 years to 65 years, compared with other estimates that look at graduates ages 25-65, meaning that single mothers experience earnings gains related to degree attainment for a shorter amount of time than other graduates. Finally, the estimates are lower than for other students because they take into account the fact that single mothers earn less on average than all women, and the estimates are discounted to present value.

20 For information on amounts included in college costs, see: Jennifer Ma, Sandy Baum, Matea Pender, and Meredith Welch. 2016. *Trends in College Pricing: 2016*. New York, NY: College Board. <https://trends.collegeboard.org/sites/default/files/2016-trends-college-pricing-web_0.pdf> (accessed November 21, 2016).

21 IWPR assumes that the annual earnings gains estimates for single mothers as a result of degree attainment are constant across a person's working life. Previous research has not yet examined how the returns to education change (if at all) over working careers. An exploratory analysis of lifetime earnings profiles by educational attainment conducted by IWPR following the methodology of Julian and Kominski (2011), however, indicated that the difference in earnings between individuals with college degrees and those with high school only were relatively constant over one's working life. Tiffany Julian and Robert Kominski. 2011. *Education and Synthetic Work-Life Earnings Estimates* (American Community Survey Reports ACS-14). U.S. Department of Commerce, Bureau of the Census. <https://www.census.gov/prod/2011pubs/acs-14.pdf> (accessed May 24, 2018).

22 Public benefit receipt includes receipt of Medicaid, Supplemental Nutrition Assistance Program (SNAP), Housing Assistance, Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), and General Assistance (GA).

23 Mary Ann DeMario 2017. "Outcomes of Monroe Community College Student Parents Who Used the Campus Child Care Center vs. Those Who Didn't, Fall 2006 - Fall 2014. Unpublished Overview of Research Findings."

24 See: DeMario 2017. "Outcomes of Monroe Community College Student Parents." Ray Franke. 2014. "Towards the Education Nation? Revisiting the Impact of Financial Aid, College Experience, and Institutional Context on Baccalaureate Degree Attainment for Low-Income Students." Philadelphia, PA, April 3-7, 2014. Sara Goldrick-Rab, Robert Kelchen, Douglas N. Harris, and James Benson. 2016. "Reducing Income Inequality in Educational Attainment: Experimental Evidence on the Impact of Financial Aid on College Completion." American Journal of Sociology 121 (6): 1762–1817. Benjamin L. Castleman and Bridget Terry Long. 2013. "Looking Beyond Enrollment: The Causal Effect of Need-Based Grants on College Access, Persistence, and Graduation." Working Paper. Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w19306>. William N. Evans, Melissa S. Kearney, Brendan C. Perry, and James X. Sullivan. 2017. "Increasing Community College Completion Rates among Low-Income Students: Evidence from a Randomized Controlled Trial Evaluation of a Case Management Intervention." Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w24150> (accessed January 2, 2017). Susan Scrivener, Michael J. Weiss, Alyssa Ratledge, Timothy Rudd, Colleen Sommo, and Hannah Fresques. 2015. Doubling Graduation Rates: Three-Year Effects of CUNY's Accelerated Study in Associate Programs (ASAP) for Developmental Education Students. New York, NY: MDRC. <https://www.mdrc.org/sites/default/files/doubling_graduation_rates_fr.pdf> (accessed December 28, 2017).

25 The cost of a child care slot for children under six is calculated as the average of the national median cost of infant care, toddler care, and four-year-old care using data from Child Care Aware. Institute for Women's Policy Research. 2018. IWPR analysis of data from Child Care Aware of America 2017. "Parents and the High Cost of Child Care: 2017 Appendices." Arlington, VA: Child Care Aware of American. <https://usa.childcareaware.org/wp-content/uploads/2018/01/2017_CCA_High_Cost_Appendices_FINAL_180112_small.pdf> (accessed February 22, 2018).

26 Higher and faster rates of completion would have positive revenue implications for higher education institutions, but those cost savings were not estimated for this study.

27 Attewell and Lavin. 2007. *Passing the Torch.*

28 Jose Y. Diaz and Gabriel Piña. 2013. *Return on Investment in the Jeremiah Program*. Saint Paul, MN: Wilder Research. <https://www.wilder.org/Wilder-Research/Publications/Studies/Jeremiah%20Program/Return%20on%20Investment%20in%20the%20Jeremiah%20Program,%20Full%20Report.pdf> (accessed April 23, 2018).

29 Lawrence J Schweinhart, Jeanne Montie, Zongping Xiang, W Steven Barnett, Clive R Belfield, and Milagros Nores. 2005. *The High/Scope Perry Preschool Study Through Age 40: Summary, Conclusions, and Frequently Asked Questions*. Ypsilanti, MI: High/Scope® Educational Research Foundation. <http://nieer.org/wp-content/uploads/2014/09/specialsummary_rev2011_02_2.pdf> (accessed May 31, 2018).