

OHIO EARNED INCOME TAX CREDIT REFUNDABILITY

A Cost-Benefit Analysis

Rob Moore and Tong Zhou
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Executive Summary

This study is a cost-benefit analysis of proposed reforms to Ohio’s state earned income tax credit. We analyze four alternative schemes to make Ohio’s earned income tax credit refundable. We find that proposals to make the earned income tax credit refundable would increase low-income worker wages by an average of \$150-900 (a 1 to 6% increase in wages for the average EITC recipient), increase employment by 3,000-59,000 workers, give families resources that would prevent 20-120 cases of low birthweight and induce 40-230 new college enrollments every year, and generate anywhere from \$5 million to \$134 million in total annual net economic benefits.

Background

The federal earned income tax credit is one of the most effective antipoverty programs in the United States, pulling almost 9 million Americans out of poverty and assisting another 20.2 million Americans in poverty every year.¹ The earned income tax credit works by supplementing the wages of low-income workers with a credit on taxes delivered at the end of the tax year. The success of the federal earned income tax credit has encouraged many states to create their own state-level tax credits. Currently, 29 states have a state-level earned income tax credit, including Ohio.²

The earned income tax credit is designed to increase workforce participation. This is achieved by increasing the size of the credit with more income at the low end of the income spectrum (the “phase-in” range of the program). The program is then targeted at low-income workers by gradually reducing the size of the credit at higher incomes (the “phase-out” range of the program). The federal credit also is more generous to families with children, as can be seen in Figure 1.

Federal EITC Schedule for Single-Parent Households (2018 Data)

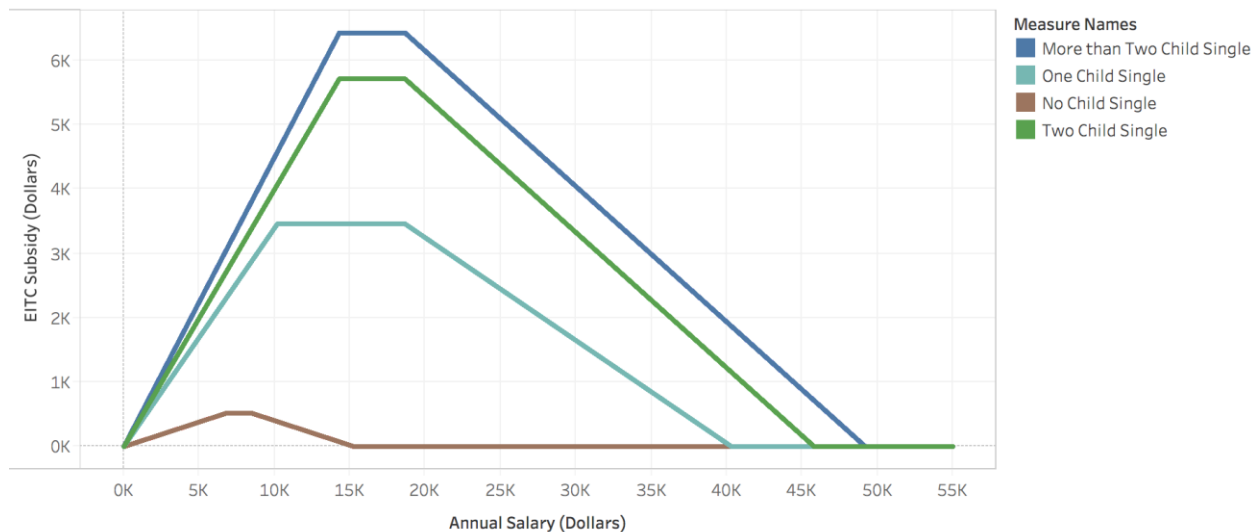


Figure 1: Federal EITC Schedule for Single-Parent Households

¹ Beltrán, Jennifer, “Working-Family Tax Credits Lifted 8.9 Million People out of Poverty in 2017,” Center on Budget and Policy Priorities, January 15, 2019.

² “Tax Credits for Working Families: Earned Income Tax Credit (EITC),” National Conference of State Legislatures, March 25, 2019.

As figure 1 shows, the earned income tax credit is quite generous for families with children, with a low-income family with three or more kids making \$15,000 receiving a 40% wage subsidy through the credit.

State-level earned income tax credit policy varies substantially. The size of the credit, usually determined as a percentage match to the federal credit, ranges from 3.5% of the federal credit in Louisiana to 45% of the federal credit in California.³ Six of twenty-nine states (including Ohio) also do not have a “refundable” earned income tax credit.⁴ This means that a worker cannot collect any more credit than her state income tax liability. While non-refundability can save the state money, it limits the ability of the earned income tax credit to assist low-income workers since they are most likely to have low initial tax liabilities.

Recently, Governor Mike DeWine signed a change to the state earned income tax credit to increase its match to the federal earned income tax credit from 10% to 30%. The change did not, however, make the state earned income tax credit refundable. Refundability and increasing the state EITC match are two options the state has to increase generosity of the earned income tax credit.

This cost-benefit analysis aims to answer three main questions.

1. What would the economic impact be of policies to increase generosity of the earned income tax credit?
2. How would changes in the state earned income tax credit impact incomes and workforce participation of recipients?
3. How would changes in the state earned income tax credit impact health, education, and other human development indicators?

Methodology

This study uses standard policy analytic techniques to provide answers to the above questions. We carry out a best-practice cost-benefit analysis following the guidance in Boardman et al’s *Cost-benefit Analysis: Concepts and Practice* to determine economic impact. We then use insights gleaned from this process to determine wage, workforce, health, and education impacts of EITC reform alternatives.

Alternatives

In light of the recent changes made to the state earned income tax credit, this study focuses on two aspects of earned income tax credit design: refundability and percentage match to the federal tax credit. In particular, the study compares the status quo 30% match of the federal schedule nonrefundable tax credit to 10%, 20%, 30%, and 40% refundable alternatives.

Standing

For purposes of this study, we consider the state of Ohio to be the appropriate level of analysis. As much as possible, benefits and costs counted are limited to residents of the state of Ohio.

³ Ibid.

⁴ Ibid.

Impacts

In order to determine the impacts of changes to the state earned income tax credit, we conducted a literature review on impacts of the federal and state earned income tax credits. This literature review resulted in the determination of four major economic impacts of the earned income tax credit.

1. **Marginal Excess Tax Burden.** Financing of the earned income tax credit requires tax increases elsewhere, which have a distortionary impact on the economy.
2. **Workforce Participation Inducement.** Since the earned income tax credit provides incentive to work, it pulls people who otherwise would not choose to work into the workforce. This creates a distortion in the economy as it defers people from preferred nonmarket activity such as childrearing and housework to market work.
3. **Reduction in Low Birthweight Children.** The earned income tax credit has been shown to reduce incidence of low birthweight children by improving family resources.⁵ Since low birthweight is highly correlated with infant mortality, earned income tax credit expansions can reduce infant deaths by improving birthweight outcomes.
4. **Increased College Enrollment.** Studies have found that earned income tax credit expansions lead to higher college enrollment rates for children in families of earned income tax credit recipients.⁶ Higher enrollment rates mean more children attaining higher education, which has myriad social and personal benefits.⁷

To estimate the quantitative impact of the earned income tax credit on these four outcomes, we first estimate the total expenditure impact of reform alternatives and their average wage impacts. Then we determine the size of impacts based off these estimates.

Federal and State Expenditures and Average Wage Impacts

Before estimating any impacts to individuals, we first estimated the future trajectory of enrollment in the federal earned income tax credit. Over the past four years, federal EITC spending in Ohio has been rather steady, ranging between \$2.2 and \$2.3 billion according to the IRS.⁸ We assume that federal EITC spending will stay constant at the average rate of the past four years, which comes out to a projected \$2.3 billion in federal EITC spending in Ohio per year.

We chose this estimation technique over an estimation technique suggested by the Center on Budget and Policy Priorities (CBPP).⁹ We made this choice because their method since relies on projections made by the Joint Committee on Taxation, projections that have overestimated federal

⁵ Hilary W. Hoynes, Douglas L. Miller, and David Simon, UC Davis, *The EITC: Linking Income to Real Health Outcomes*

⁶ Diana Schoder, *From tax credits to college credits*, May 9 2018

⁷ Walter W. McMahon, *The Private and Social Benefits of Higher Education: The Evidence, Their Value, and Policy Implications*, March 2010

⁸ “Statistics for Tax Returns with EITC,” *Earned Income Tax Credit and Other Refundable Credits*, eitc.irs.gov, 11 March, 2019.

⁹ Williams, Erica and Samantha Waxman, “How Much Would a State Earned Income Tax Credit Cost in Fiscal Year 2020?,” *Center on Budget and Policy Priorities*, March 7, 2019.

EITC outlays by as much as \$10 billion.¹⁰ Under the alternative estimation technique, potential net benefits would have been higher.

With this number, we estimate what the state expenditures would be for alternative EITC proposals. If the state EITC were made refundable, the math is rather simple: the state expenditures on the state EITC will theoretically match that percentage of the cost of the federal EITC. We know, however, that anywhere between 3 and 19% of tax filers who claim the federal EITC do not claim the state EITC.¹¹ Thus, we follow the advice of Williams and Waxman and apply at 10% “haircut” to the state expenditures on a refundable EITC.¹²

For the baseline nonrefundable scenario, we combine state Department of Taxation projection of spending on the previous 10% nonrefundable earned income tax credit with Legislative Service Commission estimates for the additional cost of expanding the earned income tax credit to 30% of the federal level.^{13,14} Table 1 below shows our estimation of total state expenditure for four alternatives.

Refundable	Federal Match	2020 Expenditures	Average Subsidy
No (status quo)	30%	\$83M	\$100
Yes	10%	\$210M	\$250
Yes	20%	\$420M	\$500
Yes	30%	\$630M	\$750
Yes	40%	\$840M	\$1,000

Table 1: Ohio State Expenditure Estimates

Our estimates for refundable options come in about 7% lower than the Center on Budget and Policy Priorities’s estimates, which came in at \$226M for a 10% refundable credit and \$453M for a 20% refundable credit. This is because we used historical IRS data as a guide rather than the more bullish Joint Commission on Taxation projections used by CBPP.

Overall, these numbers suggest that reform packages to make the earned income tax credit refundable would result in anywhere from \$130 million to \$760 million in additional expenditures by the state.

The alternative plans would have varying impacts on individual incomes as well. Changing from the status quo policy of 30% nonrefundable to an alternative that makes the EITC refundable would mean an extra \$150-\$900 per year in the pockets of the average low-income household. Since the average Ohio household claiming EITC makes \$14,000 a year, this change would represent an increase of 1-6% in total income for the average EITC household.¹⁵

¹⁰ “Estimates of Federal Tax Expenditures for fiscal years 2018-2022,” Joint Committee on Taxation, October 4, 2018.

¹¹ Williams and Waxman, “How Much Would a State Earned Income Tax Credit Cost in Fiscal Year 2020?”

¹² Ibid.

¹³ McClain, Jeffrey, “Tax Expenditure Report: The State of Ohio Executive Budget for Fiscal Years 2020-2021,” Ohio Department of Taxation, March 8, 2019.

¹⁴ “Transportation Budget in Brief: House Bill 62 – As Enacted,” Legislative Budget Office of the Legislative Service Commission, 2019.

¹⁵ “Earned Income Tax Credit (EITC) Interactive Database,” Tax Policy Center, Accessed July 24, 2019.

Marginal Excess Burden of Taxation

When a program such as the earned income tax credit is created, its funding must come from somewhere. If funding is provided by cuts to programs such as early education, the cost of financing can be very high. Alternatively, if funding is provided by closing wasteful tax loopholes or cuts to ineffective programs, the cost of financing can be quite low.

In the absence of perfect information about the political circumstances surrounding a reform, we model financing of alternative reform proposals as increases in state taxes. Increases in taxes have economic impacts: increases in sales taxes mean consumers will reduce consumption on the margin, increases in income taxes will induce workers to reduce work hours on the margin, increases in corporate taxes will reduce business activity.¹⁶

While the “sticker price” of the expenditures to fund programs is important for budgeting purposes, much of the economic cost of a given program is made up as a benefit to participants in the program. Because of this, the bulk of the cost of a program represents a “transfer” to other recipients. For this reason, the economic cost of the program should be measured in how the tax distorts the economy, not in the size of the transfer, where the costs of the tax are canceled out by subsidies paid out.

We estimate the marginal excess burden of taxation at 12-17%, meaning 12-17 cents of economic costs for every dollar spent on the EITC. This is drawn from most recent US estimates of the marginal excess burden of taxation.¹⁷ We then estimate the cost of the marginal excess burden of taxation of alternative policy options by multiplying state expenditures by the marginal excess burden of taxation (MEBT).

Financing of earned income tax credit expansions through tax increases would result in tax distortions that range from \$10 million to \$140 million depending on the size of the expansion and the impact of the taxes on consumption, labor, and other economic activity. Table 2 below shows the estimation of marginal excess burden of taxation (MEBT) induced by different EITC reform alternatives.

Refundable	Federal Match	2020 Low-End MEBT Cost	2020 High-End MEBT Cost
No (status quo)	30%	\$10M	\$14M
Yes	10%	\$26M	\$35M
Yes	20%	\$51M	\$70M
Yes	30%	\$77M	\$105M
Yes	40%	\$102M	\$141M

Table 2: Marginal Excess Burden of Taxation Estimates

Workforce Impact

A key feature of the earned income tax credit is that it is only available to workers. This creates an incentive for people to work who would not otherwise work, thus bringing people into the workforce who would not otherwise be there.

¹⁶ Boardman, Anthony et. al., *Cost-Benefit Analysis: Concepts and Practice: 5th Edition*, 2018.

¹⁷ Dahlby, Bev, *The Marginal Cost of Public Funds: Theory and Application*, 2008

While policymakers may value workforce participation as an end in itself, inducing greater workforce participation in a competitive labor market results in economic costs, pulling workers away from socially beneficial nonmarket activities such as caregiving, housework, and volunteering. Targeted labor subsidies in inefficient labor markets can lead to economically efficient outcomes, but labor subsidies broadly applied will lead to reduction in economic welfare.

In order to model the workforce impact associated with earned income tax credit alternatives, we used estimates of the impact of changes in state earned income tax credit generosity on labor force participation by the Congressional Budget Office.¹⁸ This study found that a 1% increase in wages has historically led to a 0.3-1.2% increase in labor force participation rate for the EITC-eligible population. Using this estimate, we are able to estimate the relative labor impact of alternative earned income tax credit reform proposals.

This means that the current 30% nonrefundable earned income tax credit is inducing 2,000-7,000 people to enter the workforce who would not otherwise do so. A conservative expansion to a 10% refundable tax credit would create 3,000 to 10,000 new jobs and a robust expansion to a 40% refundable tax credit would create 16,000 to 59,000 new jobs. Table 3 shows our estimation of workers pulled into the labor market through different EITC reform alternatives.

Refundable	Federal Match	2020 Low-End Workforce Impact	2020 High-End Workforce Impact
No (status quo)	30%	2,000 new workers	7,000 new workers
Yes	10%	5,000 new workers	17,000 new workers
Yes	20%	9,000 new workers	34,000 new workers
Yes	30%	14,000 new workers	50,000 new workers
Yes	40%	18,000 new workers	66,000 new workers

Table 3: Workforce Impact Estimates

While there are potential positive externalities to employment, we take a conservative route in this paper by not favoring labor force participation rate over nonmarket activity. For this reason, we model induced workforce participation as a cost, pulling workers away from preferred nonmarket activities such as caregiving, housework, and early-stage entrepreneurship.

In order to model the cost of induced labor force participation, we model the low-income labor force as in equilibrium, using a standard supply/demand model to measure the impact of the subsidy on labor force participation and the size of the deadweight loss (economic distortion) caused by the subsidy. Table 4 below estimates the deadweight loss (DWL) induced by different EITC reform alternatives.

¹⁸ Robert McClelland, “A Review of Recent Research on Labor Supply Elasticities”, Working Paper Series, Congressional Budget Office, October 2012.

Refundable	Federal Match	2020 Low-End Workforce Costs	2020 High-End Workforce Costs
No (status quo)	30%	Negligible	Negligible
Yes	10%	\$1M	\$2M
Yes	20%	\$2M	\$9M
Yes	30%	\$5M	\$19M
Yes	40%	\$9M	\$33M

Table 4: Workforce Cost Estimates

Though the workforce impacts on the economy are negative, they are much smaller than the taxation impacts on the economy, ranging from 4-23% of the size of the deadweight loss caused by taxation. Due to possible positive impacts on the economy in noncompetitive labor markets, we consider this a conservative estimate of the potential workforce benefits of earned income tax credit expansion.

Low Birthweight Impact

A substantial benefit of the earned income tax credit is its impact on public health. In particular, families with more resources are more likely to have the care that leads to children being born at normal weights. An examination of 1986, 1990, 1993 federal expansions of the earned income tax credit found that a \$1,000 increase in earned income tax credit income reduced instances of low birthweight by seven percent.¹⁹

Assuming EITC expansions would have similar impacts in Ohio, we can estimate how many children would be born at normal weight rather than low birthweight with each earned income tax credit alternative. Table 5 outlines estimates of the number of children who would be born at normal weight under different EITC reform alternatives.

Refundable	Federal Match	2020 Additional Children Born Normal Birthweight
No (status quo)	30%	10 children
Yes	10%	30 children
Yes	20%	60 children
Yes	30%	90 children
Yes	40%	120 children

Table 5: Birthweight Impact Estimates

Thus, we would expect an additional 20-110 children to be born normal birthweight rather than low birthweight every year under EITC reform scenarios. According to the National Center for Health

¹⁹ Hoynes, Hilary W. Douglas L. Miller, and David Simon, “The EITC: Linking Income to Real Health Outcomes,” UC Davis Center for Policy Research, 2013.

Statistics, 140,000 children were born in Ohio last year, and 8.5% were low birthweight.²⁰ This means that about 12,000 children were born low birthweight in Ohio last year. In addition, this means that EITC reforms could have modest impacts on low birthweights, reducing the number of children born low birthweight by 0.2-1% every year depending on the size of the reform.

In order to monetize the benefits of reduction in low birthweight children, we estimated the reduction in infant mortality caused by reducing instances of low birthweights. A child born at low weight is twenty-four times more likely to die than a child born at normal weight. We calculated the expected reductions in infant mortality from the policy using relative infant mortality rates for low birthweight and normal birthweight infants. Since a low birthweight infant in the United States has a 5.1% chance of death and a normal birthweight infant has a 0.2% chance of death, we estimate that a child born at normal weight rather than low weight reduces its chances of death by about 4.9 percentage points.²¹ We used this to calculate the likelihood of each EITC reform alternative would prevent an infant death, then used the standard value of a statistical life suggested by Boardman et al (\$11 million) to calculate the economic impact of the reduction in infant mortality.²² Table 6 below shows the monetized estimates of health benefits associated with reductions in low birthweights.

Refundable	Federal Match	Number of Infant Deaths Averted	Health Benefits²³
No (status quo)	30%	1	\$6M
Yes	10%	1	\$16M
Yes	20%	3	\$33M
Yes	30%	4	\$49M
Yes	40%	6	\$65M

Table 6: Health Benefit Estimates

As can be seen above, policy changes that make the earned income tax credit refundable do not have a large impact on the number of infant deaths averted, only saving anywhere from zero to five lives a year. These infant deaths averted, however, have a substantial economic benefit, much larger than the costs related to workforce distortions calculated above. The \$11 million figure could even be underestimating the value of a statistical life of an infant as that number is usually used to calculate adult lives. Therefore, these numbers should be considered conservative estimates of the economic value of reductions in low birthweight created by earned income tax credit reform alternatives.

²⁰ “Final Natality Data,” National Center for Health Statistics, 2019.

²¹ Matthews et al., “Infant Mortality Statistics from the 2010 Period Linked Birth/Infant Death Data Set,” National Vital Statistics Reports, Vol 62 No 8, National Vital Statistics System, National Center for Health Statistics, Centers for Disease Control and Prevention, US Department of Health and Human Services, December 18, 2013.

²² Boardman et. al, *Cost-Benefit Analysis, Concepts and Practice*.

²³ Though economic impact is fully calculated using the value of a statistical life, expected economic value differs compared to expected lives saved due to rounding.

Higher Education Attainment

An additional demonstrated impact of the earned income is its impact on higher education attainment. Recent research suggests that an additional \$1,000 in earned income tax credit leads to a 1.3 percentage point increase in a high schooler's chance in enrolling in college.²⁴ The authors theorize that this may be the impact of lowering barriers caused by up-front costs involved with the college application process.

Assuming similar impacts in Ohio, we are able to project the impact of state earned income tax credit reform alternatives on college enrollment. We first estimate the number of students from EITC families graduating from high school by multiplying the number of high school graduates as reported by the Ohio Department of Education (120,000) by a weighted graduation ratio to factor in lower graduation rates for low-income students as reported by the Everyone Graduates Center at the School of Education at Johns Hopkins University and the Ohio Department of Education (77.6%/86.1%) and the ratio of EITC-claiming households to total households as reported by the IRS and the US Census Bureau (800,000/4,600,000).^{25,26,27,28} We then multiply this number by 1.3% weighted by the size of the respective EITC reform alternatives to estimate the number of new students who will enroll in college under the different alternative scenarios. Table 7 below shows our estimate of how many additional students will enroll in college under alternative EITC reform scenarios.

Refundable	Federal Match	2020 Additional College Enrollment
No (status quo)	30%	20 new students
Yes	10%	60 new students
Yes	20%	130 new students
Yes	30%	190 new students
Yes	40%	250 new students

Table 7: Additional College Enrollment Estimates

In order to monetize the benefits of new college enrollment, we first estimate how many students graduate from two-year and four-year higher education programs. We assume that the

²⁴ Manoli, Day and Nicholas Turner, "Cash-on-Hand and College Enrollment: Evidence from Population Tax Data and the Earned Income Tax Credit," *American Economic Journal: Economic Policy*, Vol. 10, No. 2, May 2018.

²⁵ "5-Year Graduates Count: 2015-2016 School Year," bireports.education.gov, Ohio Department of Education, Accessed July 25, 2019.

²⁶ DePaoli et al, "Building a Grad Nation: Progress and Challenge in Raising High School Graduation Rates," Everyone Graduates Center at the School of Education at John Hopkins University, Annual Update 2018

²⁷ "Earned Income Tax Credit (EITC) Interactive Database," Tax Policy Center, Accessed July 24, 2019.

²⁸ "QuickFacts: Ohio: 2013-2017," United States Census Bureau, Access July 25, 2019.

students who enroll in college due to the earned income tax credit reflect the ratios of students who enroll in two-year versus four-year in the general population. Using data from the Ohio Department of Higher Education, we find that 41% of college enrollees enroll in community college (28,000/(28,000+40,000)), with the remainder enrolling in four-year universities.^{29,30} We then assume these students graduate at the same rates as the 2011 cohort, 49% for community college enrollees and 67% for four-year university enrollees, and multiply the enrollment number by these numbers to estimate the number of new graduates the earned income tax credit reform alternatives would create. Table 8 below shows the estimation of students graduate from two-year and four-year higher education programs.

Refundable	Federal Match	Community College Graduates	Four-Year University Graduates
No (status quo)	30%	5 graduates	10 graduates
Yes	10%	13 graduates	25 graduates
Yes	20%	25 graduates	50 graduates
Yes	30%	38 graduates	75 graduates
Yes	40%	50 graduates	100 graduates

Table 8: Additional University Graduate Estimates

Our final step in monetizing these benefits is calculating the value of higher education. We draw our estimate of the value of higher education from a study by Walter McMahon on the value of higher education, including social and private benefits.³¹ We discount these benefits for 44 years to reflect the average career length at 7% (a high discount rate) and multiply this number by the total graduates from each program to determine low-end estimates of the value of higher education. We use 3% (a low discount rate) to determine high-end estimates of the value of higher education.³²

Table 9 shows the estimated higher education benefits from earned income tax credit reform alternatives.

²⁹ “Three-Year Success Measures: Fall 2011 Cohort of First-Time, Full-Time, Degree/Certificate-Seeking Undergraduate Students,” Ohio Department of Higher Education, October 2015.

³⁰ “Six-Year Success Measures: Fall 2011 Cohort of First-Time, Full-Time Degree Seeking Undergraduate Students,” Ohio Department of Higher Education, March 2018.

³¹ McMahon, Walter, “The Private and Social Benefits of Higher Education: The Evidence, Their Value, and Policy Implications,” *Advancing Higher Education*, March 2010.

³² Notably, all other benefits and costs are accrued same-year, so this is the only calculation that requires discounting.

Refundable	Federal Match	Low-End Higher Education Benefit	High-End Higher Education Benefit
No (status quo)	30%	\$10M	\$20M
Yes	10%	\$30M	\$60M
Yes	20%	\$50M	\$110M
Yes	30%	\$80M	\$170M
Yes	40%	\$100M	\$220M

Table 9: Education Benefit Estimates

Higher education benefits end up being the largest single economic impact of the four, with conservative refundability reforms leading to gains of \$20-40 million in economic activity and robust reforms leading to \$90-200 million in new economic activity generated by new college enrollment.

Sensitivity Analysis

Before calculating total net benefits for earned income tax credit reform scenarios, we performed sensitivity analysis using a Monte Carlo simulation model. Our model specified possible ranges of results for each variable input into our cost-benefit model then chose them at random 10,000 times to simulate 10,000 scenarios in which each earned income tax credit reform alternative was put in place. We assumed a uniform distribution of possible outcomes for each input, meaning each possibility for the inputs of marginal excess burden of taxation, labor elasticity, and discount rates were varied randomly in the 10,000 simulations. Using this method, we were able to calculate likely low-end and high-end estimates of net benefits (net benefit simulations that fell within 95% of all simulated outcomes) and the probability that the program would result in net benefits.

Net Benefit Calculations

Table 10 shows the final results for low-end, expected, and high-end benefits associated with the current 30% nonrefundable earned income tax credit policy.

Impact	Low-End	Expected	High-End
Tax Distortion	-\$14M	-\$12M	-\$10M
Labor Distortion	Negligible	Negligible	Negligible
Health Benefit	\$6M	\$6M	\$6M
Education Benefit	\$10M	\$15M	\$22M
Total	\$4M	\$9M	\$17M

Table 10: Estimated Impact of a 30% Non-Refundable Earned Income Tax Credit

As can be seen here, the current, status-quo policy's \$12 million in expected tax costs are made up for by the health and education benefits gained by the policy. Likely scenarios clustered towards lower values, meaning more extreme outcomes tended in the positive net benefits direction. This is a

trend that played out in all policy reform alternatives. In all 10,000 simulations we ran of the current policy, the net benefits figure was positive.

Table 11 shows the total expected economic impacts for a conservative 10% refundable reform policy. These are calculations against the baseline of no earned income tax credit.

Impact	Low-End	Expected	High-End
Tax Distortion	-\$35M	-\$30M	-\$26M
Labor Distortion	-\$2M	-\$1M	Negligible
Health Benefit	\$16M	\$16M	\$16M
Education Benefit	\$26M	\$37M	\$55M
Total	\$8M	\$22M	\$41M

Table 11: Estimated Impact of a 10% Refundable Earned Income Tax Credit

As can be seen in the table above, a 10% refundable tax credit would generate between \$8-41 million in total net benefits, with a likely generation of \$16 million in net benefits. As with the status quo policy, all 10,000 simulations we ran resulted in net economic benefits.

Table 12 below shows the total expected economic impacts for a robust 40% refundable policy.

Impact	Low-End	Expected	High-End
Tax Distortion	-\$140M	-\$121M	-\$103M
Labor Distortion	-\$33M	-\$21M	-\$9M
Health Benefit	\$65M	\$65M	\$65M
Education Benefit	\$104M	\$148M	\$222M
Total	\$16M	\$73M	\$150M

Table 12: Estimated Impact of a 40% Refundable Earned Income Tax Credit

Expected net benefits for a 40% refundable tax credit are larger than the status quo policy or a 10% refundable credit. The 40% refundable tax credit, however, did simulate some negative net benefits scenarios: in 7 of the 10,000 simulations run of the 40% refundable tax credit, the policy resulted in negative net economic benefits. That means we can only say with 99.93% confidence that a 40% refundable tax credit alternative will result in net economic benefits.

Table 13 below shows low-end, expected, and high-end net benefits for the four alternatives we analyzed throughout the study. As can be seen below, status quo policy ranges from \$4 million in economic benefits to \$17 million in economic benefits while reform alternatives yield between \$8 million in economic benefits and \$151 million in economic benefits.

Refundable	Federal Match	Low-End	Expected	High-End
No (status quo)	30%	\$4M	\$9M	\$17M
Yes	10%	\$8M	\$22M	\$41M
Yes	20%	\$14M	\$41M	\$80M
Yes	30%	\$17M	\$58M	\$117M
Yes	40%	\$16M	\$73M	\$151M

Table 13: Estimated Net Benefits for Earned Income Tax Credit Alternatives

Policy Implications

By comparing the status quo policy to reform alternatives, we can evaluate what the impact of reform alternatives would be on key outcomes. Below is a table detailing the impact of a change from the status quo policy of 30% federal match nonrefundable to 10% refundable. Such a change would yield \$5-24 million in net economic benefits. Table 14 below shows detailed impacts of this change.

Impact	Low-End	Expected	High-End
State Expenditures	\$130 million	\$130 million	\$130 million
Average Worker Wage Increase	\$150	\$150	\$150
Tax Distortion	-\$21 million	-\$18 million	-\$16 million
Workers Hired	3,000 workers	6,000 workers	10,000 workers
Children Born Normal Birthweight	18 normal-weight births	18 normal-weight births	18 normal-weight births
New College Enrollees	38 new college enrollees	38 new college enrollees	38 new college enrollees
Net Economic Benefits	\$5 million	\$13 million	\$24 million

Table 14: Comparison of 30% Non-Refundable and 10% Refundable Earned Income Tax Credit Alternatives

A change from the status quo 30% nonrefundable to a robust 40% refundable earned income tax credit would yield higher benefits, ranging from \$12-134 million in net benefits, with the most likely outcome being \$62 million in net benefits. Table 15 shows detailed impacts of this change.

Impact	Low-End	Expected	High-End
State Expenditures	\$760 million	\$760 million	\$760 million
Average Worker Wage Increase	\$900	\$900	\$900
Tax Distortion	-\$126 million	-\$109 million	-\$93 million
Workers Hired	16,000 workers	38,000 workers	59,000 workers
Children Born Normal Birthweight	109 normal-weight births	109 normal-weight births	109 normal-weight births
New College Enrollees	226 new college enrollments	226 new college enrollments	226 new college enrollments
Net Economic Benefits	\$12 million	\$62 million	\$134 million

Table 15: Comparison of 30% Non-Refundable and 40% Refundable Earned Income Tax Credit Alternatives