

Return on Investment Study: AmeriCorps Urban Safety Program Detroit

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Executive Summary

Program Description

Founded on a unique crime reduction model, the AmeriCorps Urban Safety (AMUS) Program works to improve public health and safety in the City of Detroit and Wayne County, Michigan. AmeriCorps members with service terms of up to a year work to increase public safety through:

- Using community mapping and statistical software to identify crime “hot spots”
- Organizing neighborhood block clubs and community patrols
- Providing outreach and support to survivors of intimate partner violence
- Implementing safe routes for youth walking or biking to neighborhood schools
- Securing vacant and open structures
- Providing resources to residents to help reduce property crime, such as home safety assessments and anti-theft auto devices¹

AmeriCorps, the federal agency for national service and volunteerism, provides opportunities for Americans to serve their country domestically, address the nation's most pressing challenges, improve lives and communities, and strengthen civic engagement. Each year, the agency places more than 200,000 AmeriCorps members and AmeriCorps Seniors volunteers in intensive service roles; and empowers millions more to serve as long-term, short-term, or one-time volunteers. Learn more at AmeriCorps.gov.

Recently, AMUS AmeriCorps members have expanded their efforts to include public health activities, such as:

- Installing water filtration resources and sharing information with residents to increase the use of filtered water and reduce blood lead levels
- Distributing air purifiers and HEPA filters to help residents improve home indoor air quality, reducing the presence of asthma triggers and other irritants

AMUS also has a summer youth program in which AMUS hires youth as members. These youth members work on the activities discussed above. Additionally, these members build skills and participate in weekly seminars to prepare for college and future careers. Youth members are AmeriCorps members with shorter terms of national service.

¹ AMUS Detroit, <https://amusdetroit.org/our-services/>

To better understand the impact of the program in relation to costs, AmeriCorps commissioned a return on investment (ROI) analysis by ICF, an independent research firm. ROI analyses of national service programs estimate the monetary value of benefits that a program generates per dollar invested.

Overview of Benefits and Costs

To calculate the ROI, the program benefits were identified, quantified, and compared to the program's costs. Benefits of AMUS that can be monetized based on the available data and research include:

- **Reduced costs and increased economic benefits to society from reduced criminal activity in neighborhoods served by AMUS.** Because of reduced criminal activity in the neighborhoods served by AMUS and by youth members, society avoids related costs. For example, potential victims of crime avoid property loss and medical costs. In addition, society benefits from increased employment as a result of reduced incarceration.
- **Reduced lifetime spending on the criminal justice system due to AMUS's summer youth program.** AmeriCorps youth members are less likely to commit violent or property crimes than their peers due to their participation in the summer youth program. This results in less federal, state, and local government expenditure on policing, legal services, and corrections.
- **Additional societal benefits from increased employment by participants in AMUS's summer youth program.** AmeriCorps youth members benefit from increased employment as a result of reduced incarceration. This benefit is post-program, based on research that establishes that similar summer youth programs reduce criminal activity by participants after the program has ended.
- **Additional lifetime earnings resulting from decreased lead exposure.** Because of the program, households with children under age 6 that received water filters will have reduced lead exposure, which leads to a higher intelligence quotient (IQ), and, as a result, those children will have higher lifetime earnings.
- **Additional earnings by AmeriCorps members.** Serving in AmeriCorps leads to increased wages and reduced unemployment post-national service through skill acquisition, as well as increased educational attainment post-service.
- **Living allowances, stipends, and education awards.** AmeriCorps members receive living allowances and stipends during their national service and receive a Segal AmeriCorps Education Award after successful completion.
- **Additional lifetime earnings for youth members.** AmeriCorps youth members are more likely to enroll in bachelor's programs than their peers due to their participation in the summer youth program and, as a result, will have higher lifetime earnings.

- **Increased tax revenue for government.** Federal, state, and local governments receive more income tax revenue from increased AmeriCorps member earnings post-service and from water filter recipients once they enter the workforce. State and local governments also realize additional sales tax revenue related to those earnings. Federal and state governments also realize tax revenue from the taxable living allowances, stipends, and education awards provided to AmeriCorps members.
- **Reduced lifetime spending on corrections, public assistance, and social insurance.** Because of the increase in postsecondary educational attainment for AmeriCorps members, federal and state governments spend less on these items.

The estimated annual cost for the AMUS program from 2021 to 2022 is \$3,699,768, of which \$1,559,497 is estimated to be funded by the federal government, or roughly 42 percent.

ROI Results

Table ES-1 shows the ROI results. Each row represents a different ROI calculation depending on which benefits are considered (all benefits or only benefits to the federal government) and which funding is considered (federal funding only or all funding). The ROIs are presented as dollars returned for every dollar of investment. The analysis used three different scenarios to estimate benefits under different assumptions. Specifically, the study assumed that increased earnings attributable to the program and reduction in crime due to AMUS's summer youth program lasted for 1 year (short-term scenario), 15 years (medium-term scenario), or 30 years (long-term scenario).

The ROI analysis estimated the AMUS program's ROI to be between \$1.63 and \$3.07 per funder dollar, depending on how long program beneficiaries and AmeriCorps members experience increased earnings as a result of the program. The return on each dollar of federal support for the program is between \$3.86 and \$7.28. These results are driven by favorable employment and education outcomes for AmeriCorps members following their service.

Table ES-1. ROI Estimates

ROI calculation	ROI scenario		
	Short-term	Medium-term	Long-term
Total benefits per federal dollar	\$3.86	\$6.00	\$7.28
Total benefits per funder dollar	\$1.63	\$2.53	\$3.07
Federal government benefits per federal dollar	\$0.41	\$0.89	\$1.16

The program produces strong returns in the short-, medium-, and long-term for total benefits per federal dollar and total benefits per funder dollar. The federal government benefits per federal dollar calculations estimate losses for the short- and medium-term scenarios and modest returns in the long-term scenario. Most criminal justice expenditures are at the state and local levels, so these results are consistent with the

design of AMUS. The magnitude and direction of the results of the ROI calculations are driven by several factors, including:

- **Increased economic benefits and reduced costs due to reduced criminal activity.** AMUS's work to reduce criminal activity leads to less property damage, additional community member earnings from reduced incarceration, and less spending on the criminal justice system.
- **Additional earnings by AmeriCorps members.** Serving in AmeriCorps leads to increased wages and reduced unemployment post-national service through skill acquisition, as well as increased educational attainment post-service.
- **Reduced lifetime spending on corrections, public assistance, and social insurance.** Because of the increase in postsecondary educational attainment for AmeriCorps members, federal and state governments spend less on these items.

Introduction

AmeriCorps contracted with ICF Incorporated, LLC (hereafter ICF) to research and quantify the return on investment (ROI) of several programs that rely on national service—specifically AmeriCorps—as a major resource to sustain operations. ROI analyses measure the performance of programs and build the base of evidence for future resource allocation decisions. ROI study results demonstrate the value of AmeriCorps programming to relevant stakeholders.

This project began with a comprehensive literature review and preliminary assessments of whether ROI analyses were feasible for five national service programs. These feasibility studies included thorough reviews of these programs' recent evaluations, detailed logic models, proposed ROI analysis methodologies for each program, and a scorecard mechanism that determined the viability of conducting an ROI analysis for each selected program.

Upon completion of five feasibility studies, AmeriCorps selected four programs to be the subjects of ROI studies for fiscal year 2022: AmeriCorps Urban Safety (AMUS) Program, Montana Conservation Corps, Green City Force, and the Parent Possible HIPPPY program. This ROI study measures the benefits of the AMUS program against costs.

This study is organized into five sections:

- **Program Description** describes the program's design, activities, and objectives, along with the role that national service (specifically AmeriCorps) plays in its operation. This section also provides a brief history of past evaluations, outlines the factors that made this program a strong selection for an ROI study, underscores the population this program serves, and identifies a set of ROI estimates of other programs that have similarities to the AMUS program.
- **ROI Methodology** outlines how this analysis used various data sources to monetize benefits derived from AMUS, describes its associated program costs, and explains how opportunity costs were calculated.
- **Benefits, Forgone Benefits (Opportunity Cost), Program Costs, and ROI Results** provides a detailed description of the program benefits, forgone benefits (opportunity cost), and program costs that are inputs into the ROI analyses and presents the results of the three ROI calculations across different assumptions.
- **Recommendations for Further Research** explores ways AmeriCorps and others could further build the evidence base for this program and similar programs, including how to address limitations of this study.
- **Conclusion** summarizes key points from the ROI study overall.

Program Description

Founded on a unique crime reduction model, the AMUS program works to improve public health and safety in the City of Detroit and Wayne County, Michigan. AMUS partners with the local police to facilitate a crime mapping and analysis (CompStat) program in conjunction with AmeriCorps neighborhood organizing. AmeriCorps members with service terms of up to a year work to increase public safety through:

- Creating partnerships with community stakeholders to identify crime “hot spots”
- Organizing neighborhood block clubs and community patrols
- Providing outreach and support to survivors of intimate partner violence
- Implementing safe routes for youth walking or biking to neighborhood schools
- Securing vacant and open structures
- Providing resources to residents to help reduce property crime, such as home safety assessments and anti-theft auto devices²

Recently, AMUS AmeriCorps members have expanded their efforts to include public health activities, such as:

- Installing water filtration resources and sharing information with residents to increase the use of filtered water and reduce blood lead levels
- Distributing air purifiers and HEPA filters to help residents improve home indoor air quality, reducing the presence of asthma triggers and other irritants

AMUS also has a summer youth program in which AMUS hires youth as members. These youth members build skills and participate in weekly seminars to prepare for college and future careers. Summer youth program participants are AmeriCorps members, with shorter terms of national service.

Demographics of Youth Members and Others Served by AMUS

AMUS AmeriCorps Members in the Summer Youth Program

Youth members are young men and women ages 17–24, 98 percent of whom are Detroit residents. Since 2010, AMUS has enrolled 535 members who have completed nearly 900,000 service hours.

Table 1 shows the demographic characteristics of the AmeriCorps members in the summer youth program.³ The youth served by the program are diverse in terms of race, gender, location, and other background characteristics. The majority of members identify as non-white. Sixty-six students participated in the program from 2021 to 2022.

² AMUS Detroit, found here: <https://amusdetroit.org/our-services/>

³ Ramona Rodriguez-Washington, AMUS contact, personal communication, January 18, 2023. Hereafter, all instances of AMUS referenced as a data source were retrieved from this communication.

Table 1. Selected Demographic Characteristics of AmeriCorps Members Participating in the AMUS Summer Youth Program During Fiscal Year 2021–2022⁴

Characteristic	Percentage
Race/ethnicity	
Black/African American	77%
White	5%
American Indian or Alaska Native	2%
Multiracial	12%
Gender	
Female	58%
Male	42%

Source: AMUS

Others Served by AMUS Activities

Households in low-income communities throughout Detroit and Wayne County are served by AMUS efforts to improve public health and safety. Detroit has a majority-Black population and a relatively high poverty rate of 32 percent in 2022. Wayne County, which includes Detroit and surrounding suburbs, has a majority white population and a large minority of Black residents. The median income for Wayne County was \$52,830 in 2022 and the poverty rate was 19.6 percent, while in Detroit itself they are \$34,762 and 32 percent, respectively. AMUS concentrates their efforts in specific neighborhoods with low income and high poverty, so the median income of households served is likely lower than the those shown below and poverty rates are likely higher.

⁴ This fiscal year was representative of the most recent data available regarding the population served.

Table 2. Selected Demographic Characteristics of Detroit and Wayne County

Characteristic	Detroit	Wayne County
Race/ethnicity		
American Indian or Alaska Native	0.4%	0.5%
Black/African American	78%	38%
Hispanic	8%	7%
Multiracial	3%	3%
White	10%	49%
Income		
Median income	\$34,762	\$52,830
Poverty rate	32%	20%

Source: U.S. Census Bureau (2021-c)

AMUS Program Evaluation History

There has been one evaluation completed for the AMUS program, described below.

Impact Evaluation of the AmeriCorps Urban Safety Program 2019–2020

This evaluation (Moss, 2021) studied the efficacy of AMUS's effort to reduce criminal activity from 2019 to 2020. The study evaluated the difference in crime report trends in precincts where AMUS was implemented compared to those without AMUS implementation. Prior to implementation, there was no difference in reported crime trends between treatment and comparison precincts. The authors used both regression point displacement design and interrupted time series analysis to estimate the impact of AMUS on local crime. The study found reported crime was reduced below levels of comparison groups for select precincts. The author used simple year-over-year changes in reported crimes to estimate the economic impact of AMUS, so if the reported number of robberies fell from one year to the next, that decrease was attributed to AMUS. The study concluded that, since implementation, AMUS has saved society about \$250 million, including reductions in costs to crime victims and reductions in expenditures for different levels of government. This study did not examine the impact of AMUS's other services.

While Moss's evaluation relates directly to the AMUS program, the present ROI methodology used other literature to estimate benefits from AMUS's crime reduction work. This ROI analysis did not attempt to validate or reproduce Moss's crime reduction estimates because the data necessary to update these findings for the 2021–2022 program year was unavailable for analysis. Additionally, Moss evaluated an overall reduction in crime but did not estimate the impact of AMUS on particular types of crime. As referenced below, other literature finds that similar programs have different impacts on different types of crime. Rather than assuming a uniform impact on crime, this analysis relied on findings in the literature on the implementation of CompStat and similar programs. This analysis also includes other program activities and benefits of AMUS that could be monetized—specifically, mitigating lead exposure and reducing

crime by engaging youth as AmeriCorps members in their summer youth program. These new benefits, which had not previously been monetized, produce benefits beyond the value of crime reduction as identified by Moss.

Other Data Sources

In addition to the AMUS evaluation described above, the following sources are also used for the ROI analysis:

A Meta-Analysis of the Impact of Community Policing on Crime Reduction

This study (Ekici et al., 2022) examined the literature on community policing and its impacts on criminal activity. The authors included 32 studies in their evaluation, finding that the outcomes analyzed by the studies had a 16 percent reduction in any criminal activity. The authors then analyzed specific outcomes, such as burglaries, and found that community policing reduced robberies, burglaries, drug/gun crimes, and fear of crime. This analysis uses the findings on reduced burglaries, an 11 percent reduction, because it was the only outcome that 1) was statistically significant and 2) had a monetizable benefit.

These findings are reinforced by Jang's evaluation of Fort Worth's CompStat program (Jang et al., 2010), which found that property crime decreased after their implementation of CompStat. It is worth noting that both of these programs were implemented by police departments rather than community groups. The impact of AMUS's work in the community may differ from that implemented by the police. However, without AMUS, the police department would not have implemented CompStat, so this study attributes the full benefit of reduced burglaries to AMUS's proactive work to get these special crime reduction measures implemented in selected Detroit neighborhoods.

What's in a Job? Evaluating the Effect of Private Sector Employment Experience on Student Academic Outcomes

This study (Modestino, 2022) estimated the impacts on enrollment in bachelor's programs from a summer youth employment program (SYEP) in Boston. The author evaluated administrative records from the National Student Clearinghouse and Massachusetts Department of Elementary and Secondary Education from 2014 to 2016 for youth who participated in Boston's Summer Youth Employment Program and a matched group of non-participants. The author found increased enrollment in bachelor's programs for students who participated in the SYEP.

The program analyzed in this study is similar to AMUS's summer youth program. Both provide job readiness training, such as resume writing and interview practice, among other skills. Boston's program either places the youth in positions with a local nonprofit or city agency or it connects youth with private-sector employment. AMUS is similar in that members engage in AMUS's program activities, which should be similar to other nonprofit environments. While there are likely some differences in implementation and experience, Heller (2021) argued that summer youth employment programs have been analyzed enough that the benefits accrue regardless of variation in implementation.

How Do Summer Youth Employment Programs Improve Criminal Justice Outcomes, and for Whom?

This study (Modestino, 2019) estimated the impact of Boston's SYEP on arrest rates for participants. The author used the random assignment of youth into the program to create a randomized controlled trial to estimate the program's impact. The study used data from the Massachusetts Department of Criminal Justice and Office of Commissioner of Probation for records of criminal charges in the 17 months after the program's conclusion. Results showed that program participants had 0.031 fewer violent crime criminal arraignments per youth and 0.022 fewer property crime arraignments per youth. Again, while there are likely some differences in program implementation, there is strong evidence that SYEPs produce these impacts across programs.

The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation

This study (McCollister et al., 2010) attempted to quantify the costs of different crimes to society on a per-offense basis. The authors identified four primary types of losses: victim costs, criminal justice costs, reduced employment activity related to incarceration, and intangible costs. For victim costs, the authors compiled data from the U.S. Department of Justice (DOJ) on costs incurred by victims of crime and divided by the number of offenses to calculate the per-crime costs. Criminal justice system costs incorporated expenditures on legal and adjudication costs, corrections costs, and police protection costs. For reduced employment activity related to incarceration, the authors used DOJ data on the person-years of inmates incarcerated by type of offense. They assumed the earnings potential of individuals incarcerated was equal to the national minimum wage. The person-years served was multiplied by the yearly earnings of the national minimum wage to calculate the per-offense productivity loss. Since the SYEP evaluation did not state which type of criminal arraignments were impacted, the analysis used cost estimates of the least costly crimes to avoid overstating benefits: robbery for violent crime and larceny/theft for property crime.

Costs of Lead Exposure and Remediation in Michigan: Update

An assessment of the economic impact of childhood lead exposure of Michigan children (Swinburn, 2016) provides data relevant to measuring the impact of installation of lead filters by AMUS members. The analysis studied the different impacts of lead exposure to children based on existing literature. The study identified several studies that connected lead exposure to negative health, employment, and other outcomes. The CDC reports that two primary health costs of lead exposure are the immediate treatment and increased probability of attention-deficit/hyperactivity disorder (ADHD). The authors identified several studies in the United States that found childhood lead exposure increases the probability of juvenile and adult crime. The authors also identified studies that connect lead exposure with decreased lifetime earnings. Other studies have identified a connection between childhood lead exposure and reduced IQ, reduced academic performance in elementary and middle school, and increased likelihood of needing special education in school.

Selection of AMUS for the AmeriCorps ROI Project

ICF recommended the AMUS AmeriCorps program for a feasibility study to explore monetizing benefits and costs of an urban safety program. The availability of data related to the program's documented activities and outcomes—particularly related to the summer youth program and installation of lead filters—made it a strong candidate for estimating ROI. An ROI study of these outcomes complements ongoing work by AMUS to estimate the crime reduction impacts of program activities.

Comparable ROI Estimates

ROI studies of other programs that offer similar services provide context for a potential set of ROI estimates for AMUS. Table 3 summarizes information across studies.

Environmental Exposure

The economic impact of lead exposure among children in Michigan due to lead paint was evaluated by Swinburn (2016). Children exposed to lead typically have an increased need for healthcare and special education support. To estimate societal costs of lead exposure, the author relied on previous literature that found childhood lead exposure increases juvenile and adult crime along with reduced lifetime earnings. The estimated benefit of lead paint remediation for Michigan was \$190 million annually and the cost was approximately \$600 million.

Gould et al. (2009) also studied the return on lead hazard control measures. The analysis noted that lead exposure increases special education needs, causes cognitive damage, and leads to increased criminal activity. The study estimated conservative and optimistic benefits and costs of household lead paint hazard control, with an overall return ranging from \$17 to \$221.

Note that both Swinburn (2016) and Gould et al. (2009) include outcomes this ROI analysis did not capture. Both studies assumed that the interventions they studied entirely eliminated lead exposure, which allowed them to capture benefits of avoiding all lead exposure. AMUS only addresses one source of potential lead exposure—drinking water—making it inappropriate to apply this same approach. AMUS's installation of water filters reduces overall lead exposure but does not eliminate exposure from other sources.

In 2019, the Minnesota Department of Health estimated the costs and benefits of lead pipe removal for the State of Minnesota. The study used the Environmental Protection Agency's (EPA) 2018 estimate that 20 percent of childhood lead exposure is derived from drinking water (2023) to estimate the increased lifetime earnings due to increased IQ as a result of eliminating lead exposure through drinking water. The estimated increased market productivity is approximately \$3 billion to \$6 billion, including increased tax revenue of \$900 million to \$1.8 billion. However, removing lead pipes would cost about \$1.5 billion to \$4 billion, resulting in a ROI range of \$0.75 to \$4.00.

Table 3. Relevant ROI Studies

Study	Study area	Benefits/ cost savings evaluated	ROI estimate* (return in dollars for every \$1 in cost)
Swinburn (2016)	Environmental exposure intervention	<p>Benefits: Improved health and well-being of children and families</p> <p>Costs: Blood lead treatment, treatment of lead-related ADHD, increase in special education costs, reduction in lifetime earnings, increased crime, juvenile incarceration related to childhood lead, adult crimes related to childhood lead</p>	\$9.50 over 30 years
Minnesota Department of Health (2019)	Environmental exposure intervention	<p>Benefits: Increased lifetime earnings due to greater IQ resulting from reduced lead exposure from drinking water</p> <p>Costs: Remediating lead pipes</p>	\$0.75 to \$4.00
Gould et al. (2009)	Environmental exposure intervention	<p>Benefits: Reduced potential exposure of lead to other individuals</p> <p>Costs: Cognitive damage, increase in the use of special education services, increased risk for committing a crime</p>	\$17 to \$221

*Where studies did not report ROIs, they were calculated based on the net benefits and net costs, where available

ROI Methodology

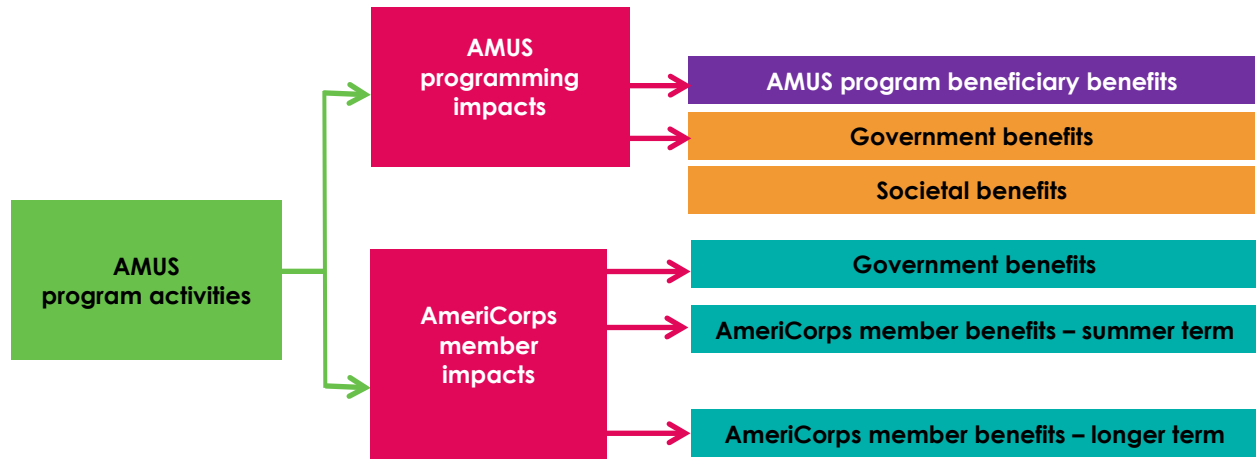
The methodology for estimating the ROI for AMUS consisted of the following components:

- 1. Measuring and monetizing program benefits.** This included using program data provided by AMUS, publicly available data, and other third-party sources to determine the benefits to program beneficiaries, AmeriCorps members, and the government.
- 2. Estimating forgone benefits (opportunity costs).** This ROI analysis estimated two types of forgone benefits. The first was the professional opportunity cost to AMUS AmeriCorps members for their period of national service, during which they could have earned more pay by doing other work. The second was the investment opportunity cost for AMUS program funding that could have been used for other purposes.
- 3. Assessing program costs.** AMUS provided program costs for the program year of September 2021 through August 2022. AMUS costs for the 2021–2022 program year included operating costs, AmeriCorps member expenses, and other indirect costs. AmeriCorps member expenses included the living allowance amounts received during service and the expected education awards received post-service.
- 4. Calculating the ROI.** The ROI analysis includes three ROI calculations, each assessed under three scenarios representing different assumptions about the persistence of program outcomes:
 - Total benefits per federal dollar
 - Total benefits per funder dollar⁵
 - Federal government benefits per federal dollar

This analytical framework includes only those benefits that could be reasonably monetized given the available data and that likely would not have occurred without the AMUS program. Figure 1 shows how AMUS program activities can result in benefits to program beneficiaries who receive services provided by AMUS; AmeriCorps members (including members who serve short terms in the summer youth program and members who serve longer terms); society; and federal, state, and local governments.

⁵ The different funder groups whose investment is in this calculation include the federal government (i.e., AmeriCorps) and match funding from state and local governments.

Figure 1. Benefits Among Stakeholder Groups From AMUS



Available data establish that AMUS AmeriCorps members enjoy earnings impacts as a result of serving in the program and that AMUS's summer youth program results in a reduction in crime after the end of that program. However, the data do not establish the duration of those benefits. To address a range of possible durations for those benefits, the analysis includes three scenarios:⁶

- **Short-term.** This scenario assumes short-term earnings impacts. The assumption is that earnings impacts are limited to a single year after program exit. This scenario also assumes no lifetime benefits are realized.
- **Medium-term.** This scenario assumes a longer duration of earnings impacts. The assumption is that earnings impacts last 15 years. A 3 percent discount rate is applied each year to represent net present value in 2022 dollars.⁷ This scenario also assumes only half of the net present value of lifetime benefits is realized.
- **Long-term.** This scenario assumes sustained earnings impacts throughout AMUS AmeriCorps members' working years. The assumption is that earnings impacts last 30 years. A 3 percent discount rate is applied each year to represent net present value in 2022 dollars. This scenario also assumes the entire net present value of lifetime benefits is realized.

⁶ These three scenarios consider varying durations of how long increased employment and earnings benefits last for AmeriCorps members. They also consider varying durations for lifetime benefits that stem from AMUS. For example, lifetime benefits in terms of decreased public assistance, social insurance, and corrections costs result from AmeriCorps members' higher educational attainment post-service. The analysis estimates lifetime benefits differently in the three scenarios. Specifically, the net present value of the entire lifetime benefit is realized for the long-term scenario, half of the net present value of the lifetime benefit is realized for the medium-term scenario, and no lifetime benefit amount is realized for the short-term scenario.

⁷ The Office of Management and Budget (1992) defines a discount rate as, "The interest rate used in calculating the present value of expected yearly benefits and costs" (p. 18). Regarding the 3 percent discount rate, see Office of Management and Budget (2003).

The long-term scenario (i.e., 30 years of sustained employment and earnings benefits) represents roughly a lifetime of working years for a given person while the short-term scenario assumes benefits for only the year after program participation or service is completed. The medium-term scenario (i.e., 15 years of sustained employment and earnings benefits) represents the midpoint between these two scenarios.

Monetizing Program Benefits, Forgone Benefits (Opportunity Costs), and Program Costs

This analysis monetized an array of benefits and included AMUS program costs and expected opportunity costs—all in 2022 dollars—to assess the ROI of AMUS. Additional details on the methodology employed and the calculations used for this analysis are in Appendix B. Data on costs and benefits are from the 2021–2022 program year, for which the most recent program year data were available.

Outcomes of the AMUS program result in monetizable benefits to AMUS beneficiaries; AMUS AmeriCorps members; and federal, state, and local governments. Table 4 summarizes these benefits and data sources by stakeholder group.

Table 4. Benefits Realized From AMUS by Stakeholder Group

Stakeholder group	Benefits
AMUS program beneficiaries who are children under the age of 6 who receive lead water filters	<ul style="list-style-type: none"> Additional lifetime earnings from increased IQ as a result of avoided lead exposure
Benefits to society	<ul style="list-style-type: none"> Reduced economic losses suffered by crime victims, including medical care costs, lost earnings, and property loss/damage due to AMUS's crime prevention work Increased productive employment from reduced incarceration due to AMUS's crime prevention work Reduced economic losses suffered by crime victims, including medical care costs, lost earnings, and property loss/damage due to AMUS's summer youth program Increased productive employment from reduced incarceration due to AMUS's summer youth program
AMUS AmeriCorps members (longer-term members and short-term youth members)	<ul style="list-style-type: none"> Additional earnings from reduced unemployment Additional lifetime earnings from increased educational attainment as a result of education awards Additional lifetime earnings from increased educational attainment as a result of the summer youth program Post-tax living allowances and education awards

Stakeholder group	Benefits
Federal, state, and local governments	<ul style="list-style-type: none"> • Tax revenue from increased earnings by AMUS AmeriCorps members post-program and sales tax revenue from the induced increased economic activity • Tax revenue from living allowances and education awards • Lifetime tax revenue from increased earnings from increased educational attainment by AMUS AmeriCorps members as a result of education awards and by AMUS AmeriCorps members as a result of the summer youth program • Reduced lifetime spending on corrections, public assistance, and social insurance from increased educational attainment by AMUS AmeriCorps members as a result of education awards and by AMUS AmeriCorps members as a result of the summer youth program • Reduced costs of police protection, legal and adjudication services, and corrections programs due to reduced criminal activity as a result of the summer youth program • Lifetime tax revenue from increased earnings by beneficiaries under the age of 6 as a result of avoided lead exposure due to water filters

Benefits to AMUS Program Beneficiaries Who Receive Water Filters

Additional Lifetime Earnings From Increased IQ as a Result of Reduced Lead Exposure (Benefit to AMUS Water Filter Recipients)

Using census data, the analysis estimated the number of children under age 6 in households that received water filters. Then, using Michigan Department of Health and Human Services lead exposure data, the authors calculated the estimated number of children under 6 years old who would have elevated blood lead levels in these households. The analysis assumed that children would have the minimum blood lead level (3.5 micrograms per deciliter of blood)⁸ since more precise data were unavailable. The analysis then applied the EPA's finding that approximately 20 percent of lead exposure is due to drinking water to estimate the amount of lead that would have been avoided due to the water filters.

The analysis used the following finding from Canfield et al. (2003) that, for children under age 6, 1 µg/dL of blood results in a 1.37 IQ point reduction for blood lead levels below 10 µg/dL . The authors measured blood lead concentration every 6 months, starting at 6 months old through 4 years old in 172 children. The authors administered

⁸ Going forward, micrograms per deciliter of blood will be referred to as µg/dL.

the Stanford-Binet Intelligence Scale at 3 years old and 5 years old. The authors conducted regression analysis, controlling for maternal IQ, home environment, and other potential confounding factors. The finding was significant at the 0.01 level. While several other studies have found IQ reductions due to blood lead level,⁹ Canfield et al. is the most relevant to the ROI analysis since the majority of Detroit children have blood lead concentrations between 3.5 and 5 µg/dL.¹⁰

The analysis then used Salkever (1995) to estimate the impact of reduced IQ on lifetime earnings. Salkever used the 1979 National Longitudinal Study of Youth to identify the relationship between Armed Forces Qualifying Test (standardized on the same 100-point scale as IQ) and earnings over time. A 1-point score reduction resulted in a 2.39 percent reduction in annual earnings. Note that since the benefit is accrued by children, there are no short-term benefits and limited medium-term benefits.

While other ROI estimates for reducing blood lead levels use other outcomes—such as reduced ADHD, reduced criminal activity, and reduced special education expenditures—this analysis was unable to use those outcomes. These ROI studies estimate the impact of the entire elimination of lead exposure for all children. Since this ROI analysis estimates a reduction in lead exposure for a subset of children, the analysis can only use the impact of lead on IQ as a benefit.

Benefits to AmeriCorps Members

Post-Tax Living Allowances and Education Awards (Benefits to AMUS AmeriCorps Members)

Some member-specific benefits realized due to AmeriCorps members serving in AMUS include the post-tax living allowances AmeriCorps State and National members are allotted during their national service and the post-tax education awards they receive after service completion. All are considered taxable income and thus result in increased government revenue.¹¹ The post-tax living allowance and the education award amount that was used to repay student loans were included in the ROI analysis as direct one-time benefits to AMUS AmeriCorps members. These benefits were calculated for both short-term AmeriCorps members participating in the summer youth program as well as AmeriCorps members who serve for longer periods since both received living allowances and education awards.

⁹ See Zhou, Y. & Grosse, S. D. (2019) for a comprehensive review of these studies.

¹⁰ While distributional data is not available from Michigan's Department of Health and Human Services, they provide the percentage of children with elevated blood levels below 3.5 and below 5 µg/dL. From this, the analysis calculated that more than half of Detroit children have blood lead levels between 3.5 and 5 µg/dL.

¹¹ The tax implications of the AmeriCorps member education award are stated here: AmeriCorps. (n.d.). Segal AmeriCorps Education Award. <https://americorps.gov/members-volunteers/segal-ameri-corps-education-award>

Additional Earnings From Reduced Unemployment (Benefit to AMUS AmeriCorps Members)

Evaluations have shown that serving in AmeriCorps fosters higher skill acquisition, increased educational attainment, and higher income from increased employment post-national service.¹² Freidman et al. (2016) found that unemployment among AmeriCorps members 6 months after their period of national service was 5 percentage points lower compared to 6 months before service.¹³ To monetize this decrease in unemployment, the analysis first determined the demographic distribution of AMUS AmeriCorps State and National members who served during the most recent program year in terms of race/ethnicity, gender, age, and education level pre-service using data provided by AMUS. The analysis then proceeded to:

1. Estimate AMUS AmeriCorps members' per-person average annual earnings (weighted by the above demographics) using data from the Current Population Survey's Annual Social and Economic (ASEC) Supplement for 2021 (U.S. Census Bureau, 2021-b)
2. Multiply the 5-percentage-point reduction in unemployment from Freidman et al. (2016) by the number of full-time equivalent (FTE) AMUS AmeriCorps members who served during the most recent program year to estimate the number of *additional* AMUS AmeriCorps members employed post-service
3. Multiply the demographically weighted per-person average annual earnings by the number of additional AMUS AmeriCorps members employed to estimate the total increased earnings attributable to national service

The earnings metrics for AMUS AmeriCorps members were applied and discounted based on the short-term, medium-term, and long-term scenarios to represent net present 2022 dollars. The post-tax AMUS AmeriCorps members' projected earnings represent the additional income earned by AmeriCorps members attributable to serving with AMUS.

This benefit was calculated for both short-term AmeriCorps members participating in the summer youth program as well as AmeriCorps members who serve for longer periods. It may be unreasonable to expect short-term AmeriCorps members to accrue this full benefit. Members with service terms of less than a year were attributed an employment benefit proportional to the amount of the year they served, so the analysis does not attribute the full benefit of unemployment reduction for short-term members. Members currently enrolled in high school were excluded from this benefit.

¹² Relevant studies include Markovitz et al., 2008; Spera et al., 2013; Friedman et al., 2016; Zeidenberg et al., 2016.

¹³ See page 56 of Friedman et al. (2016).

Additional Lifetime Earnings From Increased Educational Attainment as a Result of Education Awards (Benefit to AMUS AmeriCorps Members)

Another benefit derived from national service is the higher educational attainment of AmeriCorps members. AmeriCorps members in general—as documented in Friedman et al. (2016)—can use their education awards to pay for additional postsecondary educational attainment or to repay student loans.

Friedman et al. (2016) reported that 46 percent of AmeriCorps State and National members used their education award to pursue additional postsecondary education while 33 percent used it to repay student loans.¹⁴ The analysis only applied these findings to long-term AMUS AmeriCorps members.

This analysis estimated the expected increase in lifetime earnings of AMUS AmeriCorps members attributable to the use of education awards to pay for additional postsecondary schooling. Based on the findings from Friedman et al. (2016), this ROI analysis estimated the amount in post-tax education awards that AMUS AmeriCorps members used to pay for additional educational attainment. The analysis then estimated the value of the additional educational attainment attributable to the education awards in terms of lifetime earnings using data from Trostel (2015). These estimated additional post-tax lifetime earnings were included as a benefit to AMUS AmeriCorps members.

Additional Lifetime Earnings From Increased Educational Attainment as a Result of Summer Youth Program Participation (Benefit to AMUS AmeriCorps Members)

Modestino (2022) found that a similar summer program for youth increased enrollment in bachelor's programs by 8 percentage points. The analysis applies these findings to AmeriCorps members who participated in the summer youth program. The analysis then estimated the value of the additional educational attainment attributable to the summer youth program in terms of lifetime earnings using data from Trostel (2015). These estimated additional post-tax lifetime earnings were included as a benefit to AMUS AmeriCorps members.

Benefits to Society

Benefits to Society From Reduced Criminal Activity due to AMUS's Crime Reduction Work

AMUS facilitates a CompStat program for the police, organizes neighborhood groups, implements safe routes to schools, and assists community members in training on home safety and installing crime prevention tools. Using the finding of Ekici et al. (2022), this analysis estimates that burglaries would be 11 percent higher in neighborhoods AMUS operates in if not for CompStat program and AMUS's crime prevention work.

McCollister et al. (2010) estimated the costs of different crimes to society.

¹⁴ Friedman et al. (2016). op. cit. Exhibit VIII-6.

- **Reduced costs to victims of crime.** Victims of crime incur various types of losses from criminal activity, including medical expenses, property damage, lost earnings from injury, and other monetary losses. McCollister's estimates for costs to victims of crime were multiplied by the estimated reduction in criminal arraignment calculated by Modestino (2022).
- **Increased benefit of productive labor from reduced incarceration.** Society loses productivity if someone chooses to engage in criminal activities rather than employment. Rather than being incarcerated, the community members can engage in the labor market, which generates economic benefits to the individual; federal, state, and local governments; and society at large. The analysis used McCollister's estimated benefits of increased employment from reduced incarceration.

These benefits accrued during the 2021–2022 program year; therefore, this analysis considers this a one-time benefit not extending beyond the program year.

Benefits to Society From Reduced Criminal Activity by AMUS Youth Members due to AMUS's Summer Youth Program

Society benefits from reduced criminal activity by youth members. Modestino (2019) established that participants in similar summer youth programs have a reduced number of criminal arraignments in the 17 months after their program ends. AMUS's youth members are less likely to commit violent or property crimes after participating in the program. The analysis annualized these findings to obtain the number of reduced arraignments by year. Then, the analysis applied findings of the costs of crime from McCollister et al. (2010) to the expected reduction in criminal arraignments. The analysis assumed the reduction in criminal arraignments is equal to the reduction in criminal activity. Estimates for the lowest-cost crimes were used for violent and property crimes.

McCollister et al. (2010) estimated the costs of different crimes to society.

- **Reduced costs to victims of crime.** Victims of crime incur various types of losses from criminal activity, including medical expenses, property damage, monetary losses, and lost earnings from injury. McCollister's estimates for costs to victims of crime were multiplied by the estimated reduction in criminal arraignment calculated by Modestino (2022).
- **Increased benefit of productive labor from reduced incarceration.** Society loses productivity if someone chooses to engage in criminal activities rather than employment. Rather than being incarcerated, the youth can engage in the labor market, which generates economic benefits to the individual; federal, state, and local governments; and society at large. The analysis used McCollister's estimated benefits of increased employment from reduced incarceration.

These estimates were applied and discounted based on the short-term, medium-term, and long-term scenarios to represent net present 2022 dollars.

Benefits to Government

Benefits to government include tax revenue generation and reduced spending on public assistance, social insurance, and corrections, resulting from increased earnings and educational attainment from AMUS AmeriCorps members and program beneficiaries who receive lead water filters.

Benefits to Government From Increased Earnings due to Reduced Lead Exposure by Water Filter Recipients

Federal and state governments benefit from the lifetime increase in tax revenue from increased educational attainment by water filter recipients who are children under the age of 6. The ROI analysis estimated additional lifetime tax revenue resulting from beneficiaries' increased IQ due to lower blood lead levels. Here, the estimated increase in earnings was multiplied by relevant tax rates. This tax revenue includes federal income, state income, property, Social Security, Medicare, and sales taxes.

Benefits to Government From Increased Earnings by AMUS AmeriCorps Members

Federal, state, and local governments benefit from increased earnings by AMUS AmeriCorps members due to lower unemployment as a result of service. Those benefits include:

- **Income tax revenue from increased earnings by AMUS AmeriCorps members post-service.** Federal income taxes, state income taxes, Medicare taxes, and Social Security taxes were estimated for the additional pre-tax earnings of AMUS AmeriCorps members based on 2021 rates. For both federal and state income taxes, the analysis estimated proportional tax rates representing the share of earnings paid in taxes.

To estimate proportional tax rates that reflect federal- and state-level progressive tax brackets and standard deductions, the amount of total taxes paid was divided by the pre-tax earnings per AMUS AmeriCorps member. For the state income tax rate, the analysis weighted individual state-level rates by their respective state populations to estimate a weighted national tax rate to apply program-wide. A weighted national tax rate was used because AMUS AmeriCorps members may disperse to various locations nationwide following their service terms and continue to migrate over the course of their working years.

- **Sales tax revenue from the increased economic activity that results from increased earnings by AMUS AmeriCorps members post-service.** To estimate the additional sales tax revenue generated due to the additional post-tax earnings of AMUS AmeriCorps members, the combined state and average local sales tax rate for the United States—weighted by states' populations—was calculated. This analysis applied that rate to the estimated taxable expenditures of AMUS AmeriCorps members based on their post-service pre-tax earnings using

Consumer Expenditure Survey data (U.S. Bureau of Labor Statistics, 2022).¹⁵ The resulting product was then applied to the share of post-tax earnings attributable to serving with AMUS to estimate state and local government sales tax revenue.

Benefits to Government From Reduced Criminal Activity due to AMUS's Crime Reduction Work

Federal and state governments spend less on criminal justice as a result of AMUS's work to reduce criminal activity in the communities they serve. The meta-analysis conducted by Ekici et al. (2022) found that programs similar to AMUS's work reduce burglaries by 11 percent. The analysis applied findings of the costs of crime from McCollister (2010) to the expected reduction in criminal arraignments. The analysis assumed the reduction in criminal arraignments is equal to the reduction in criminal activity.

These benefits accrued during the 2021–2022 program year; therefore, this analysis considers this a one-time benefit not extended beyond the program year.

Benefits to Government From Reduced Criminal Activity by AmeriCorps Members Participating in the Summer Youth Program

Federal and state governments spend less on criminal justice because of reduced criminal activity by AmeriCorps members in the summer youth program. Modestino (2019) established that participants in similar summer youth programs have a reduced number of criminal arraignments in the 17 months after their program ends. AMUS's youth members are less likely to commit violent or property crimes after participating in the program. This ROI analysis annualized these findings to obtain the number of reduced arraignments by year and then applied findings of the costs of crime from McCollister (2010) to the expected reduction in criminal arraignments. This ROI analysis assumed the reduction in criminal arraignments is equal to the reduction in criminal activity. Estimates for the lowest cost crimes were used for violent and property crimes. These estimates were applied and discounted based on the short-term, medium-term, and long-term scenarios to represent net present 2022 dollars.

Benefits to Government From Increased Earnings due to Educational Attainment by AMUS AmeriCorps Members

Federal and state governments benefit from increased postsecondary educational attainment by AMUS AmeriCorps members from education awards and summer youth program participation. Those benefits include:

- **Tax revenue from education awards.** Education awards provided to AMUS AmeriCorps members upon service completion are subject to taxes, resulting in

¹⁵ To calculate the estimated taxable expenditures, Consumer Expenditure Survey (CE) Table 1203 was used from the U.S. Bureau of Labor Statistics (2022). This table lists the annual expenditure means by pre-tax income tax brackets. Thus, the pre-tax earnings of AMUS AmeriCorps members were used instead of their post-tax earnings to calculate this metric. Please visit this site for more details: <https://www.bls.gov/cex/tables/calendar-year/mean-item-share-average-standard-error.htm#cu-income>.

additional government revenue.¹⁶ This ROI analysis applied federal income, state income, Social Security, and Medicare tax rates to the expected total amount of education awards to be given to AMUS AmeriCorps members to estimate these additional taxes. Both estimated proportional federal and state income tax rates were used. Sales taxes were not estimated for education awards because they cannot be used for consumer purchases.

- **Reduced lifetime spending on corrections, public assistance, and social insurance from increased educational attainment as a result of education awards.** Higher educational attainment is associated with less dependence on government assistance programs and lower incarceration rates (Blagg and Blom, 2018; Harlow, 2003). Because of AMUS AmeriCorps members' increased postsecondary educational attainment due to the use of the education award and summer youth program, federal and state governments spend less. For the monetization of these benefits, the analysis paired the expected increase in postsecondary educational attainment of AMUS AmeriCorps members with the expected difference in per-person lifetime government cost savings from Medicaid, SNAP, unemployment insurance, workers' compensation, and corrections for individuals with different levels of educational attainment. The latter values were provided by Trostel (2015).
- **Lifetime tax revenue from increased educational attainment as a result of education awards.** Another benefit related to AMUS AmeriCorps members captured in this ROI study is the lifetime tax revenue generated from members' higher postsecondary educational attainment due to the summer youth program and use of the education award. Here, the estimated increase in AMUS AmeriCorps members' postsecondary educational attainment was paired with the expected difference in per-person lifetime taxes for individuals with different levels of education as provided by Trostel (2015). This lifetime tax revenue includes federal income, state income, property, Social Security, Medicare, and sales taxes derived from use of the education award.

Benefits to Government From Living Allowances Received by AMUS AmeriCorps Members

The living allowance provided to AMUS AmeriCorps members during their service term is considered taxable income. This analysis applied a proportional federal income tax rate as well as Medicare and Social Security tax rates to the pre-tax living allowance amount received by AMUS AmeriCorps members for the most recent program year. The analysis also applied a sales tax rate to the estimated taxable expenditures of AMUS AmeriCorps members based on their post-tax living allowance amount to estimate additional state and local government revenue.

¹⁶ The tax implications of the AmeriCorps member education award are stated here: AmeriCorps. (n.d.). Segal AmeriCorps Education Award. <https://americorps.gov/members-volunteers/segal-ameri-corps-education-award>

Forgone Benefits (Opportunity Costs)

The analysis estimated forgone benefits of both members and funders because of their participation and investment in AMUS. These forgone benefits were subtracted from the program benefits (shown above) to calculate the net benefits of the program. Those net benefits were then compared to program cost to calculate the ROI. These forgone benefits are referred to as the *professional and investment opportunity costs*, described below.

Professional Opportunity Cost to AMUS AmeriCorps Members

The forgone benefit was the professional opportunity cost to AMUS AmeriCorps members for their period of national service, during which they could otherwise be working and earning higher pay. Opportunity costs for members that served for a full year and for the summer were calculated, but members still enrolled in high school were excluded. To calculate the opportunity cost, this analysis estimated what AMUS AmeriCorps members would have earned if they did *not* serve with AMUS. Specifically, this analysis estimated the weighted average annual earnings of this group as well as their weighted unemployment rate using ASEC data and the demographic distribution of AMUS AmeriCorps members for the 2021–2022 program year. The demographics included were gender, age, race/ethnicity, and the highest level of education pre-service. The weighted average annual earnings represent the expected earnings of the AMUS AmeriCorps members if they were employed but *not* serving with AMUS. The weighted unemployment rate represents how many of the AMUS AmeriCorps members would have been unemployed if they did *not* serve with AMUS. These weighted metrics were first used to estimate the portion of AMUS AmeriCorps members who would have been employed and then to calculate the aggregate earnings those employed individuals would have made without serving with AMUS. Namely, they are used to calculate the aggregate post-tax earnings this population would forgo due to serving with AMUS for 1 year.

Some of the forgone earnings would have been paid in the form of taxes. To appropriately allocate opportunity costs between AMUS AmeriCorps members and federal and state governments, the analysis estimated the reduced tax revenue for federal income, state income, Social Security, and Medicare taxes. The analysis also estimated the reduction in sales tax from reduced consumption. Combined, these taxes represent what the various levels of government are forgoing in tax revenue when these individuals decide to serve with AMUS instead of working for higher pay. The summation of all forgone taxes and the forgone post-tax earnings of AMUS AmeriCorps members is called the *total professional opportunity cost*.

It is important to note that in the *federal government benefits per federal dollar* ROI calculation, only federal government (not total) benefits are included. Given this, only federal components of the professional opportunity cost were subtracted from all federal government benefits (e.g., tax revenue and cost savings) realized as a result of AMUS in this ROI calculation. The parts of the professional opportunity cost removed from these total federal government benefits included the federal income, Social

Security, and Medicare taxes forgone due to AMUS AmeriCorps members forgoing earnings during their service year. The summation of these forgone federal taxes is called the *federal professional opportunity cost*.

Investment Opportunity Cost to Funders

The second forgone benefit used in this ROI analysis is an investment opportunity cost. It estimates the expected forgone return if all funds used to support AMUS during the 2021–2022 program year were invested in U.S. Treasury bonds instead. This opportunity cost applies to all funders, including but not limited to AmeriCorps. To calculate this, the analysis matched 2021 real interest rates provided by the Office of Management and Budget (2022) to each of the scenarios leveraged in this ROI analysis: short-term, medium-term, and long-term.¹⁷ The rates of return for U.S. Treasury bonds provide a market-based estimate of return for low-risk investments.

The real interest rate for the 3-year maturity was used for the short-term scenario, the average between the 10-year and 20-year maturity rates was used as the rate for the medium-term scenario, and the 30-year maturity rate was used for the long-term scenario. These real interest rates were -1.8 percent, -0.8 percent, and -0.3 percent, respectively (Office of Management and Budget, 2022). Also, the number of time periods elapsed on these bonds was equal to the number of years the short-term, medium-term, and long-term scenarios assume AMUS AmeriCorps members' employment and earnings gains are sustained, 1 year, 15 years, and 30 years, respectively. These bonds compound biannually, according to the U.S. Department of the Treasury (2022). The forgone accrued interest was calculated for each of the three scenarios if the funding amount used to support AMUS was instead invested.

Note that for 1) the *federal government benefits per federal dollar* and 2) the *total benefits per federal dollar* ROI calculations, the investment opportunity cost subtracted from the benefits in these calculations is the forgone accrued interest from investing *only* the federal funds into these U.S. Treasury bonds. This is called the *federal investment opportunity cost*. This is because these ROI calculations only include federal government (not total) program costs. For the other ROI calculation estimated in this analysis, the investment opportunity cost subtracted from the benefits realized is the forgone accrued interest from investing *all* AMUS program funds (both federal and non-federal) into these U.S. Treasury bonds. This is called the *total investment opportunity cost*. See Appendix B for details.

Program Costs

The costs for AMUS, used for this ROI analysis, include federal and required match funding and any other funding used to support program operations. The match and any additional funding can come from state/local governments and private entities.

¹⁷ The analysis used 2021 real interest rates for U.S. Treasury bonds because the program year analyzed began in 2021.

The program costs are specific to funding the activities and positions of AMUS AmeriCorps members whose outcomes are measured in this analysis.

ROI Study Limitations

The study had limitations that prevented the analysis from capturing the full benefits that likely derive from the AMUS program. The limitations include the following:

- While this analysis included the benefits of AMUS's work to reduce criminal activity in the communities they serve, not all types of crime were included. The analysis used the findings of a meta-analysis on community policing (Ekici et al., 2022) and a study of Fort Worth's CompStat program (Jang et al., 2010) to estimate AMUS's impact on crime. The meta-analysis allowed this analysis to confidently estimate how community engagement would affect burglaries but did not have sufficient studies to estimate the impact on other types of crime. For example, the two studies in the meta-analysis that included robberies as an outcome found a 38 percent reduction in robberies; however, given the small sample size, this figure was statistically insignificant and, therefore, not used in this analysis. If the reduction in other types of crime was included in this analysis, the AMUS program would likely produce a higher ROI.

Additionally, these studies looked at the implementation of these programs by police, rather than service-oriented groups. While, without AMUS, the police department likely would not have implemented a CompStat program, the effect of AMUS's engagement in the community may be different from community policing, even if the activities are similar. Given that AMUS has a smaller scope, the reduction in burglaries due to their intervention may be overstated, even if confined to the neighborhoods AMUS works in.

- The analysis did not include benefits from AMUS's distribution of HEPA filters to community members. The health benefits could include reduced asthma triggers and reduced allergen presence due to reduced indoor air pollution by HEPA filters. However, quantifiable outcome data were not available related to this activity.
- Michigan's Department of Health and Human Services only provides data on the number of children under age 6 who have elevated blood lead levels. Since there are not more precise data on the distribution of those blood lead levels, this analysis makes the conservative assumption that children with elevated blood lead levels have the floor levels of measured blood lead. Additionally, this study is evaluating a reduction in lead exposure from only drinking water for some children while most ROI and cost-benefit studies estimate the benefit of eliminating lead exposure from all sources. AMUS's work results in an incremental reduction in lead exposure rather than complete elimination. Therefore, the analysis was unable to monetize benefits related to reduced criminal activity, ADHD, and special education, for which data are only available when lead exposure is completely eliminated.

Program Benefits, Forgone Benefits (Opportunity Costs), Program Costs, and ROI Results

This section provides estimates of program benefits, forgone benefits (opportunity costs), and program costs, along with the ROI results.

Program Benefits

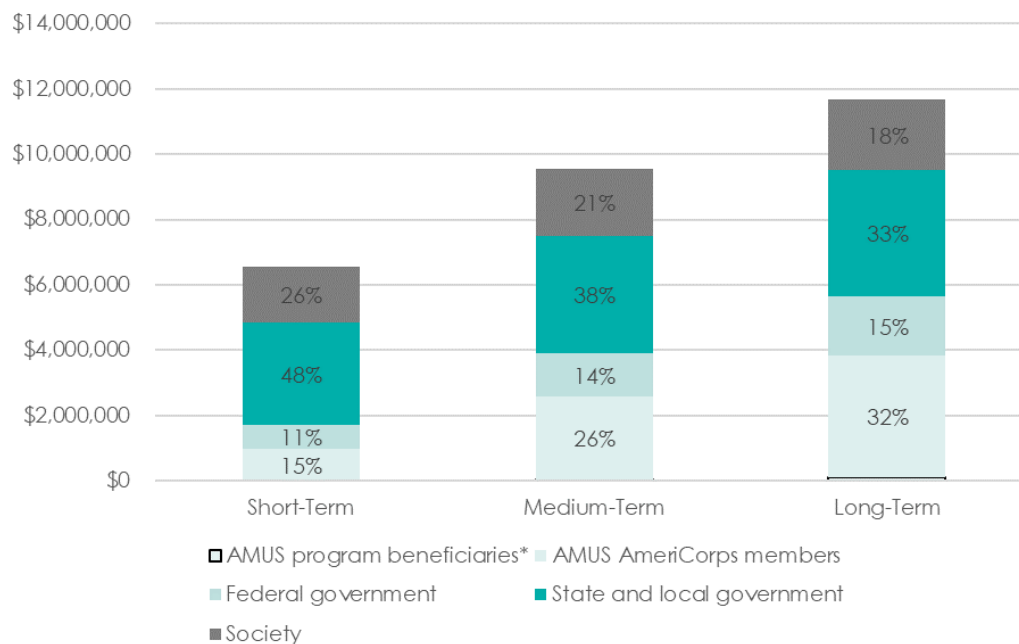
Table 5 shows the estimates of monetized benefits of AMUS by stakeholder group for each of the three scenarios. Figure 2 shows the estimates broken out into percentages.

Table 5. Program Benefits by Recipient

Recipient	Benefits by scenario (2022\$)		
	Short-term	Medium-term	Long-term
Water filter recipients	\$0	\$54,746	\$109,493
AMUS AmeriCorps members	\$970,384	\$2,526,976	\$3,734,661
Federal government	\$741,648	\$1,331,237	\$1,801,934
State and local governments	\$3,121,467	\$3,588,618	\$3,859,700
Society	\$1,735,368	\$2,050,710	\$2,150,214
Total	\$6,568,867	\$9,552,288	\$11,656,002

Note: Numbers may not sum due to rounding.

Figure 2. Program Benefits by Stakeholder Group



*Percentages for AMUS program beneficiaries: short-term, 0%; medium-term, 1%; long-term, 1%.

Note: Numbers may not sum due to rounding.

Forgone Benefits (Opportunity Costs)

Table 5 shows the breakdown of the forgone benefits from the professional opportunity cost to AMUS AmeriCorps members and government in net present 2022 dollars. It provides the amount of post-tax earnings that members forgo—and the associated taxes forgone—to serve with AMUS. This is called the *total professional opportunity cost*. For the *federal government benefits per federal dollar* ROI calculation, only the forgone federal income, Social Security, and Medicare taxes were subtracted from the total federal benefits that are realized due to AMUS. The summation of these forgone federal taxes is called the *federal professional opportunity cost*.

Table 6. Forgone Benefits From Professional Opportunity Cost

Forgone category	Professional opportunity cost amount across all scenarios (2022\$)
Post-tax earnings	\$451,488
Federal income taxes	\$80,367
State income taxes	\$21,823
Social Security and Medicare taxes	\$47,007
Sales taxes	\$13,790
Total	\$614,475

Table 7 lists the forgone benefits from the investment opportunity cost incurred by scenario and for when:

- a) Total AMUS program funds for the program year are invested in U.S. Treasury bonds
- b) Only federal AMUS Michigan program funds (both program and education award funding) are invested in these bonds

Table 7 also lists the 2021 real interest rates and the number of years elapsed (with two payments a year) that were used as inputs to calculate the forgone accrued interest value for each scenario. The analysis used 2021 real interest rates for U.S. Treasury bonds because the AMUS program year analyzed began in 2021.

Table 7. Investment Opportunity Cost by Scenario and Funding Stream

Funding stream	Forgone accrued interest by scenario (2021\$)		
	Short-term (-1.80% interest rate and 1 year elapsed)	Medium-term (-0.80% interest rate and 15 years elapsed)	Long-term (-0.30% interest rate and 30 years elapsed)
Total AMUS program funding	-\$66,296	-\$419,158	-\$318,663
Federal AMUS program funding only	-\$27,945	-\$176,680	-\$134,320

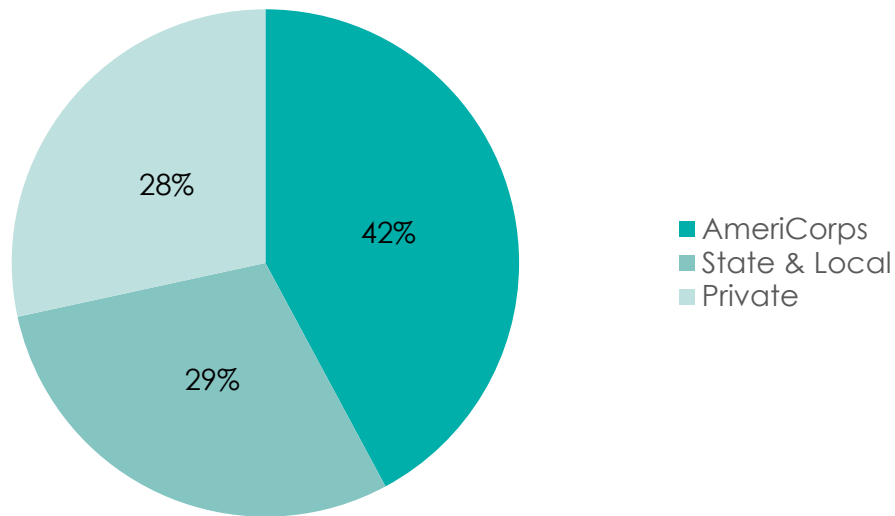
Program Costs

Table 8 shows the cost of AMUS for the 2021–2022 program year by funding source, and the percentage from each source is shown in Figure 3. Total program cost amounted to \$3,699,768, 42 percent of which is funded by AmeriCorps and approximately 58 percent of which is funded by other entities, such as state and local governments and private funders. The federal funds include the AmeriCorps State and National grant and the education award amounts granted to AMUS AmeriCorps members once they have completed their service term. Funds provided by state/local governments and private funds represent the match funding and other funding received by AMUS to support program activities for the program year. This match and other funding provide AMUS with the resources to offer more services and support to students than would otherwise be available only under the AmeriCorps federal funds. That translates into increased aggregate benefits realized across stakeholder groups.

Table 8. Program Cost by Funding Source for AMUS

Funder	Funding provided for the program year
AmeriCorps (federal government)	\$1,559,497
State and local governments	\$1,089,404
Private	\$1,050,867
Total	\$3,699,768

Figure 3. Program Cost by Funding Source



Note: Numbers may not sum due to rounding.

ROI Results

This analysis developed three ROI estimates using the three scenarios (short-term, medium-term, and long-term). The ROI calculations compare the net benefits of AMUS with the program cost to calculate the ROI. As noted above, this analysis did not include the impact of many AMUS activities.

Table 9 shows the program gross benefits, forgone benefits, net benefits, and cost of AMUS, and each of the components that are used to calculate the three ROIs.

Table 9. Program Benefits, Net Benefits, and Program Costs by ROI Scenario

Benefits and costs	ROI scenario (2022\$)		
	Short-term	Medium-term	Long-term
Total program gross benefits	\$6,568,867	\$9,552,288	\$11,656,002
Program beneficiaries (water filter recipients under the age of 6)	\$0	\$54,746	\$109,493
Member benefits	\$970,384	\$2,526,976	\$3,734,661
Federal government benefits	\$741,648	\$1,331,237	\$1,801,934
State and local government/other funder benefits	\$3,121,467	\$3,588,618	\$3,859,700
Societal benefits	\$1,735,368	\$2,050,710	\$2,150,214
Total forgone benefits (opportunity cost)	\$548,179	\$195,317	\$295,812
Forgone benefits to members (forgone earnings post-taxes)	\$451,488	\$451,488	\$451,488

Benefits and costs	ROI scenario (2022\$)		
	Short-term	Medium-term	Long-term
Forgone tax revenue from members' earnings	\$162,987	\$162,987	\$162,987
Forgone tax revenue federal government	\$127,374	\$127,374	\$127,374
Forgone tax revenue state/local governments	\$35,613	\$35,613	\$35,613
Forgone benefits from total investment (all funders)	-\$66,296	-\$419,158	-\$318,663
Forgone benefits from federal government investment	-\$27,945	-\$176,680	-\$134,320
Forgone benefits from state/local government investment	-\$38,352	-\$242,478	-\$184,343
Total program net benefits (total program gross benefits – total forgone benefits)	\$6,020,688	\$9,356,971	\$11,360,190
Program beneficiaries (participant benefits)	\$0	\$54,746	\$109,493
Net benefits members (member benefits – forgone benefits members)	\$518,896	\$2,075,488	\$3,283,173
Net benefits federal government (federal government benefits – forgone tax revenue to federal government – forgone benefits from federal government investment)	\$642,219	\$1,380,543	\$1,808,880
Net benefits state/local governments and other funders (state/local government benefits – forgone tax revenue to state/local governments – forgone benefits from state/local governments and other funder investment)	\$3,124,206	\$3,795,483	\$4,008,430
Net benefits society (society benefits)	\$1,735,368	\$2,050,710	\$2,150,214
Program cost	\$3,699,768	\$3,699,768	\$3,699,768
Federal government cost	\$1,559,497	\$1,559,497	\$1,559,497
Non-federal government cost	\$2,140,271	\$2,140,271	\$2,140,271
ROI for total benefits per federal dollar (Total program net benefits / federal government cost)	\$3.68	\$6.00	\$7.28
ROI for total benefits per funder dollar (Total program net benefits / program cost)	\$1.63	\$2.53	\$3.07

Benefits and costs	ROI scenario (2022\$)		
	Short-term	Medium-term	Long-term
Federal government benefits per federal dollar (Net benefits federal government / federal government cost)	\$0.41	\$0.89	\$1.16

Table 10 summarizes the ROI results for AMUS across the short-term, medium-term, and long-term scenarios. Three different ROI results are calculated for each scenario. Specifically, these ratios take the form of the sum of monetized benefits over the sum of applicable program costs. The ROIs expressed as cost–benefit ratios in this study can be interpreted as the amount of dollars returned for every \$1 of investment (or program cost).¹⁸ See Appendix B for the formulas used to calculate each ROI calculation.

Table 10. ROI Results for AMUS

ROI calculation	ROI scenario		
	Short-term	Medium-term	Long-term
Total benefits per federal dollar	\$3.68	\$6.00	\$7.28
Total benefits per funder dollar	\$1.63	\$2.53	\$3.07
Federal government benefits per federal dollar	\$0.41	\$0.89	\$1.16

The program produces strong returns for the short-, medium-, and long-term scenarios when benefits to AmeriCorps members, program beneficiaries, and state/local governments are included. This is indicated by the results of the *total benefits per federal dollar* and the *total benefits per funder dollar* ROI calculations. The *federal government benefits per federal dollar* calculations estimate losses for the short- and medium-term scenarios and positive returns in the long-term scenario. Reduction in crime primarily benefits society and state and local governments, rather than the federal government, so these results are consistent with the design of AMUS. The magnitude and direction of the ROI results are driven by several factors, including:

- **Increased economic benefits and reduced costs due to reduced criminal activity.** AMUS's work to reduce criminal activity leads to less property damage, additional community member earnings from reduced incarceration, and less spending on the criminal justice system.
- **Additional earnings by AmeriCorps members.** Serving in AmeriCorps leads to increased wages and reduced unemployment post-national service through skill acquisition, as well as increased educational attainment post-service.

¹⁸ ROIs can be expressed in percentages or as ratios, such as in this study. Although not shown as a ratio in the results, the ROIs in this study show the amount of return for every \$1 invested.

- **Reduced lifetime spending on corrections, public assistance, and social insurance.** Because of the increase in postsecondary educational attainment for AmeriCorps members, federal and state governments spend less on these items.

Government funding serves as a catalyst for private funding of evidence-based social services programs. For the ROI calculations of 1) *total benefits per federal dollar* and 2) *total benefits per funder dollar*, AmeriCorps's requirement of match funding also contributed to the magnitude of outcomes. Federal government funding of AMUS serves as a catalyst for other funding. This additional funding allows AMUS to serve more youth than otherwise would have been served under the federal funding alone. Though it may not impact the ROI, because it is a per-unit metric, match funding leads to greater investment in AMUS and thus to a greater impact as more individuals are served.

Recommendations for Further Research

Future ROI studies for national and community service programs, such as AMUS, can be strengthened in several ways.

Recommendation 1: Determine the persistence of short- and long-term impacts for AmeriCorps members. The persistence of impacts, such as earnings or employment, is often not measured in evaluations because it requires long-term tracking. Although a scenario-based approach that accounts for variations in the persistence of impacts can be used, as was completed in this ROI analysis, rigorous research on the long-term impact of programming will enable AmeriCorps to determine a single value for ROI calculations and avoid relying on the scenario-based approach. For example, Friedman et al. (2016) reported the unemployment status of AmeriCorps member alumni 6 months before service, 6 months after service, and during the summer of 2016. The authors indicate that data for the latter timepoint was collected anywhere from 3 to 11 years after service completion, depending on the AmeriCorps member alumni cohort (i.e., 2005, 2010, or 2013). The varying data collection periods for the cohorts makes it difficult to measure the duration of benefits. Thus, instead of collecting outcome measures at a time that varies by AmeriCorps member or program participant, studies should track outcomes of interest at the same intervals, multiple times after program or service completion, to provide greater insight into the duration and consistency of benefits.

Recommendation 2: Document outcomes using third-party data sources. Using third-party data, along with or in place of self-reported data, can also improve the accuracy of program outcome measurements. While self-reported data are easier to obtain—especially via the use of survey instruments—they have several disadvantages. Some answers may be exaggerated, respondents may not answer honestly, and response biases could affect results. AmeriCorps programs should—where possible—leverage data from third-party sources either to provide data for their program evaluation or to corroborate findings from self-reported data. For example, if employment and earnings outcomes are of interest, unemployment insurance data—which are submitted by employers—could be used to verify members' wages or employment status post-

service. Additionally, if degree completion data are of interest, such as in the case of this ROI analysis, data from the National Student Clearinghouse (NSC) could be used to verify what portion of AMUS AmeriCorps members pursued higher education and which degrees were completed post-program with the help of the education award. Were degree or employment outcomes data available from third-party data sources (like NSC), those data may make more precise ROI estimates possible.

Recommendation 3: Document outcomes prior to and after HEPA filter installation.

Indoor air pollution is associated with worse asthma and allergy symptoms and can be addressed with HEPA filters. However, the benefits of HEPA filters are limited compared to more intense interventions like new HVAC systems (U.S. Environmental Protection Agency, 2018). To capture the benefits of HEPA filters in the future, surveying homeowners on the presence of respiratory or lung illness prior to installation and how their condition changed in subsequent weeks could be used. Subsequent analysis can use medical expense data to quantify the benefits of reduced symptoms. Absent third-party data, collection of survey data on health outcomes can provide a more complete estimate of program benefits.

Recommendation 4: Identify appropriate control groups for outcome comparisons across AMUS activities. To measure impacts of the AMUS program, we relied on outcomes from similar activities in other programs. Although impacts of similar programs can reasonably estimate the impact of specific AmeriCorps programs, program implementation, participant population, or broader socio-economic context may differ in meaningful ways. For some AMUS activities, a more robust approach to tracking outcomes would be developing a control group, either through random assignment or propensity score matching, which could provide higher-quality estimates of impacts specific to the program. It may be necessary to develop control groups for each individual activity to accurately measure impact.

Recommendation 5: Research the per-unit impact of lead exposure. Lead exposure is a well-documented public health concern. However, most of the literature is focused on the elimination of lead and identifying the total impact of lead exposure. This makes it difficult to monetize programs that have partial reductions in lead exposure. Future researchers should identify the impacts on reduction in lead exposure to understand how mitigation of specific types of exposure can lead to economic benefits.

Recommendation 6: Research the impact of crime reduction programs. The literature has gaps for the impact of crime reduction programs on different types of crime. A recent meta-analysis (Ekici et al., 2022) found positive outcomes for several types of crimes, but not all were statistically significant because few studies included specific types of crimes. Examination of how these programs impact different types of crime, especially robberies, would allow more precise and complete ROI estimates.

Conclusion

The program produces modest returns for the medium-term scenarios and strong returns for long-term scenarios when all stakeholders are included as indicated by the results of the ROI calculations for these two scenarios. The federal government does not have a positive ROI from AMUS, but strong benefits to AmeriCorps members, state/local governments, and society demonstrate the AMUS program has strong program impacts. In the short-term scenario—which only includes benefits for 1 year post-program—the ROI results indicate that there is a short-term loss on funding invested in the program.

Appendix A: Program Benefits, Forgone Benefits, and Program Costs Included in Return on Investment Calculations

In Table 11, the three columns on the right indicate by an “X” if the program benefits, forgone benefits (opportunity cost), or program cost is included in the numerator or denominator of an ROI calculation.

Table 11. Benefits and Costs Included in the AMUS ROI Calculation

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
Benefits	Stakeholder group	Data sources	X indicates inclusion in the ROI denominator		
Increased lifetime earnings due to water filters for program beneficiaries who are children under age 6	Lead filter recipients	<ul style="list-style-type: none"> • AMUS • Canfield et al. (2003) • Landigran et al. (2002) • Zhou & Grosse (2019) • U.S. Census Bureau (2021-a) • Michigan Department of Health & Human Services (2023) 	X	X	
Increased lifetime income tax revenue due to increased IQ for program beneficiaries who are children under age 6 who receive lead filters	Federal government	<ul style="list-style-type: none"> • AMUS • Canfield et al. (2003) • Landigran et al. (2002) • Zhou & Grosse (2019) • U.S. Census Bureau (2021-a) • Michigan Department of Health & Human Services (2023) 	X	X	X

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
Increased lifetime Social Security tax revenue due to increased IQ for program beneficiaries who are children under age 6 who receive lead filters	Federal government	<ul style="list-style-type: none"> • AMUS • Canfield et al. (2003) • Landigran et al. (2002) • Zhou & Grosse (2019) • U.S. Census Bureau (2021-a) • Michigan Department of Health & Human Services (2023) 	X	X	X
Increased lifetime sales tax revenue due to increased IQ for program beneficiaries who are children under age 6 who receive lead filters	State and local governments	<ul style="list-style-type: none"> • AMUS • Canfield et al. (2003) • Landigran et al. (2002) • Zhou & Grosse (2019) • U.S. Census Bureau (2021-a) • Michigan Department of Health & Human Services (2023) 	X	X	
Reduced costs to society due to reduced criminal activity by community members due to AMUS's crime reduction work	Society	<ul style="list-style-type: none"> • AMUS • Ekici et al. (2022) • McCollister (2010) 	X	X	
Increased productive employment of community members from reduced incarceration due to AMUS's crime prevention work	Society	<ul style="list-style-type: none"> • AMUS • Modestino (2019) • McCollister (2010) 	X	X	

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
Reduced spending on criminal justice system due to reduced criminal activity by community members due to AMUS's crime reduction work	Federal, state, and local governments	<ul style="list-style-type: none"> • AMUS • Ekici et al. (2022) • McCollister (2010) 	X	X	X
Reduced costs to society due to reduced criminal activity by AmeriCorps youth members due to AMUS's summer youth program	Society	<ul style="list-style-type: none"> • AMUS • Modestino (2019) • McCollister (2010) 	X	X	
Increased productive employment of AmeriCorps youth members due to AMUS's summer youth program	Society	<ul style="list-style-type: none"> • AMUS • Modestino (2019) • McCollister (2010) 	X	X	
Reduced spending on criminal justice system due to reduced criminal activity by AmeriCorps youth members due to AMUS's summer youth program	Federal, state, and local governments	<ul style="list-style-type: none"> • AMUS • Modestino (2019) • McCollister (2010) 	X	X	X
Increased earnings of national service members due to increased employment and education of AmeriCorps members	AmeriCorps members	<ul style="list-style-type: none"> • AMUS • Friedman et al. (2016) • Modestino (2022) • U.S. Census Bureau (2021-a) • U.S. Bureau of Labor Statistics (2021-a) • U.S. Bureau of Labor Statistics (2021-b) 	X	X	

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
Increased income tax revenue due to increased earnings of AmeriCorps members	Federal, state, and local governments	<ul style="list-style-type: none"> Friedman et al. (2016) U.S. Census Bureau (2021-a) U.S. Bureau of Labor Statistics (2021-a) Tax rate data on Bankrate.com and Loughead (Tax Foundation, 2021) 	X	X	X
Increased Social Security and Medicare tax revenue due to increased earnings of AmeriCorps members	Federal government	<ul style="list-style-type: none"> Friedman et al. (2016) U.S. Census Bureau (2021-a) U.S. Bureau of Labor Statistics (2021-a) Social Security Administration (2022) 	X	X	X
Increased sales tax revenue due to increased earnings of AmeriCorps members	State and local governments	<ul style="list-style-type: none"> Friedman et al. (2016) U.S. Census Bureau (2021-a) U.S. Bureau of Labor Statistics (2021-a) U.S. Bureau of Labor Statistics (2021) Loughead (Tax Foundation, 2021) 	X	X	
AmeriCorps member living allowances and education awards	AmeriCorps members	<ul style="list-style-type: none"> AMUS 	X	X	

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
Reduced spending on lifetime public assistance, corrections, and social insurance due to increased educational attainment of AmeriCorps members	Federal, state, and local governments	<ul style="list-style-type: none"> • Trostel (2015) • Zeidenberg et al. (2016) • U.S. Census Bureau (2021-a) 	X	X	X
Forgone benefit (opportunity cost)	Stakeholder group	Data source	X indicates inclusion in the ROI denominator		
Opportunity costs of forgone market wages for AmeriCorps members	AmeriCorps members	<ul style="list-style-type: none"> • AMUS • U.S. Census Bureau (2021-a) • U.S. Bureau of Labor Statistics (2021-b) 	X	X	X
Opportunity costs of federal taxes on forgone market wages for AmeriCorps members (e.g., federal income and Social Security taxes)	Federal government	<ul style="list-style-type: none"> • AMUS • U.S. Census Bureau (2021-a) • U.S. Bureau of Labor Statistics (2021-a) • U.S. Bureau of Labor Statistics (2021-b) • Tax rate data on Bankrate.com and Loughhead (Tax Foundation, 2021) • Social Security Administration (2022) 	X	X	X

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
Opportunity costs of state and local taxes on forgone market wages for AmeriCorps members (e.g., state income and state/local sales taxes)	State and local governments	<ul style="list-style-type: none"> • AMUS • U.S. Census Bureau (2021-a) • U.S. Bureau of Labor Statistics (2021-a) • U.S. Bureau of Labor Statistics (2021-b) • U.S. Bureau of Labor Statistics (2021) • Loughead (Tax Foundation, 2021) 	X	X	X
Opportunity costs of federal funders	Federal government	<ul style="list-style-type: none"> • AMUS • U.S. Department of the Treasury (2022) 	X	X	X
Opportunity costs of program funders	Non-government funders	<ul style="list-style-type: none"> • AMUS • U.S. Department of the Treasury (2022) 	X	X	
Program cost	Payer	Data sources	X indicates inclusion in the ROI denominator		
AmeriCorps grant costs (excluding living allowances and education awards provided to AmeriCorps members)	Federal government (AmeriCorps)	<ul style="list-style-type: none"> • AmeriCorps 	X	X	X
AmeriCorps member living allowances and education awards	Federal government (AmeriCorps)	<ul style="list-style-type: none"> • AmeriCorps 	X	X	X
AMUS costs	AMUS	<ul style="list-style-type: none"> • AMUS 		X	
Other federal government funding (not provided by AmeriCorps)	Federal government	<ul style="list-style-type: none"> • AMUS 	X	X	X

Benefit or cost			Total benefits per federal dollar	Total benefits per funder dollar	Federal government benefits per federal dollar
State and local government funding	State and local governments	<ul style="list-style-type: none"> • AMUS 		X	
Other non-government costs	Non-government funders	<ul style="list-style-type: none"> • AMUS 		X	

Appendix B: Additional Information on the Methodology

This appendix provides additional details on the methodology used for this study, as a supplement to the methodology section in the main report. It describes the steps used to calculate the ROI, the results of interim calculations that contribute to the ROI calculations, and assumptions that underlie the analysis.

Methodology Overview

Calculating the ROI for the AMUS program included the following steps:

- Measuring and monetizing program benefits to AMUS program beneficiaries, AMUS AmeriCorps members, and the different levels of government
- Estimating forgone benefits (opportunity costs)
- Assessing program costs
- Calculating the ROI

This ROI analysis included only those benefits that could be reasonably monetized given the available data and that likely would not have occurred without the AMUS program.

Available data establish that AMUS AmeriCorps members enjoy earnings impacts as a result of serving in the program and that AMUS's summer youth program results in a reduction in crime after the end of that program. However, the data do not establish the duration of those benefits. To address a range of possible durations for those benefits, three scenarios were developed for this ROI study:

- **Short-term.** This scenario assumes short-term earnings impacts. The assumption is that earnings impacts are limited to a single year after program exit. This scenario also assumes no lifetime benefits are realized.
- **Medium-term.** This scenario assumes a longer duration of earnings impacts. The assumption is that earnings impacts last 15 years. A 3 percent discount rate is applied each year to represent net present value in 2022 dollars.¹⁹ This scenario also assumes only half of the net present value of lifetime benefits is realized.
- **Long-term.** This scenario assumes sustained earnings impacts throughout AMUS AmeriCorps members' working years. The assumption is that earnings impacts last 30 years. A 3 percent discount rate is applied each year to represent net present value in 2022 dollars. This scenario also assumes the entire net present value of lifetime benefits is realized.

There are some differences between the three scenarios. One is the length of time that increased employment—and earnings associated with that employment—are

¹⁹ The Office of Management and Budget (1992) defines a discount rate as, "The interest rate used in calculating the present value of expected yearly benefits and costs" (p. 18). Regarding the 3 percent discount rate, see Office of Management and Budget (2003).

sustained. The other is what portion of lifetime benefits, when applicable, are realized.²⁰ For each ROI calculation, three estimates using the three scenarios were developed, which is shown in greater detail in the Calculating ROI section.

Measuring Program Benefits

The first step in calculating the ROI for the AMUS program is to measure and monetize the program benefits. AMUS program beneficiaries, AMUS AmeriCorps members, and various levels of government benefit from the AMUS program. These benefits were identified through an extensive literature review and data collection process. The methods used to measure benefits for each of these stakeholder groups are described below.

Benefits to the AMUS Program Beneficiaries Who Received AMUS Water Filters

AMUS members distribute water filters to prevent exposure to lead in drinking water in the communities they serve. Lead exposure is linked with numerous negative health and neurological effects, including ADHD, learning disabilities, and aggression. Additionally, lead exposure has been linked to reduced IQ. Canfield et al. (2003) estimated the association between childhood lead exposure and IQ as blood lead level increases from 1 to 10 µg/dL. The authors controlled for several potentially confounding factors, such as maternal IQ and home environment quality. The study found a 1.37-point reduction in IQ per 1 µg/dL increase in blood lead level as exposure increased from 1 to 10 µg/dL.

This analysis only captured benefits from increased IQ due to avoided lead exposure. Other studies that evaluate the benefits of reduced lead exposure assume the entirety of lead exposure was avoided for a select population. This analysis captures a partial reduction of lead exposure, which limits the outcomes that can be quantified.

For example, Swinburn (2016) estimated the impact of remediating lead exposure for all children in Michigan. The author used estimates that 20 percent of ADHD cases and 10 percent of juvenile crime were attributable to elevated blood lead levels to quantify healthcare and state and local government savings, respectively. These findings are based on studies that do not identify a level of risk for ADHD or juvenile crime for an individual child given a certain level of lead exposure. The author was able to assume avoiding 20 percent of ADHD cases and 10 percent of juvenile crime since the ROI analysis was for the entire elimination of lead exposure. Additionally, the author identified a study that found 20 percent of children with a blood lead level of 25 µg/dL or more required special education services for 3 years. However, this analysis relied on

²⁰ These three scenarios consider varying durations of how long increased employment and earnings benefits last for AMUS AmeriCorps members. They also consider varying durations for lifetime benefits that stem from the AMUS program. For example, lifetime benefits in terms of decreased public assistance, social insurance, and corrections costs result from AMUS AmeriCorps members' higher educational attainment post-service. The analysis estimates lifetime benefits differently in the three scenarios. Specifically, the net present value of the entire lifetime benefit is realized for the long-term scenario, half of the net present value of the lifetime benefit is realized for the medium-term scenario, and no lifetime benefit amount is realized for the short-term scenario.

the percentage of children with more than 3.5 µg/dL blood lead level exposures since more detailed data were unavailable. Without data on the percentage of children with a blood lead level of 25 µg/dL, estimating the number of children who avoid special education costs is not feasible.

To estimate the impact of the water filters on childhood lead exposure, the analysis first estimated the number of children in the households that received a lead water filter. To do so, the analysis used 2021 American Community Survey data on the percentage of households in Detroit and Wayne County with related children under age 18, along with the percentage of children under the age of 6 (U.S. Census Bureau, 2021-a). The analysis assumed that each household with children under the age of 6 only had one child in that age range, which may underestimate the actual impact.

Each year, the State of Michigan releases the results of lead tests that show the percentage of children with elevated blood lead levels by locality. The average percentage of children under age 6 with elevated blood lead levels for 2017–2021 was 10 percent in Detroit and 3.5 percent in the remainder of Wayne County.

Table 12. Estimated Number of Program Beneficiaries Who Received a Water Filter and Are Children Under the Age of 6 With Elevated Blood Lead Levels

Locality	Water filters distributed	Percentage of households with children	Percentage of households with at least one child under age 6	Estimated households with at least one child under age 6	Percentage of children under age 6 with elevated blood lead levels	Estimated children with elevated blood lead levels
Detroit	151	62%	35%	33.0	10.5%	3.5
Harper Woods City	297	60%*	33%*	58.2	3.5%	2.0
Inkster	21	60%*	33%	4.2	3.5%	0.2
Total	469	N/A	N/A	95.4	N/A	5.6

*The Wayne County figure was used because American Community Survey data were not collected for this locality.

Note: Numbers may not sum due to rounding.

Sources: U.S. Census Bureau (2021-a), Michigan Department of Health and Human Services (2023), AMUS

The EPA (2023) estimates that about 20 percent of lead exposure is attributable to drinking water. Since data on the distribution of these blood levels were not available, the analysis assumes all children with elevated blood lead levels have a 3.5 µg/dL blood lead level. So, the analysis estimates that about 0.7 µg/dL of blood lead level is due to drinking water. With the installation of the water filters, this lead exposure would not occur.

As discussed above, an increase of 1 µg/dL of blood lead level is associated with a decline of 1.37 IQ points, and a decline of 1 IQ point is associated with a 2.39 percent decline in lifetime income. Below is the calculation for the expected reduction in lifetime income for a child with an elevated blood level:

$$\frac{3.5 \mu\text{g}}{\text{dL}} * 20\% * \frac{1.37 \text{ IQ Point}}{\mu\text{g/dL}} * (2.39 \% / \text{IQ} * \$1,139,593) = \$26,120$$

Table 13. Estimated Avoided Income Loss for AMUS Program Beneficiaries Who Are Children Under the Age of 6

Locality	Estimated children with elevated blood lead levels	Estimated increase in lifetime income	Estimated pre-tax lifetime income
Detroit	3.5	\$26,120	\$90,290
Harper Woods City	2.0	\$26,120	\$52,939
Inkster	0.2	\$26,120	\$3,835
Total	5.7	N/A	\$147,063

Note: Numbers may not sum due to rounding.

Sources: AMUS, U.S. Census Bureau (2021-a), Canfield et al. (2003)

Benefits to AMUS AmeriCorps Members

The AMUS AmeriCorps members who provide services as part of the AMUS program experience benefits due to their national service. This analysis estimated the following benefits:

- Living allowance and education award
- Increased earnings due to reduced unemployment
- Increased lifetime earnings due to increased postsecondary education derived from the use of education awards

Living Allowance and Education Award

Living allowances are given to AmeriCorps members during their service term to pay for various living expenses—such as housing and groceries—and they sometimes include members' workers' compensation and health insurance when applicable. Regarding education awards, according to Friedman et al. (2016), a significant portion (i.e., 46 percent) of AmeriCorps State and National member alumni use them to pay for additional postsecondary education at colleges, graduate schools, and technical/vocational schools, while others (i.e., 33 percent) use them to pay off outstanding student loans. The remaining 21 percent do not use their education awards. Living allowances and education awards are prorated based on the service terms of members, including those participating in the summer youth programs with especially short service terms.

Both the living allowances and education awards (considered one-time benefits that are not discounted or spread over time) are taxable and represent member benefits. However, only the portion of education awards used by members to pay off existing student loans is considered a direct member benefit. The portion that is utilized to pursue further postsecondary education is only used in calculating members' additional lifetime earnings due to the increased educational attainment they experience post-service from using the education award. This is done to avoid double counting. This analysis included the post-tax values of the living allowance and the portion of the education award used to repay student loans as AMUS AmeriCorps member benefits, which are listed in Table 14. The portion of the education award used to fund additional postsecondary education is discussed in the following section.

Table 14. AMUS AmeriCorps Member Benefits From the Living Allowance and Education Award

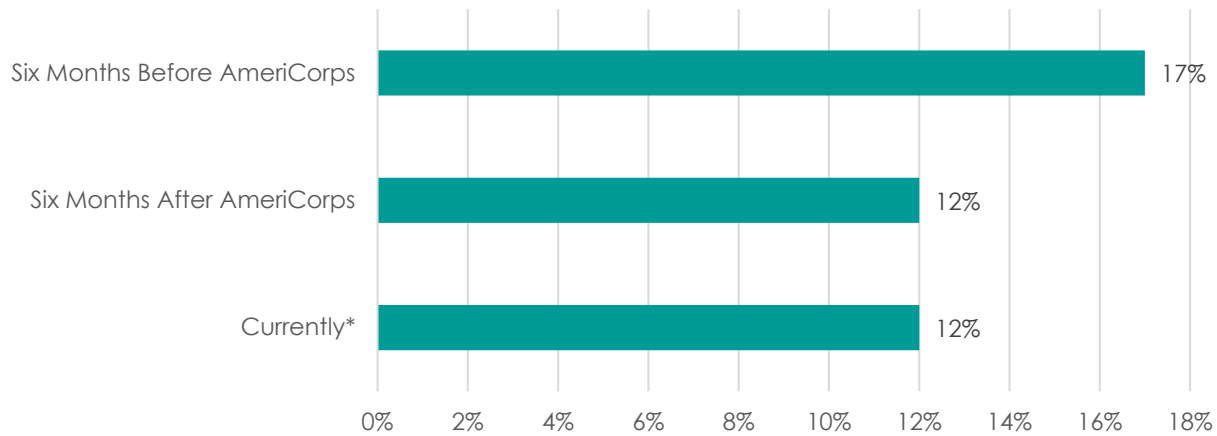
Benefit	Post-tax value (2022\$)	Notes
Living allowance	\$809,695	Post-tax living allowances members receive during service
Education award used to pay off student loans	\$103,521	Post-tax education award amount used to pay off outstanding student loans
Total	\$913,216	

Sources: AMUS and Friedman et al. (2016)

Increased Earnings due to Reduced Unemployment

According to Friedman et al. (2016), the percentage of AmeriCorps members unemployed was 5 percentage points lower 6 months after serving in AmeriCorps compared to 6 months before serving. The study did not provide actual employment rates for AmeriCorps members pre- and post-service, but instead provided the unemployment rates shown in Figure 4 (17 percent vs. 12 percent) in which the change between them represents a 5-percentage-point decrease.

Figure 4. Percentage of AmeriCorps Alumni Seeking Work, Providing Caregiving, or Occupied Outside of the Workforce From Friedman et al. (2016)



*"Currently" refers to the summer 2016 survey. Respondents were from the 2005, 2010, and 2013 AmeriCorps cohorts, so respondents varied in how much time had elapsed since their AmeriCorps service.

A direct member benefit from being employed post-service is additional income earned. To monetize this 5-percentage-point decrease in unemployment, ICF requested that AMUS provide the gender, age, pre-service educational attainment, and race/ethnicity distribution of AmeriCorps members who served with AMUS for the most recent program year. Based on those demographics, the analysis used annual average earnings data from the Current Population Survey's Annual Social and Economic (ASEC) Supplement for March 2021 to estimate AMUS AmeriCorps members' additional earnings due to the reduced unemployment (U.S. Census Bureau, 2021-b).

Specifically, the analysis used ASEC data to calculate the per-person pre-tax average annual earnings for 18- to 34-year-olds weighted by the demographic distribution of AMUS AmeriCorps members who served during the 2021–2022 program year. This value expressed in 2022 dollars was \$35,358 as shown in Table 15. The analysis then multiplied the 5-percentage-point decrease in unemployment from Friedman et al. (2016) by the number of AMUS AmeriCorps member (including summer program participants) FTEs who served during the most recent program year (i.e., 52). This estimated the number of *additional* AMUS AmeriCorps member FTEs employed due to national service (i.e., 0.5). To estimate the additional pre-tax earnings that stemmed from the reduced unemployment, the \$35,358 annual earnings amount was multiplied by the additional number of AMUS AmeriCorps members employed post-service. This represents the additional income earned by AMUS AmeriCorps members due to serving with AMUS.

Table 15. Additional Pre-Tax Earnings for AMUS AmeriCorps Members From Reduced Unemployment Based on AMUS AmeriCorps Member Demographics

Metric	Value (2022\$)*
Average per-person pre-tax annual earnings of employed 18- to 34-year-olds weighted by AMUS AmeriCorps member demographics (e.g., gender, race/ethnicity, and pre-service education level)	\$35,358
Reduction in AmeriCorps members' unemployment	5%
Total expected increase in earnings, per member	\$1,768
AMUS AmeriCorps member FTEs	45.8
Cumulative additional pre-tax earnings	\$80,883
Cumulative additional post-tax earnings	\$57,168

*This value is undiscounted; thus, the values do not sum in the table.

Sources: AMUS (2023), Friedman et al. (2016), and U.S. Census Bureau (2021-b)

To avoid double counting, the additional *post-tax* earnings is used to calculate the direct benefit to AMUS AmeriCorps members, rather than the additional *pre-tax* earnings. The post-tax annual earnings for the additional AMUS AmeriCorps member FTEs employed in Table 16 excludes payroll taxes (e.g., federal and state income, Social Security, and Medicare). The payroll tax rates used are described in more detail in the Benefits to Government section.

Based on these calculations, the cumulative additional post-tax earnings for AMUS AmeriCorps members for the three different scenarios—discounted in 2022 dollars using data from the Office of Management and Budget (2003)—are shown in Table 16. These monetary amounts represent the additional post-tax earnings realized due to the employment gain that is solely attributed to the AMUS program.

Table 16. Cumulative Additional Post-Tax Earnings Derived From Reduced Unemployment due to Serving With the AMUS Program by Scenario

Scenario	Cumulative additional post-tax earnings due to serving with the AMUS program (2022\$)
Short-term	\$57,168
Medium-term	\$566,924
Long-term	\$727,774

Sources: AMUS, Friedman et al. (2016), U.S. Census Bureau (2021-b), and Office of Management and Budget (2003)

Increased Lifetime Earnings due to Increased Postsecondary Education Derived From the Use of Education Awards

The AmeriCorps education award pays for some portion of members' increased postsecondary educational attainment, and the future earnings derived from that educational attainment are treated as a direct benefit to AMUS AmeriCorps members. To calculate the portion of members' increased educational attainment that is attributable to the AMUS program, this analysis used cost data from the National Center for Education Statistics (NCES). Table 17 details the average total cost for each degree type and the portion of the cost that the post-tax education award amount (i.e., \$5,622) represents (\$7,015 before taxes²¹). The analysis used these percentages to estimate the lifetime benefits of postsecondary educational attainment that can be attributed to the education award. For instance,

according to NCES (2021-a), the average annual cost of a public, in-state, 4-year academic institution during the 2020–2021 academic year was \$28,029. This amounts to more than \$100,000 for 4 years if expressed in 2022 dollars. The \$5,622 post-tax education award only represents 4.8 percent of the cost of that degree, so the AMUS program could only be credited with 5 percent of the completion of AMUS AmeriCorps members' bachelor's degrees post-service.

Additional earnings derived from AMUS AmeriCorps members' *reduced unemployment* were calculated annually and then discounted based on the short-term, medium-term, and long-term scenarios in net present 2022 dollars.

For additional earnings derived from AMUS AmeriCorps members' *increased postsecondary educational attainment*—due to using education awards—Trostel (2015) did not provide data on how earnings accrue over time. Therefore, this analysis treated the increases in earnings as lifetime values expressed in 2022 dollars. The analysis assumed 100 percent of those lifetime earnings accrued by year 30 (i.e., in the long-term scenario), 50 percent accrued by year 15 (i.e., in the medium-term scenario), and nothing accrued 1 year post-program (i.e., in the short-term scenario).

²¹ This analysis used the 2021 to 2022 AmeriCorps education award amount (\$6,495) but adjusted it to net present 2022 dollars using the Consumer Price Index (U.S. Bureau of Labor Statistics, 2021-a). For more information about this education award, please see <https://americorps.gov/members-volunteers/segal-ameri-corps-education-award/find-out-more>.

Table 17. Average Total Cost of Education and Portion Attributable to Education Award by Degree Type

Degree type ²²	Average cost (2022\$)*	Percentage of degree total cost covered by post-tax education award
Associate degree	\$28,029	20.1%
Bachelor's degree	\$116,275	4.8%
Graduate degree	\$35,872	15.7%

*Costs were provided for the 2020 to 2021 academic year by NCES (2021-a) for associate degree, bachelor's degree, and graduate degree types.

Sources: AmeriCorps (n.d.) and NCES (2021-a)

To determine the future lifetime earnings realized due to the use of the education award post-service (and, later, the associated lifetime taxes, which are described in the Benefits to Government section), the analysis first determined the number of additional postsecondary degrees estimated to be completed by degree type. The 29.9 AMUS AmeriCorps member FTEs who served during the 2021–2022 program year and were not a part of the summer youth program were distributed by the education award use findings listed in Friedman et al. (2016) across the degree types. The analysis did not include AMUS youth members to avoid double counting benefits.

Specifically, Friedman et al. (2016) reported 46 percent of AmeriCorps State and National member alumni used their education award to pursue postsecondary degrees after program completion. This makes the number of AMUS AmeriCorps member FTEs expected to use the education award to pursue additional postsecondary education roughly equal to 10. Specifically, Friedman et al. (2016) indicated that the 46 percent comprises 2 percent using the education award to attend a technical or vocational training program, 21 percent using it to obtain a bachelor's degree, and 23 percent using it for graduate school.²³ This results in the number of AMUS AmeriCorps members estimated to *pursue*—due to using the education award—an associate degree, a bachelor's degree, or a graduate degree post-service to be roughly 0.6, 6.3, and 6.9, respectively, for a total of 14. These values are shown in Table 18.

²² Costs for an associate degree include tuition, required fees, books, and supplies for a public, in-state, 2-year program; costs for a bachelor's degree include tuition, required fees, books, supplies, and on-campus housing for a public, in-state, 4-year program; costs for a graduate degree include tuition and required fees for a public, in-state, 2-year graduate program.

²³ This analysis considers the use of the education award to attend a technical or vocational training program from Friedman et al. (2016) to be synonymous with using it to pursue an associate degree.

Table 18. Estimates of the Number of Postsecondary Degrees Pursued Using the Education Award by Degree Type

Degree type	Total AMUS AmeriCorps member FTE count	Percentage estimated to pursue postsecondary education according to Friedman et al. (2016)	Number of degrees pursued using the education award
Associate degree	29.9	2%	0.6
Bachelor's degree	29.9	21%	6.3
Graduate degree	29.9	23%	6.9
All degrees	—	46%	13.7

Note: Numbers may not sum due to rounding.

Sources: AmeriCorps (n.d.), AMUS, Friedman et al. (2016), NCES (2021-b)

Next, the difference in the additional lifetime pre-tax earnings from one degree type to the subsequent degree type was estimated using data provided by Trostel (2015), which is shown in the fifth column of Table 19 and expressed in 2022 dollars.²⁴ For instance, using Trostel (2015) data, the lifetime earnings in 2022 dollars of someone with an associate degree is about \$1 million, while that of someone with a bachelor's degree is almost \$1.5 million. The difference between these two metrics (roughly \$483,000 as show in Table 19) represents the additional lifetime earnings realized as a result of gaining a bachelor's degree if an associate degree was already completed. This process was completed for all postsecondary degree types to conservatively estimate the additional lifetime earnings realized by AMUS AmeriCorps members due to an increase in postsecondary educational attainment. Trostel (2015) also included data on lifetime taxes paid, which was converted to 2022 dollars and then used to estimate the post-tax lifetime earnings that would be realized per additional postsecondary degree received. Specifically, the lifetime taxes paid amounts were subtracted from the pre-tax additional lifetime earnings amounts to estimate the additional post-tax lifetime earnings, a direct benefit to AMUS AmeriCorps members.

²⁴ For an associate degree, comparisons were made between metrics for a high school diploma and those for an associate degree. For a bachelor's degree, comparisons made were between metrics for some college and those of a bachelor's degree. For a graduate degree, comparisons made were between metrics for a bachelor's degree and those of a master's degree.

Table 19. Additional Earnings From AmeriCorps Members' Use of the Education Award

Degree type	Degrees pursued using the education award	Percentage of degree total cost covered by post-tax education award	Degrees obtained using the education award	Additional pre-tax lifetime earnings per degree type	Additional lifetime taxes paid per degree type	Additional post-tax lifetime earnings per degree type	Total post-tax lifetime earnings using the education award
Associate degree	0.6	20.1%	0.1	\$194,929	\$95,763	\$99,166	\$11,959
Bachelor's degree	6.3	4.8%	0.3	\$602,351	\$289,747	\$312,604	\$94,531
Graduate degree	6.9	15.7%	1.1	\$534,678	\$202,162	\$332,516	\$360,215
Total	13.7	—	1.5	—	—	—	\$466,705

Note: Numbers may not sum due to rounding.

Sources: AmeriCorps (n.d.), AMUS, Friedman et al. (2016), NCES (2021-b), and Trostel (2015)

To isolate the increase in additional lifetime earnings specific to members using the education award, the number of AMUS AmeriCorps members who used the education award for this purpose by degree type was reduced by the percentage of the degree cost that can be covered by the \$5,622 post-tax education award received post-service, displayed in the third column of Table 19. As a result, the analysis estimated that the use of the education award among AMUS AmeriCorps members produced roughly 0.1 additional associate degree, 0.3 additional bachelor's degree, and 1.1 additional graduate degrees post-service. Then, the number of additional degrees *obtained* was applied to the 2022 additional post-tax lifetime earnings by degree type. This calculates the additional lifetime post-tax earnings realized by AMUS AmeriCorps members from their increase in postsecondary educational attainment that is credited to the use of the education award post-service. The total additional lifetime post-tax earnings amount was roughly \$466,705 across AMUS AmeriCorps members. Of note, these lifetime earnings are *in addition to* the earnings derived from AMUS AmeriCorps members' gains in employment as delineated in the previous section. To reiterate, the earnings from AMUS AmeriCorps members' reduced unemployment differs depending on the scenario (i.e., short-term, medium-term, and long-term) since it is uncertain how long these earnings will persist. For the post-tax lifetime earnings—and all lifetime benefits in this ROI analysis—the entire amount is realized in the long-term, half of it is realized in the medium-term, and no amount is realized in the short-term.

Youth members are approximately 8 percentage points more likely to enroll in bachelor's degree programs (Modestino, 2022). To estimate the number of additional bachelor's degrees attained due to the summer youth program, the analysis selected the number of members in the program with a high school degree or less (42) and applied the increased enrollment finding. Then, the analysis applied the number of enrolled students by the national graduation rate of 4-year institutions (64 percent).

Table 20. Estimates of the Number of Bachelor’s Degrees Pursued due to Summer Youth Program Participation

Degree type	Youth members with high school degree or less	Increased likelihood of college enrollment	National graduation rate	Number of degrees obtained using the education award
Bachelor's degree	42	8.1%	64%	2.2

Sources: AMUS, Modestino (2022), and NCES (2021-b)

Next, the difference in the additional lifetime pre-tax earnings from one degree type to the subsequent degree type was estimated using data provided by Trostel (2015), which is shown in the fifth column of Table 19 and expressed in 2022 dollars. Trostel (2015) also included data on lifetime taxes paid, which was converted to 2022 dollars and then used to estimate the post-tax lifetime earnings that would be realized per additional postsecondary degree received. Specifically, the lifetime taxes paid amounts were subtracted from the pre-tax additional lifetime earnings amounts to estimate the additional post-tax lifetime earnings, a direct benefit to AMUS AmeriCorps members who participated in the summer youth program.

Table 21. Additional Earnings From Summer Youth Program Members’ Increased Education

Degree type	Number of degrees pursued using the education award	Additional pre-tax lifetime earnings per degree type	Additional lifetime taxes paid per degree type	Additional post-tax lifetime earnings per degree type	Total post-tax lifetime earnings using the education award
Bachelor's degree	2.2	\$602,351	\$289,747	\$312,604	\$680,626

Benefits to Society

Avoided Costs and Increased Productivity From AMUS’s Crime Reduction Activities:

Society at large benefits from reduced costs to victims and increased productivity due to AMUS's crime reduction efforts. A meta-analysis conducted by Ekici et al. (2022) based on 20 studies found that community policing efforts, which include activities similar to AMUS, reduced burglaries by 11 percent. The analysis assumes that, without AMUS, burglaries in the neighborhoods they operate in would have been 11 percent higher. The analysis used data from Moss's evaluation regarding the number of burglaries in 2019 in precincts that AMUS was operating in and used data from 2019 because it was the most recent year available. The analysis relied on McCollister's estimate for the per-offense cost of crime to estimate the costs to the criminal justice system. The two forms of costs of crime to society are 1) direct costs to victims and 2) lost economic productivity due to incarceration. The authors estimated the cost of one

burglary to a victim was \$1,851 and the productivity loss associated with incarceration was \$926 per burglary. The total cost of burglary to society is \$2,777 per offense (in 2022 dollars). Table 22 and Table 23 show the calculations used to estimate this benefit.

Table 22. Avoided Costs to Society due to Reduced Costs to Victims by Type of Crime due to AMUS’s Crime Reduction Activities

Source of societal cost	Percentage reduction in crimes	Number of burglaries in neighborhoods with AMUS	Number of avoided burglaries	Cost to government per offense (2022\$)	Cost to society
Burglary	11%	5,630	612	\$1,851	\$1,133,335

Table 23. Benefits to Society due to Increased Employment From Reduced Incarceration by Type of Crime due to AMUS’s Crime Reduction Activities

Source of societal cost	Percentage reduction in crimes	Number of burglaries in neighborhoods with AMUS	Number of avoided burglaries	Cost to government per offense (2022\$)	Cost to society
Burglary	11%	5,630	612	\$926	\$566,668

Since this impact is sustained for the program year and not subsequent years, the benefit is not extrapolated to accrue beyond the first year.

Avoided Costs and Increased Productivity From AMUS’s Summer Youth Program: Society at large also benefits from the reduced costs to victims and increased productivity by youth members due to avoided criminal activity from their participation. Modestino (2019) found that participants in Boston’s SYEP had 0.022 and 0.016 fewer violent and property criminal arraignments per participant per year, respectively. The analysis used McCollister’s estimate for the per-offense cost of crime to estimate the costs to the criminal justice system. To avoid overstating the benefits of the program, the analysis used the type of crime with the lowest estimated cost in each category. The two forms of costs of crime to society are 1) direct costs to victims and 2) lost economic productivity due to incarceration. For violent crime, robbery was the lowest cost and for property crime larceny/theft was the lowest. The authors estimated the direct costs to victims was \$4,484 per robbery and \$652 per larceny/theft (in 2022 dollars). The authors estimated the lost economic activity was \$5,807 per robbery and \$222 per larceny/theft. Table 24 and Table 25 show the calculations used to estimate this benefit. A 3 percent discount was applied to the annual benefit for the short-, medium- and long-term scenarios.

Table 24. Annual Avoided Costs to Society due to Victim Costs by Type of Crime due to AMUS's Summer Youth Program

Source of cost	Number of avoided crimes per youth	Youth members	Cost to society per offense (2022\$)	Annual avoided cost to society
Robbery	0.022	66	\$4,484	\$6,476
Theft/larceny	0.016	66	\$652	\$669

Source: AMUS, Modestino (2019), McCollister (2010)

Table 25. Annual Benefits to Society due to Increased Employment From Reduced Incarceration by Type of Crime due to AMUS's Summer Youth Program

Source of cost	Number of avoided crimes per youth	Youth members	Benefit to society per offense (2022\$)	Annual benefit to society
Robbery	0.022	66	\$5,807	\$8,386
Theft/larceny	0.016	66	\$222	\$227

Source: AMUS, Modestino (2019), McCollister (2010)

Benefits to Government

State and Local Governments

State and local governments benefit from:

- Additional state income tax revenue from AMUS AmeriCorps members' increased earnings due to reduced unemployment
- Additional lifetime state and local taxes due to AMUS AmeriCorps members' increased postsecondary educational attainment²⁵
- Additional lifetime state and local taxes due to AMUS water filter recipients' increased earnings²⁶
- Additional state and local taxes from the living allowance and education award received by these members

²⁵ This benefit was calculated using lifetime tax revenue data from Trostel (2015). These values summed lifetime state income taxes, lifetime property taxes, and lifetime sales taxes by education level.

²⁶ This benefit was calculated using lifetime tax revenue data from Trostel (2015) for postsecondary education.

- Additional state and local sales tax revenue from AMUS AmeriCorps members' increased consumption due to reduced unemployment
- Reduced lifetime spending on public assistance, social insurance, and corrections²⁷ due to AMUS AmeriCorps members' increased postsecondary educational attainment
- Reduced spending on the criminal justice system from reduced criminal activity due to AMUS's crime reduction work
- Reduced spending on the criminal justice system from reduced criminal activity by AMUS youth members due to AMUS's summer youth program

State and local government criminal justice system cost savings due to crime reduction activities:

State and local governments avoid spending on police, legal services, and corrections programs due to AMUS's crime reduction efforts. A meta-analysis conducted by Ekici et al (2022) based on 20 studies found that community policing efforts, which include activities similar to AMUS, reduced burglaries by 11 percent. The analysis assumes that without AMUS, burglaries in the neighborhoods they operate in would have been 11 percent higher. The analysis used data from Moss's evaluation regarding the number of burglaries in 2019 in precincts that AMUS was operating in and used data from 2019 because it was the most recent year available. The analysis also used McCollister's estimate for the per-offense cost of crime to estimate the costs to the criminal justice system. The analysis based findings on an estimated cost of burglary to the criminal justice system of \$5,610 per offense (in 2022 dollars). To calculate the costs specific to state and local governments,

Additional tax revenue derived from AMUS AmeriCorps members' *reduced unemployment, living allowances, and education awards* was calculated using tax rates specific to each per-person monetary amount.

For additional tax revenue derived from AMUS AmeriCorps members' *increased postsecondary educational attainment*—due to using education awards—Trostel (2015) did not provide specific tax rates. Therefore, this analysis treated the increases in tax revenue as lifetime values expressed in 2022 dollars. The analysis assumed 100 percent of those lifetime tax revenues accrued by year 30 (i.e., in the long-term scenario), 50 percent accrued by year 15 (i.e., in the medium-term scenario), and nothing accrued 1 year post-program (i.e., in the short-term scenario).

Tax revenue derived from AMUS beneficiaries' increased educational attainment assumes a federal marginal income tax rate of 12 percent, the state income tax rate for Michigan (4.25 percent), the Medicare tax rate (1.45 percent), and the Social Security tax rate (6.2 percent). The assumed Michigan sales tax, state and local, is 6.00 percent. The analysis applied these tax rates to the estimated earnings in each scenario.

²⁷ Reduced spending on public assistance due to AMUS AmeriCorps members' increased postsecondary educational attainment is included as a federal government benefit, not a state and local government benefit. This is because public assistance includes programs funded at the federal level (e.g., TANF, etc.).

the analysis relied on Sawyer and Wagner's estimate that 87 percent of people who are incarcerated are in state and local prisons (2023).

Since this impact is sustained for the program year and not subsequent years, the benefit is not extrapolated to accrue beyond the first year.

Table 26. Avoided Costs to State/Local Governments by Type of Crime due to Crime Reduction Activities

Source of government cost	Percentage reduction in crimes	Number of burglaries in neighborhoods with AMUS	Number of avoided burglaries	Cost to government per offense (2022\$)	State/local government proportion of costs	Cost to state/local governments
Burglary	11%	5,630	612	\$5,610	87%	\$2,974,332

State and local government criminal justice system cost savings due to the summer youth program: State and local governments avoid spending on police, legal services, and corrections programs due to AMUS's summer youth program. Modestino (2019) found that participants in Boston's SYEP had 0.031 and 0.022 fewer violent and property criminal arraignments per participant, respectively, in the 17 months after the program. To calculate the benefits over the course of a year, the analysis calculated these findings on an annual basis (0.022 and 0.016 fewer violent and property crimes per youth, respectively). The analysis used McCollister's estimate for the per-offense cost of crime to estimate the costs to the criminal justice system. To avoid overstating the benefits of the program, the analysis used the type of crime with the lowest estimated cost in each category. For violent crime, robbery was the lowest cost at \$29,086 per offense (in 2022 dollars) and for property crime larceny/theft was the lowest at \$4,789 per offense. The costs to the criminal justice system for robbery and larceny/theft were \$18,795 and \$3,913 respectively. To calculate the costs specific to state and local governments, the analysis relied on Sawyer and Wagner's estimate that 87 percent of people who are incarcerated are in state and local prisons (2023). A 3 percent discount was applied to the annual benefit for the short-, medium- and long-term scenarios.

Table 27. Annual Avoided Costs to State/Local Governments by Type of Crime due to the Summer Youth Program

Source of government cost	Number of avoided crimes per youth	Youth members	Cost to government per offense (2022\$)	State/local government proportion of costs	Annual cost to state/local governments
Robbery	0.022	66	\$18,795	87%	\$23,743
Theft/larceny	0.016	66	\$3,913	87%	\$3,595

Source: AMUS, Modestino (2019), McCollister (2010)

State income tax revenue: To measure income tax revenue generation that stems from reduced unemployment for state governments (any local income taxes are not

included), the additional pre-tax earnings of AMUS AmeriCorps members that are solely attributed to AMUS are taxed by a weighted estimated proportional state income tax rate. This tax rate considers state-specific progressive tax brackets and standard deduction amounts. Based on the taxable income, the analysis estimated the proportional state income tax for each state as the amount of state income taxes paid per AMUS AmeriCorps member divided by their pre-tax earnings. This analysis then calculated the weighted average of these state-specific tax rates—using these states' populations from the 5-year estimates of the 2021 American Community Survey (U.S. Census Bureau, 2021-a)—to estimate a weighted national tax rate (i.e., 2.2 percent). A weighted national tax rate was used because AMUS AmeriCorps members may disperse to various locations nationwide following their service terms and continue to migrate over the course of their working years.

Lifetime state income tax revenue values are also provided by Trostel (2015) by education level. Based on the number of postsecondary degrees estimated to be obtained due to the use of the education award received after serving with AMUS, additional lifetime state income taxes are realized. Thus, the additional lifetime state income taxes' paid values—informed by data from Trostel (2015)—were first converted to 2022 dollars. The analysis then multiplied them by the inferred number of degrees obtained using the education award (which are listed in the fourth column of Table 18).

State governments also receive state income taxes from the education awards that AMUS AmeriCorps members receive post-service. The analysis estimated the pre-tax education award amount in 2022 dollars (i.e., \$7,015).²⁸ Then the analysis multiplied it by the number of AMUS AmeriCorps member FTEs expected to redeem the award and use it to pursue postsecondary education or to repay outstanding student loans, based on findings from Friedman et al. (2016). The result represents the pre-tax cumulative education award amount expected to be received by AMUS AmeriCorps members. The portion of this value taxed by state income taxes was estimated using a weighted state income tax rate specific to the per-person education award amount. Additionally, state income taxes were estimated for the living allowance amount received by AMUS AmeriCorps members during their service term using tax rates specific to the per-person value. The different rates used for these member benefits are enumerated in Table 31.

State and local sales tax revenue: To measure sales tax revenue generation for state and local governments that stems from reduced unemployment, a weighted state and local sales tax rate was applied to the amount of AMUS AmeriCorps members' cumulative additional *post-tax* earnings that are available to be spent on taxable goods. To establish a weighted state and local sales tax, this analysis first summed the state sales tax rate and the average local sales tax rate for each state using data from Fritts (2021). Then using 2022 data from the American Community Survey (U.S. Census

²⁸ This analysis used the 2021 to 2022 AmeriCorps education award amount (\$6,495) but adjusted it to net present 2022 dollars using the Consumer Price Index (U.S. Bureau of Labor Statistics, 2021-a). For more information about this education award, please see <https://americorps.gov/members-volunteers/segal-ameri-corps-education-award/find-out-more>.

Bureau, 2021-a), these state-level combined state and local sales tax rates were weighted based on the population of each state. The resulting weighted average sales tax rate used in this analysis was 7.44 percent.

To estimate the additional post-tax earnings as a result of reduced unemployment and program participation that was spent on taxable goods, data from the Consumer Expenditure Survey (U.S. Bureau of Labor Statistics, 2022) were used. These data show the amount of spending on a number of different goods and services by national consumers across several different pre-tax income brackets.²⁹ The proportion of earnings that is spent on taxable goods (such as alcoholic beverages, housekeeping supplies, apparel, etc.) was then calculated for consumers with incomes that matched the per-person average pre-tax earnings of AMUS AmeriCorps members. This value was 63 percent. This proportion was then applied to AMUS AmeriCorps members' cumulative additional *post-tax* earnings to calculate the post-tax monetary amount they spend on taxable goods. Then the sales tax rate (i.e., 7.44 percent) was applied to estimate the resulting sales tax revenues that go to state and local governments due to AMUS AmeriCorps members' reduced unemployment post-service.

Trostel (2015) also provides additional lifetime state and local sales tax values by education level. Using these values, the analysis calculated the additional sales tax revenue realized by state and local governments as a result of youth members' increased college enrollment and AMUS AmeriCorps members using their education award to achieve higher postsecondary educational attainment post-service. These values represent a direct benefit to state and local governments in the form of increased tax revenue.

State and local government public assistance, social insurance, and corrections cost savings: State and local governments also benefit from AMUS through lifetime savings in public assistance, social insurance, and corrections—as reported in Trostel (2015)—due to the increase in AMUS AmeriCorps members' postsecondary educational attainment after program exit. Of note, social insurance includes unemployment insurance and workers' compensation. To calculate these lifetime non-federal government savings, the analysis first calculated the decrease in public assistance, social insurance, and corrections costs (and thus, savings) from one education level to the subsequent education level using data from Trostel (2015) and then multiplied these monetary amounts by the number of additional postsecondary degrees estimated to be obtained due to the use of the education awards and summer youth employment program participation.

To determine what portion of this differential represents lifetime cost savings to state or local governments versus the federal government, a different method was employed

²⁹ To calculate the estimated taxable expenditures, Consumer Expenditure Survey (CE) Table 1203 was used from the U.S. Bureau of Labor Statistics (2022). This table lists the annual expenditure means by pre-tax income tax brackets. Thus, the pre-tax earnings of AMUS AmeriCorps members were used instead of their post-tax earnings to calculate this metric. Please visit this site for more details: <https://www.bls.gov/cex/tables/calendar-year/mean-item-share-average-standard-error.htm#cu-income>.

for each of these cost savings areas. For social insurance, 50 percent of lifetime unemployment insurance cost savings and all the lifetime cost savings for workers' compensation are apportioned to state and local governments (Oswald, 2018). Regarding reductions in lifetime corrections spending, the portion between the federal and state or local governments was determined based on data from Hyland (2015). Specifically, this report found that 8.4 percent of U.S. corrections costs are paid by the federal government and the remaining 91.6 percent is paid by state and local governments. Therefore, almost 92 percent of the lifetime cost savings in corrections due to AMUS AmeriCorps members experiencing an increase in postsecondary educational attainment post-service are allocated to state and local governments.

Federal Government

The federal government benefits from:

- Additional federal income, Social Security, and Medicare tax revenue from AMUS AmeriCorps members' increased earnings due to reduced unemployment
- Additional federal income, Social Security, and Medicare taxes from the living allowance and education award received by these members
- Additional lifetime federal taxes due to AMUS AmeriCorps members' increased postsecondary educational attainment
- Additional lifetime federal taxes due to AMUS water filter recipients' increased lifetime earnings
- Reduced lifetime spending on public assistance, social insurance, and corrections due to AMUS AmeriCorps members' increased postsecondary educational attainment
- Reduced spending on the criminal justice system from reduced criminal activity due to AMUS's crime reduction work
- Reduced spending on the criminal justice system from reduced criminal activity by AMUS youth members due to AMUS's summer youth program

Federal government criminal justice system cost savings due to crime reduction

activities: The federal government avoids spending on police, legal services, and corrections programs due to AMUS's crime reduction efforts. A meta-analysis conducted by Ekici et al. (2022) based on 20 studies found that community policing efforts, which include activities similar to AMUS, reduced burglaries by 11 percent. The analysis assumes that without AMUS, burglaries in the neighborhoods they operate in would have been 11 percent higher. The analysis used data from Moss's evaluation regarding the number of burglaries in 2019 in precincts that AMUS was operating in and used data from 2019 because it was the most recent year available. The analysis also used McCollister's estimate for the per-offense cost of crime to estimate the costs to the criminal justice system. The analysis based findings on an estimated cost of burglary to the criminal justice system of \$5,610 per offense (in 2022 dollars). To calculate the costs specific to the federal government, the analysis relied on Sawyer and Wagner's estimate that 13 percent of people who are incarcerated are in federal prisons.

Since this impact is sustained for the program year and not subsequent years, the benefit is not extrapolated to accrue beyond the first year.

Table 28. Avoided Costs to State/Local Governments by Type of Crime due to Crime Reduction Activities

Source of government cost	Percentage reduction in crimes	Number of burglaries in neighborhoods with AMUS	Number of avoided burglaries	Cost to government per offense (2022\$)	Federal government proportion of costs	Cost to federal government
Burglary	11%	5,630	612	\$5,610	13%	\$459,790

Federal government criminal justice cost savings due to the summer youth program:

The federal government avoids spending on police, legal services, and corrections programs due to AMUS's summer youth program. Modestino (2019) found that participants in Boston's SYEP had 0.031 and 0.022 fewer violent and property criminal arraignments per participant, respectively, in the 17 months after the program. To calculate the benefits over the course of a year, the analysis calculated these findings on an annual basis (0.022 and 0.016 fewer violent and property crimes per youth, respectively). The analysis used McCollister's estimate for the per-offense cost of crime to estimate the costs to the criminal justice system. To avoid overstating the benefits of the program, the analysis used the type of crime with the lowest estimated cost in each category. For violent crime, robbery was the lowest cost at \$29,086 per offense (in 2022 dollars) and for property crime larceny/theft was the lowest cost at \$4,789 per offense. The costs to the criminal justice system for robbery and larceny/theft were \$18,795 and \$3,913, respectively.

To calculate the costs specific to the federal government, the analysis relied on Sawyer and Wagner's estimate that 13 percent of people who are incarcerated are in federal prisons (2023). A 3 percent discount was applied to the annual benefit for the short-, medium- and long-term scenarios.

Table 29. Annual Avoided Costs to Federal Government by Type of Crime due to the Summer Youth Program

Source of government cost	Number of avoided crimes per youth	Youth members	Cost to government per offense (2022\$)	Federal government proportion of costs	Annual cost to federal government
Robbery	0.022	66	\$18,795	13%	\$3,548
Theft/larceny	0.016	66	\$3,913	13%	\$537

Source: AMUS, Modestino (2019), McCollister (2010)

Federal income tax revenue: To measure federal income tax revenue that stems from reduced unemployment, the additional pre-tax earnings of AMUS AmeriCorps members that are solely attributed to the AMUS program—as well as the pre-tax living allowance and education award amounts received by AMUS AmeriCorps members—are taxed by

a federal income tax rate. The rates used are estimated proportional tax rates that consider the standard deductions and progressive tax brackets specific to federal income taxes as provided by El-Sibaie (2020). To reiterate, an estimated proportional tax rate equals the total amount of taxes estimated to be paid divided by the pre-tax amount of the value to be taxed (e.g., per-person average pre-tax earnings). The specific federal income tax rates used for these different benefits are enumerated in Table 31. Of note, different tax rates were used because they were specific to the per-person pre-tax earnings, living allowance, and education award amounts.

For the additional lifetime earnings of AMUS AmeriCorps members that is based on their increase in postsecondary educational attainment—made possible by the use of the education award—Trostel (2015) provides additional lifetime federal income tax values. These values were used to calculate the additional income tax revenue realized by the federal government due to members' postsecondary education gains.

For water filter recipients, the analysis estimated the increase in lifetime income due to reduced lead exposure. The analysis then estimated an increase in earnings for each group pre-income tax. Then, the analysis applied a marginal tax rate (12 percent) to determine the increase in federal income tax attributable to additional program participant education.

Social Security and Medicare tax revenue: Social Security and Medicare tax revenue are measured as fiscal gains as a result of the additional pre-tax earnings of AMUS AmeriCorps members from their reduced unemployment and as a result of the pre-tax living allowances and education awards amounts received by members. However, tax rates specific to each revenue source are used. Social Security and Medicare use flat tax rates, 6.2 percent and 1.45 percent, respectively; thus, these rates are applied to the additional pre-tax earnings of AMUS AmeriCorps members to calculate the additional amount of revenue the federal government receives. These same rates are also applied to the living allowance and education award amounts received by AMUS AmeriCorps members to calculate additional tax revenue.

Moreover, lifetime Social Security tax values are provided by Trostel (2015) by education level. The analysis used these values to estimate the additional lifetime Social Security tax revenue realized by the federal government as a result of AMUS AmeriCorps members using their education award to complete different postsecondary education degree types post-service.

For water filter recipients, the analysis estimated the increase in lifetime income due to reduced lead exposure. Then the analysis applied the Social Security and Medicare taxes (6.2 percent and 1.45 percent, respectively) to determine the increase in federal income tax attributable to additional program participant education.

Federal government public assistance, social insurance, and corrections cost savings:

The federal government realizes cost savings in public assistance, social insurance, and corrections due to the increased postsecondary educational attainment of AMUS AmeriCorps members after program exit. Specifically, the number of additional postsecondary degrees estimated to be earned by AMUS AmeriCorps members post-service as well as data from Trostel (2015) were used to estimate the federal government portion of lifetime cost savings on social insurance (which is composed of workers' compensation and unemployment insurance, as noted earlier), public assistance (e.g., SNAP, Medicaid, TANF, etc.), and corrections.

Table 30 shows the lifetime costs to the federal versus the state and local governments for each of these areas—where applicable—by education level in 2012 dollars as presented in Trostel (2015). The differences in these lifetime costs from one education level to the next represent cost savings per degree obtained.

Table 30. Government Costs by Education Attainment Level per Individual's Lifetime

Source of government cost	Associate degree (2012\$)	Bachelor's degree (2012\$)	Graduate degree (2012\$)
Public assistance	\$31,803	\$14,480	\$9,394
Social insurance	\$8,209	\$5,863	\$4,732
Federal	\$3,570	\$2,660	\$2,090
State/local	\$4,639	\$3,204	\$2,643
Corrections	\$4,055	\$1,190	\$725
Federal	\$341	\$100	\$61
State/local	\$3,714	\$1,090	\$664

Note: Numbers may not sum due to rounding.

Source: Trostel (2015)

As mentioned earlier in this appendix, as a result of AMUS, the analysis estimated an additional 14 long-term AMUS AmeriCorps members would redeem the education award to pursue additional postsecondary education along with two AmeriCorps youth members who would pursue a bachelor's degree. Based on the portion of degree costs covered by the post-tax education award, this analysis calculated that an additional associate degree, bachelor's degree, and graduate degree would be obtained due to AMUS. To conservatively calculate the federal government's lifetime savings associated with these education gains, the differences between the public assistance, federal social insurance, and federal corrections lifetime costs for these education levels and those that precede them are calculated and then expressed in 2022 dollars. These values are then multiplied by the number of additional postsecondary degrees estimated to be obtained—where appropriate—to represent the total cost savings realized by the federal government due to AMUS. As previously mentioned where

discussing the state and local governments' allocation of the reduction in lifetime social insurance and corrections expenditures, the federal government receives 50 percent of the lifetime cost savings in unemployment insurance (part of social insurance; Oswald, 2018), and more than 8 percent of the lifetime cost savings in corrections (Hyland, 2015). These federal government savings are shown in Table 32.

Table 31 shows the tax rates applied to AMUS AmeriCorps members' additional pre-tax and post-tax earnings (derived from reduced unemployment), depending on the type of revenue being calculated. It also enumerates the tax rates used for the pre-tax living allowance and education award amounts received by AMUS AmeriCorps members during their service term or upon service completion, respectively.

Table 31. 2021 Tax Rates and Ratio of Taxable Expenditures for AMUS AmeriCorps Members' Earnings, Living Allowances, and Education Awards

Metric	Rate for additional earnings & education award*	Rate for living allowance & education award**	Notes
Estimated proportional federal income tax	7.39%	3.42%	<ul style="list-style-type: none"> Tax rates are used that consider the progressive tax brackets and standard deductions specific to federal income taxes. These rates are dependent on and applied to the pre-tax value of each metric being taxed.
Estimated proportional state income tax	2.79%	2.21%	<ul style="list-style-type: none"> Tax rates are used that consider the progressive tax brackets and standard deductions specific to each state's income taxes. Each state's tax rate is weighted based on the state's population and summed to estimate a weighted national average. These rates are dependent on and applied to the pre-tax value of each metric being taxed.
Social Security tax	6.20%	6.20%	<ul style="list-style-type: none"> Social Security tax rate for employees and employers. These rates are applied to the pre-tax value of each metric being taxed.
Medicare tax	1.45%	1.45%	<ul style="list-style-type: none"> Medicare tax rate for employees and employers. These rates are applied to the pre-tax value of each metric being taxed.

Metric	Rate for additional earnings & education award*	Rate for living allowance & education award**	Notes
Sales tax	7.44%; N/A to the education award	7.44%; N/A to the education award	<ul style="list-style-type: none"> The combined state and average local tax rate for each state was summed and weighted based on states' populations to calculate a national weighted average sales tax rate. The rate is applied to the additional post-tax earnings of members as well as their post-tax living allowance amount.
Ratio of taxable expenditures per national consumer	44.7%; N/A to the education award	63%; N/A to the education award	<ul style="list-style-type: none"> Percentage of post-tax earnings spent on taxable goods and services that is used to calculate sales tax from post-tax earnings. Ratio is dependent on the pre-tax value of members' additional earnings or the pre-tax living allowance amount.

*These rates are only used for the portion of the education award used to repay outstanding student loans.

**These rates are only used for the portion of the education award used for additional schooling.

Sources: Fritts (2021), Social Security Administration (2022), U.S. Bureau of Labor Statistics (2022), and El-Sibaie (2020)

Summary of Benefits to Government

Table 32 shows the amount of tax revenue generated and savings in expenditures for state and local versus federal government that are solely credited to AMUS and calculated using the methods described above. These government revenue and savings amounts are benefits that are included in the three ROI calculations, and they are derived from AMUS impacts.

Table 32. State/Local and Federal Government Benefits by Stakeholder Group and by Scenario

Benefit type	Benefit (2022\$)		
	Short-term	Medium-term	Long-term
State/local government benefits	\$3,121,467	\$3,588,618	\$3,859,700
State income tax revenue from education awards, living allowances,* and employment	\$62,073	\$80,769	\$86,668
State and local sales tax revenue from living allowances and employment	\$55,514	\$89,681	\$100,462

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Benefit type	Benefit (2022\$)		
	Short-term	Medium-term	Long-term
State income, sales, and property taxes from AmeriCorps member educational attainment (lifetime)	\$0	\$105,729	\$211,459
State income, sales, and property taxes from increased income of program beneficiaries who are young children and receive lead filters (lifetime)	\$0	\$4,336	\$8,673
Savings in reduced public assistance, social insurance, and corrections spending from member postsecondary educational attainment (lifetime)	\$0	\$70,818	\$141,636
Savings in reduced criminal justice spending from program activities	\$2,974,332	\$2,974,332	\$2,974,332
Savings in reduced criminal justice spending from avoided criminal activity due to the summer program	\$26,198	\$259,796	\$333,506
Federal government benefits	\$741,648	\$1,331,237	\$1,801,934
Federal income tax revenue education awards and living allowances*	\$141,121	\$141,121	\$141,121
Social Security and Medicare tax revenue from education awards and living allowances*	\$107,958	\$107,958	\$107,958
Federal income tax revenue from employment	\$9,423	\$93,448	\$119,962
Social Security and Medicare tax revenue from employment	\$6,007	\$59,573	\$76,476
Federal income and Social Security tax revenue from postsecondary educational attainment (lifetime)	\$0	\$368,303	\$736,605
Federal income and Social Security tax revenue from increased income of program beneficiaries who are young children (lifetime)	\$0	\$14,449	\$28,898
Savings in reduced social insurance, corrections, and public assistance spending from member postsecondary educational attainment (lifetime)	\$0	\$32,943	\$65,885
Savings in reduced criminal justice spending from program activities	\$459,790	\$459,790	\$459,790
Savings in reduced criminal justice spending from avoided criminal activity due to the summer program	\$4,050	\$40,161	\$51,555

Benefit type	Benefit (2022\$)		
	Short-term	Medium-term	Long-term
Total	\$3,863,115	\$4,919,855	\$5,661,634

*Living allowances and education awards are one-time taxable payments. The resulting tax revenue does not vary by scenario.

Note: Numbers may not sum due to rounding.

Measuring Forgone Benefits (Opportunity Costs)

The analysis included two types of forgone benefits, referred to as *opportunity costs*, in each of the three ROI calculations to conservatively estimate the return of the AMUS program: forgone benefits from a professional opportunity cost to AMUS AmeriCorps members and forgone benefits from an investment opportunity cost to funders. Each of these forgone benefit (opportunity cost) types is subtracted from the total program benefits—that stem from AMUS—to calculate net benefits. Net benefits are then compared to the program cost to calculate each ROI. The methodologies used to calculate these two forgone benefits (opportunity costs) are described below.

Forgone Benefits From Professional Opportunity Cost to AMUS AmeriCorps Members

There is a professional opportunity cost to AMUS AmeriCorps members for their period of national service, during which they could have otherwise been working. This includes both the forgone earnings of AMUS AmeriCorps members for their service term and the forgone taxes associated with those lost earnings. To calculate this, the analysis first used the demographic distribution of AMUS AmeriCorps members for the 2021–2022 program year—in terms of gender, age, race/ethnicity, and pre-service education level—and ASEC data to estimate the weighted unemployment rate for this population (i.e., 9.2 percent). This represents how many of these AMUS AmeriCorps members would have been unemployed if they did not serve with AMUS. Using the weighted unemployment rate and the number of AMUS AmeriCorps member FTEs who served during the 2021–2022 program year (i.e., 46), the analysis estimated the number of members who would have been employed without serving with AMUS based on their demographic characteristics (i.e., 42). Then the analysis multiplied this value by the weighted post-tax annual earnings per-person, shown in Table 33. The methodology used to calculate this latter monetary amount is described in the previous Increased Earnings due to Reduced Unemployment section. The post-tax amount subtracts all applicable payroll taxes (e.g., federal income, state income, Medicare, and Social Security). The product of multiplying 42 by the weighted post-tax annual earnings represents what AMUS AmeriCorps members would have earned in total if they did not serve with AMUS. Separately, the analysis then multiplied the number of AMUS AmeriCorps member FTEs who served by the amount they earned during their national service in the form of a post-tax living allowance (i.e., \$17,729 per person). This represents the aggregate amount AMUS AmeriCorps members earned during their service term. The difference between what they would have earned if they did not serve and what they did earn because they served equals the total post-tax earnings

forgone due to serving with AMUS. These values and the formula used to calculate the forgone post-tax earnings are shown in Table 33.

Table 33. Forgone Earnings of AMUS AmeriCorps Members for a Service Term

Row	Component	Value	Source
A	AMUS AmeriCorps member FTEs	46	AMUS
B	Weighted unemployment rate	9.2%	U.S. Census Bureau (2021-b) & AMUS
C	Weighted post-tax annual earnings per person (2022\$)	\$30,392	U.S. Census Bureau (2021-b), U.S. Bureau of Labor Statistics (2021-c), & AMUS
D	Post-tax living allowance per person	\$17,729	AMUS
E	Total post-tax earnings forgone (2022\$)	\$451,488	$[A \times (1 - B) \times C] - (A \times D)$

Note: Numbers may not sum due to rounding.

The second portion of this professional opportunity cost was the forgone taxes associated with the earnings of AMUS AmeriCorps members lost for this year of service. Federal income, state income, Social Security, and Medicare taxes specific to the per-person weighted pre-tax earnings amount were calculated. Specifically, the estimated proportional federal and state income tax rates used were 7.2 percent and 2.7 percent, respectively. The analysis also estimated the sales taxes lost based on the per-person post-tax earnings forgone by the AMUS AmeriCorps members. Using data from the Consumer Expenditure Survey (U.S. Bureau of Labor Statistics, 2022), the analysis estimated that based on the per-person weighted pre-tax earnings of AMUS AmeriCorps members (i.e., \$35,358), 47 percent of their income would have been spent on taxable goods, as opposed to 63 percent of the living allowance. Then the weighted combined state and local sales tax rate (i.e., 7.44 percent)—used earlier in this analysis to calculate government benefits—was applied to the difference in expected spending on taxable goods to represent the resulting sales tax revenue lost due to individuals serving with AMUS instead of working for higher pay. The totals for these taxes are listed in Table 34.

Table 34. Forgone Taxes Associated With the Forgone Earnings of AMUS AmeriCorps Members for a Service Term

Forgone taxes	Taxes without service term (2022\$)	Taxes realized from living allowance (2022\$)	Net taxes forgone (2022\$)
Federal forgone taxes (i.e., federal professional opportunity cost)	\$234,947	\$107,939	\$127,008
Federal income taxes	\$113,580	\$33,580	\$80,000
Social Security and Medicare taxes	\$121,367	\$74,359	\$47,008
Non-federal forgone taxes	\$100,905	\$60,496	\$35,614
State income taxes	\$43,289	\$21,465	\$21,824
Sales taxes	\$45,641	\$31,851	\$13,790
Total taxes	\$323,877	\$161,255	\$162,622

Note: Numbers may not sum due to rounding.

For the *federal government benefits per federal dollar* ROI calculation, only federal government (not total) benefits are included. Because of this, only federal components of the professional opportunity cost are subtracted from all federal government benefits—realized due to AMUS—in this ROI calculation. The parts of the professional opportunity cost subtracted from these total federal government benefits include the forgone net federal income taxes (i.e., \$80,000) and the net forgone Social Security and Medicare taxes (i.e., \$47,008). The sum of these two values is called the *federal professional opportunity cost*. The sum of all the values listed in Table 34 and the forgone post-tax earnings of AMUS AmeriCorps members is called the *total professional opportunity cost*. These naming conventions are referenced in the Calculating ROI section.

Forgone Benefits From the Investment Opportunity Cost to Funders

The investment opportunity cost estimates the expected forgone return if funds used to support the activities and positions of AMUS AmeriCorps members during the most recent program year were invested in U.S. Treasury bonds instead. An investment opportunity cost is calculated for two different funding streams: 1) all AMUS program funding for the 2021–2022 program year and 2) only federal funding for the same program year. This is done because two of the three ROI calculations only have federal (not total) program costs included. Thus, for 1) the *federal government benefits per federal dollar* and 2) the *total benefits per federal dollar* ROI calculations, the investment opportunity cost subtracted from the benefits in these calculations is the forgone accrued interest from investing *only* the federal funds into these U.S. Treasury bonds. For the other ROI calculation, the investment opportunity cost subtracted from the benefits realized is the forgone accrued interest from investing *all* AMUS program funds (both federal and non-federal) into these U.S. Treasury bonds. Therefore, the

analysis estimated forgone accrued interests across all three scenarios when 1) all AMUS program funds and 2) only federal AMUS program funds are invested in U.S. Treasury bonds.

To calculate these forgone accrued interest values, the analysis first matched 2021 real interest rates provided by the Office of Management and Budget (2022) to each of the scenarios included in this ROI analysis. The analysis used 2021 real interest rates for U.S. Treasury bonds because the AMUS program year analyzed began in 2021. The real interest rate for the 3-year maturity was used for the short-term scenario, the average between the 10-year and 20-year maturity rates was used as the rate for the medium-term scenario, and the 30-year maturity rate was used for the long-term scenario. These real interest rates were -1.8 percent, -0.8 percent, and -0.3 percent, respectively (Office of Management and Budget, 2022). Also, the number of years elapsed on these U.S. Treasury bonds was equal to the number of years the different scenarios assumed AMUS AmeriCorps members' employment and earnings gains were sustained. These values are 1 year, 15 years, and 30 years for the short-, medium-, and long-term scenarios, respectively. Given that U.S. Treasury bonds compound biannually, according to the U.S. Department of the Treasury (2022), the formula used to calculate the forgone accrued interest for each of the three scenarios for the two funding streams is listed in Figure 5, where A equals the forgone accrued interest (e.g., the investment opportunity cost), P equals the amount of one of the funding streams, r equals the 2021 real interest rate, and t equals the number of years elapsed.

Figure 5. Compound Interest Formula Used to Calculate Investment Opportunity Cost

$$A = P \left(1 + \frac{r}{2} \right)^{t*2} - P$$

Based on this formula, the forgone benefits from the investment opportunity cost calculated by scenario and funding stream are listed in Table 35, along with their associated inputs. The forgone accrued interest amounts for all funding are called the *total investment opportunity costs* while that for federal funding only are called the *federal investment opportunity costs*. These naming conventions are referenced in the Calculating ROI section.

Table 35. Forgone Benefits From Investment Opportunity Cost Calculation by Scenario and Funding Stream

Metric	Short-term		Medium-term		Long-term	
	All funding	Federal funding only	All funding	Federal funding only	All funding	Federal funding only
Real interest rate	-1.8%		-0.8%		-0.3%	
Years elapsed	1		15		30	
Funding amount	\$3,699,768	\$1,559,497	\$3,699,768	\$1,559,497	\$3,699,768	\$1,559,497
Forgone return (accrued interest)	-\$38,352	-\$27,945	-\$242,478	-\$176,680	-\$184,343	-\$134,320

Measuring Program Costs

Table 36 shows the costs of AMUS by cost category and funding source. AmeriCorps funds roughly 42 percent of the program through their AmeriCorps State and National grant while other funders contribute approximately 58 percent.

Table 36. Funding Sources and Amounts for AMUS (2021–2022)

Funding source	Amount	Percentage of Total
Cost categories	\$3,699,678	
Operating	\$1,520,625	41%
AmeriCorps member expenses	\$2,179,143	59%
Funding source	\$3,699,678	
AmeriCorps	\$1,559,497	42%
Other	\$2,140,271	58%

Note: Numbers may not sum due to rounding.

Source: AMUS (2023)

Calculating ROI

To complete the three ROI calculations for AMUS, the sum of applicable program benefits is reduced by the forgone benefits, or the professional and investment opportunity costs (where appropriate), and then compared to the cost of the program. As described previously, these three ROI calculations are calculated for each of the three scenarios: short-term, medium-term, and long-term.

Since two of the calculations include benefits to society (e.g., AMUS AmeriCorps members, federal government, etc.), the results are expressed as cost–benefit ratios, while maintaining the ROI terminology. Specifically, these ratios take the form of the sum of monetized benefits over the sum of applicable program costs. The ROIs expressed as cost–benefit ratios in this study can be interpreted as the amount of dollars returned for every \$1 of investment (or program cost).³⁰

The formulas used to calculate each of the three ROIs are shown below:³¹

$$\text{Total Benefits per Federal Dollar} = \frac{(\text{Benefits to Non-Government Stakeholders} + \text{Benefits to Government}) - (\text{Forgone Benefits From Total Professional Opportunity Cost} + \text{Forgone Benefits From Federal Investment Opportunity Cost})}{(\text{AmeriCorps Federal Funding})}$$

$$\text{Total Benefits per Funder Dollar} = \frac{(\text{Benefits to Non-Government Stakeholders} + \text{Benefits to Government}) - (\text{Forgone Benefits From Total Professional Opportunity Cost} + \text{Forgone Benefits From Total Investment Opportunity Cost})}{(\text{AmeriCorps Federal Funding} + \text{Non-Federal Match Funding})}$$

$$\text{Federal Government Benefits per Federal Dollar} = \frac{(\text{Benefits to the Federal Government}) - (\text{Forgone Benefits From Federal Professional Opportunity Cost} + \text{Forgone Benefits From Federal Investment Opportunity Cost})}{(\text{AmeriCorps Federal Funding})}$$

Table 37, Table 38, and Table 39 show the total benefits, opportunity costs, program costs, and ROI results for each scenario.

Table 37. ROI Calculations for Short-Term Scenario

Components	Total benefits per federal dollar (2022\$)	Total benefits per funder dollar (2022\$)	Federal government benefits per federal dollar (2022\$)
Total program benefits	\$6,568,867	\$6,568,867	\$741,648
Total forgone benefits (opportunity costs)	\$548,179	\$548,179	\$99,430
Total program costs	\$1,559,497	\$3,699,768	\$1,559,497
Result	\$3.86	\$1.63	\$0.12

³⁰ ROIs can be expressed in percentages or as ratios, such as in this study. Although not shown as a ratio in the results, the ROIs in this study show the amount of return for every \$1 invested.

³¹ Non-government stakeholders in this ROI analysis include society, AMUS AmeriCorps members, and program beneficiaries.

Table 38. ROI Calculations for Medium-Term Scenario

Components	Total benefits per federal dollar (2022\$)	Total benefits per funder dollar (2022\$)	Federal government benefits per federal dollar (2022\$)
Total program benefits	\$9,552,288	\$9,552,288	\$1,331,237
Total forgone benefits (opportunity costs)	\$195,317	\$195,317	-\$49,306
Total program costs	\$1,559,497	\$3,699,768	\$1,559,497
Result	\$6.00	\$2.53	\$0.89

Table 39. ROI Calculations for Long-Term Scenario

Components	Total benefits per federal dollar (2022\$)	Total benefits per funder dollar (2022\$)	Federal government benefits per federal dollar (2022\$)
Total program benefits	\$11,656,002	\$11,656,002	\$1,801,934
Total forgone benefits (opportunity costs)	\$295,812	\$295,812	-\$6,946
Total program costs	\$1,559,497	\$3,699,768	\$1,559,497
Result	\$7.28	\$3.07	\$1.16

Appendix C: Results by Year

Table 40 shows the breakdown of costs and benefits over a 30-year period. Program activities create a stream of benefits over time to program beneficiaries, AmeriCorps members, the federal government, state and local governments, and society. AmeriCorps members' forgone benefits from professional opportunity cost apply to the first year. Funders' forgone benefits from investment opportunity cost accrue over time. Program costs are expended in the first year only. Program benefits are shown in nominal dollars.

Table 40. AMUS Benefits and Costs per Year

Benefits and costs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Benefits	\$6,290,787	\$227,165	\$227,694	\$228,385	\$229,236	\$230,246	\$231,415	\$232,743
Program beneficiaries	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
AmeriCorps members	\$831,270	\$124,271	\$126,112	\$128,007	\$129,960	\$131,971	\$134,043	\$136,177
Federal government	\$662,949	\$39,466	\$39,908	\$40,362	\$40,830	\$41,312	\$41,808	\$42,320
State and local governments	\$3,061,200	\$30,123	\$30,340	\$30,564	\$30,795	\$31,033	\$31,278	\$31,530
Society	\$1,735,368	\$33,305	\$31,335	\$29,451	\$27,651	\$25,930	\$24,287	\$22,717
Forgone benefits (opportunity costs)	\$548,179	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940
Forgone benefits to members	\$451,488	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forgone tax revenue	\$162,987	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Federal taxes</i>	\$127,374	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>State/local taxes</i>	\$35,613	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forgone benefits from total investments (all funders)	-\$66,296	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940
<i>Forgone benefits from federal investments</i>	-\$27,945	-\$12,620	-\$12,620	-\$12,620	-\$12,620	-\$12,620	-\$12,620	-\$12,620
Program costs	\$3,391,469	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Federal government	\$1,251,199	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-federal	\$2,140,271	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Benefits and costs	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Benefits	\$234,228	\$235,871	\$237,671	\$245,546	\$249,485	\$251,760	\$254,194	\$256,788
Program beneficiaries	\$0	\$0	\$0	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918
AmeriCorps members	\$138,374	\$140,638	\$142,970	\$145,371	\$147,845	\$150,393	\$153,017	\$155,720
Federal government	\$42,846	\$43,389	\$43,948	\$44,523	\$46,482	\$47,093	\$47,722	\$48,370
State and local governments	\$31,790	\$32,057	\$32,333	\$32,617	\$33,365	\$33,667	\$33,977	\$34,296
Society	\$21,217	\$19,786	\$18,420	\$17,118	\$15,875	\$14,690	\$13,561	\$12,485
Forgone benefits (opportunity costs)	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	\$6,700	\$6,700
Forgone benefits to members	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forgone tax revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Federal taxes</i>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>State/local taxes</i>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forgone benefits from total investments (all funders)	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	-\$29,940	\$6,700	\$6,700
<i>Forgone benefits from federal investments</i>	-\$12,620	-\$12,620	-\$12,620	-\$12,620	-\$12,620	-\$12,620	\$2,824	\$2,824
Program costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Federal government	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-federal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Return on Investment Study:
AmeriCorps Urban Safety Program Detroit

Benefits and costs	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24
Benefits	\$259,544	\$262,462	\$265,544	\$268,792	\$272,207	\$275,791	\$279,546	\$283,475
Program beneficiaries	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918
AmeriCorps members	\$158,504	\$161,372	\$164,325	\$167,368	\$170,501	\$173,729	\$177,053	\$180,477
Federal government	\$49,037	\$49,724	\$50,432	\$51,161	\$51,912	\$52,686	\$53,482	\$54,303
State and local governments	\$34,625	\$34,964	\$35,313	\$35,673	\$36,043	\$36,425	\$36,818	\$37,223
Society	\$11,460	\$10,484	\$9,556	\$8,672	\$7,832	\$7,034	\$6,275	\$5,555
Forgone benefits (opportunity costs)	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700
Forgone benefits to members	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forgone tax revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Federal taxes</i>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>State/local taxes</i>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forgone benefits from total investments (all funders)	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700
<i>Forgone benefits from federal investments</i>	\$2,824	\$2,824	\$2,824	\$2,824	\$2,824	\$2,824	\$2,824	\$2,824
Program costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Federal government	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-federal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Benefits and costs	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30
Benefits	\$287,580	\$291,864	\$296,330	\$300,980	\$305,818	\$310,848
Program beneficiaries	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918	\$5,918
AmeriCorps members	\$184,004	\$187,636	\$191,378	\$195,232	\$199,201	\$203,290
Federal government	\$55,148	\$56,019	\$56,916	\$57,839	\$58,791	\$59,770
State and local governments	\$37,639	\$38,069	\$38,511	\$38,967	\$39,436	\$39,919
Society	\$4,871	\$4,223	\$3,608	\$3,025	\$2,473	\$1,951
Forgone benefits (opportunity costs)	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700
Forgone benefits to members	\$0	\$0	\$0	\$0	\$0	\$0
Forgone tax revenue	\$0	\$0	\$0	\$0	\$0	\$0
<i>Federal taxes</i>	\$0	\$0	\$0	\$0	\$0	\$0
<i>State/local taxes</i>	\$0	\$0	\$0	\$0	\$0	\$0
Forgone benefits from total investments (all funders)	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700	\$6,700
<i>Forgone benefits from federal investments</i>	\$2,824	\$2,824	\$2,824	\$2,824	\$2,824	\$2,824
Program costs	\$0	\$0	\$0	\$0	\$0	\$0
Federal government	\$0	\$0	\$0	\$0	\$0	\$0
Non-federal	\$0	\$0	\$0	\$0	\$0	\$0

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