Washington State Institute for Public Policy

Higher Education Benefit-Cost Results

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our Technical Documentation.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

Early college high school (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated February 2018.

Program Description: Early college high schools are alternative high schools designed to help under-served and underrepresented students transition to the college environment. Located on college campuses or as small stand-alone schools, they provide students with the opportunity to take high school and college courses to complete their high school graduation requirements. Unlike dual enrollment programs, where students attend a typical high school and elect to take college courses in their junior or senior year, students enroll in early college high schools in the 9th grade and participate for four years. The curriculums are specifically designed to help students transition from high school to college-level coursework. Upon graduation, students usually have finished the equivalent of two years of college course work (enough to complete a 2-year college degree or enter a 4-year college as a junior). We report on college in the high school and dual enrollment programs separately.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$13,568	Benefit to cost ratio	$17.36
Participants	$39,041	Benefits minus costs	$68,296
Others	$24,606	Chance the program will produce benefits greater than the costs	92 %
Indirect	($4,744)		
Total benefits	$72,471		
Net program cost	($4,175)		
Benefits minus cost	$68,296		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$40	$96	$20	$157
Labor market earnings associated with higher education	$44,351	$18,881	$25,899	$0	$89,130
Costs of higher education	($5,310)	($5,354)	($1,388)	($2,677)	($14,729)
Adjustment for deadweight cost of program	$0	$0	$0	($2,088)	($2,088)
Totals	$39,041	$13,568	$24,606	($4,744)	$72,471

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

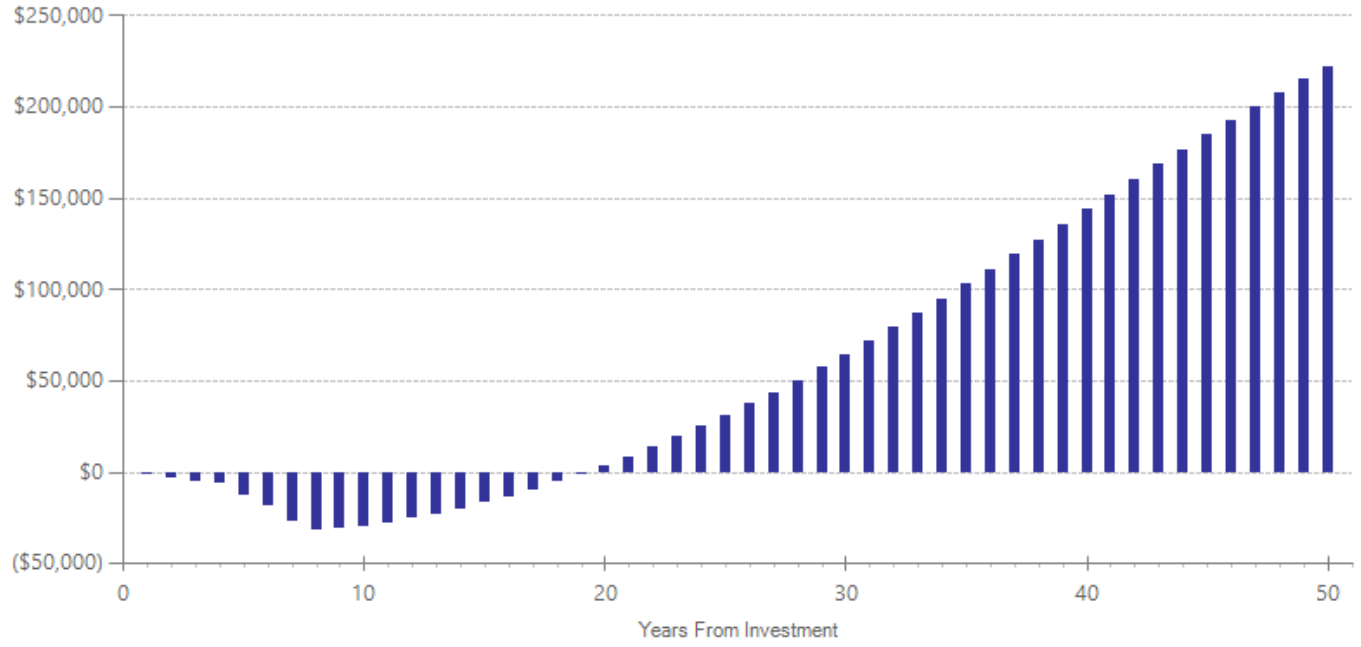
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$9,727	2015	Present value of net program costs (in 2018 dollars)	($4,175)
Comparison costs	$8,695	2015	Cost range (+ or -)	25 %

WSIPP estimates the total cost of early college by taking the difference between the per-student estimate of the total expenditures per early college high school student and WSIPP's per-student estimate of the total cost of regular K–12 education. The per-student estimate for early college is based on projected costs of early college by location, weighted by the location of the early college in the studies (Webb, 2004).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 2-year college	14	1	1044	0.511	0.231	18	0.511	0.231	18	0.511	0.027
Enroll in 4-year college	14	1	1044	0.120	0.226	18	0.120	0.226	18	0.120	0.595
Graduate with 2-year degree	14	1	1044	0.905	0.261	20	0.905	0.261	20	0.905	0.001
Graduate with 4-year degree	14	1	1044	0.277	0.195	23	0.277	0.195	23	0.277	0.156
High school graduation	14	1	1010	0.150	0.323	18	0.150	0.323	18	0.150	0.641

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Berger, A., Turk-Bicakci, I., Garet, M. Song, M., Knudson, J., Haxton, C., . . . Cassidy, L. (2013). *Early college, early success: Early College High School initiative impact study.* Washington DC: American Institutes for Research.

Haxton, C., Song, M., Zeiser, K., Berger, A., Turk-Bicakci, L., Garet, M.S., . . . Hoshen, G. (2016). Longitudinal findings from the Early College High School initiative impact study. *Educational Evaluation and Policy Analysis, 38*(2), 410-430.

College in the high school (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated February 2018.

Program Description: College in the high school allows high school sophomores, juniors, and seniors to simultaneously earn transferrable college and high school credits while still enrolled in high school. Unlike dual enrollment, students participating in college in the high school complete courses on their high school campus. The high school and partner college work closely to ensure that college in the high school coursework is comparable to a similar course taught on the college campus. We report on dual enrollment and early college high school programs separately.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$5,113	Benefit to cost ratio	$87.02
Participants	$12,722	Benefits minus costs	$24,442
Others	$7,515	Chance the program will produce benefits greater than the costs	100 %
Indirect	($624)		
Total benefits	$24,726		
Net program cost	($284)		
Benefits minus cost	$24,442		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$63	$153	$31	$247
Labor market earnings associated with high school graduation	$14,276	$6,078	$7,827	$0	$28,181
Costs of higher education	($1,554)	($1,027)	($466)	($513)	($3,560)
Adjustment for deadweight cost of program	$0	$0	$0	($142)	($142)
Totals	$12,722	$5,113	$7,515	($624)	$24,726

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

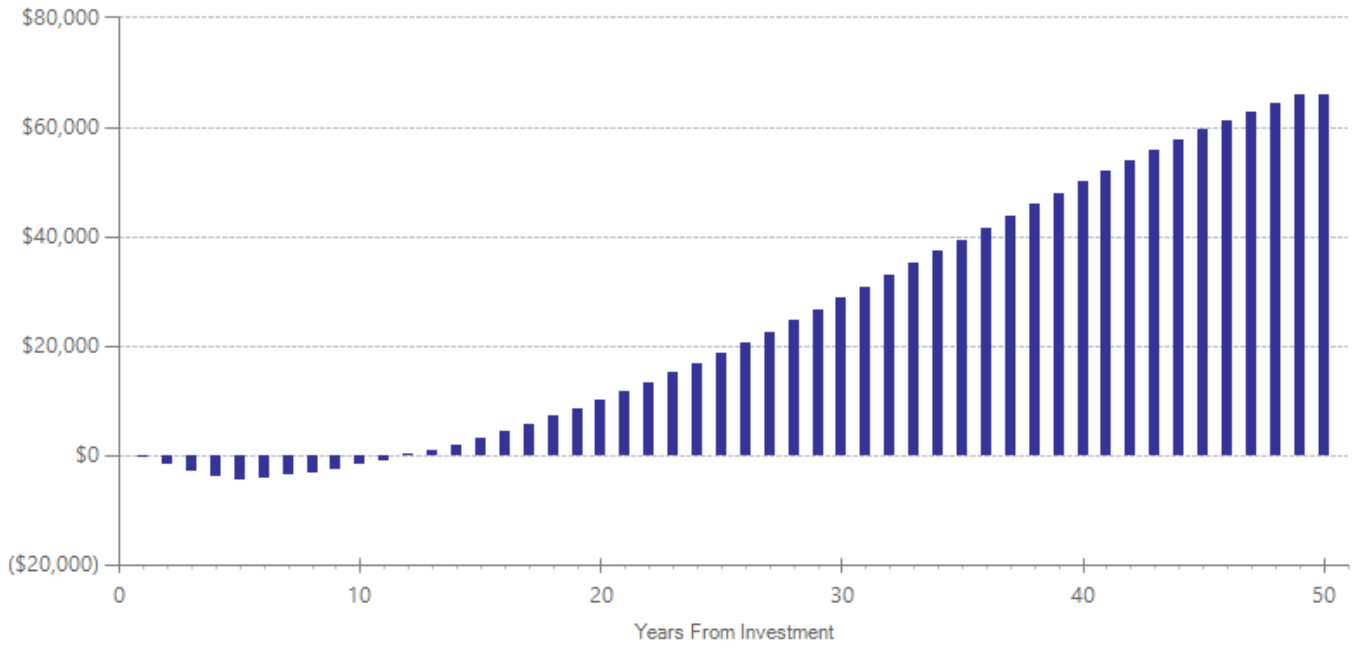
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$8,962	2015	Present value of net program costs (in 2018 dollars)	($284)
Comparison costs	$8,695	2015	Cost range (+ or -)	25 %

We determined the cost of college in the high school by multiplying the per credit cost of college In the high school for Washington students by the number of annual credits earned by the students in the studies. The average per-credit fee for Washington colleges is approximately $45. Students took an average of 1.22 courses per year in our sample (Rodriguez et al., 2012). This equates to approximately 6.08 annual credits or 0.13 of a student FTE (based on a full-time load of 45 credits).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Grade point average^	17	4	1402	0.041	0.028	18	n/a	n/a	n/a	0.115	0.028
High school graduation	17	3	819	0.276	0.082	18	0.276	0.082	18	0.517	0.001

^WSIPP’s benefit-cost model does not monetize this outcome.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Rodriguez, O., Hughes, K.L., & Belfield, C. (2012). *Bridging college and careers: Using dual enrollment to enhance career and technical education pathways.* (NCPR Brief). New York: Community College Research Center.

College advising provided by counselors (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated January 2018.

Program Description: Students in the 10th-12th grade meet in person with advisors at the high school for college-focused advising sessions. A typical session with an advisor addresses the application and enrollment process, career path readiness, and post-secondary education plans. The number of advising sessions varies by program, some sessions are held only during the time when students are applying to college, other programs require visits in multiple grades. The length and frequency of interaction with an advisor ranges from one-hour meetings once or twice a year to one-hour meetings every two to three weeks during the application season.

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	$5,043	Benefit to cost ratio	$29.70
Participants	$12,672	Benefits minus costs	$23,582
Others	$7,859	Chance the program will produce benefits greater than the costs	97 %
Indirect	($1,170)		
Total benefits	$24,404		
Net program cost	($822)		
Benefits minus cost	$23,582		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$15,412	$6,561	$8,712	$0	$30,685
Costs of higher education	($2,740)	($1,518)	($853)	($759)	($5,870)
Adjustment for deadweight cost of program	$0	$0	$0	($411)	($411)
Totals	$12,672	$5,043	$7,859	($1,170)	$24,404

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

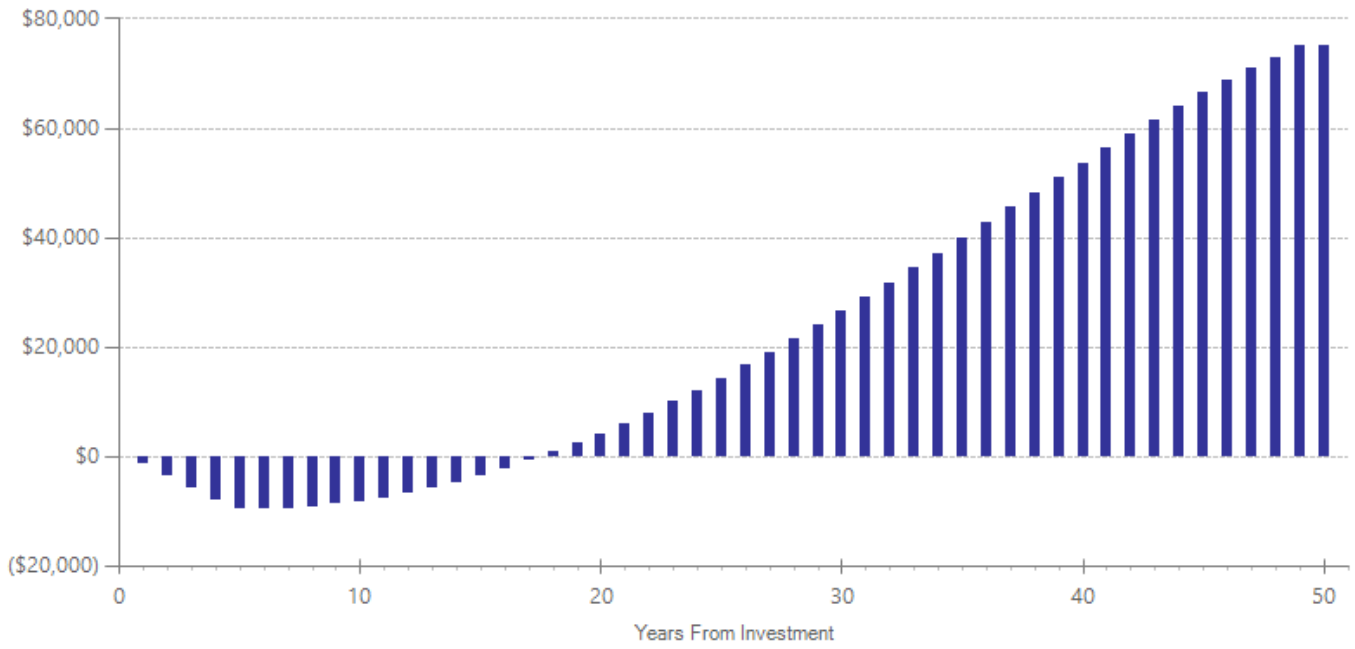
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$705	2009	Present value of net program costs (in 2018 dollars)	($822)
Comparison costs	$0	2009	Cost range (+ or -)	40 %

The per-participant cost of treatment is the weighted average estimate for studies included in the analysis. We calculate the total cost per study using Washington State compensation costs (including benefits) of counselor and staff time as reported by the Office of the Superintendent of Public Instruction. Additional program cost estimates provided by Castleman & Goodman (2015) and Barr & Castleman (2017).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 2-year college	17	3	9207	-0.019	0.060	18	-0.019	0.060	18	-0.019	0.744
Enroll in 4-year college	17	4	11952	0.194	0.063	18	0.194	0.063	18	0.194	0.002
Persistence into 2nd year^^	17	1	1687	0.349	0.070	19	n/a	n/a	n/a	0.349	0.001

^^WSIPP does not include this outcome when conducting benefit-cost analysis for this program.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Barr, A., & Castleman, B. (2017). *The Bottom Line on college counseling.* Working paper.

Belasco, A.S. (2013). Creating college opportunity: School counselors and their influence on postsecondary enrollment. *Research in Higher Education, 54*(7), 781-804.

Castleman, B., & Goodman, J. (2015). *Intensive college counseling and the enrollment and persistence of low income students.* HKS working paper.

Dual enrollment (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2017.

Program Description: Dual enrollment allows high school juniors and seniors to enroll in courses at a community, technical, and (some) four-year colleges. Students participating in dual enrollment simultaneously earn transferrable college and high school credits while still enrolled in high school. Students elect to participate in dual enrollment programs; the tuition costs are generally paid by the school district and the college. Washington State's dual enrollment program is Running Start. We report on college in the high school and early college high school programs separately.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$5,418	Benefit to cost ratio	$14.10
Participants	$11,343	Benefits minus costs	$20,807
Others	$6,492	Chance the program will produce benefits greater than the costs	100 %
Indirect	($856)		
Total benefits	$22,396		
Net program cost	($1,589)		
Benefits minus cost	$20,807		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	$42	$104	$21	$167
Labor market earnings associated with higher education	$13,016	$5,541	$6,994	$0	$25,551
Costs of higher education	($1,674)	($166)	($605)	($83)	($2,528)
Adjustment for deadweight cost of program	$0	$0	$0	($794)	($794)
Totals	$11,343	$5,418	$6,492	($856)	$22,396

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

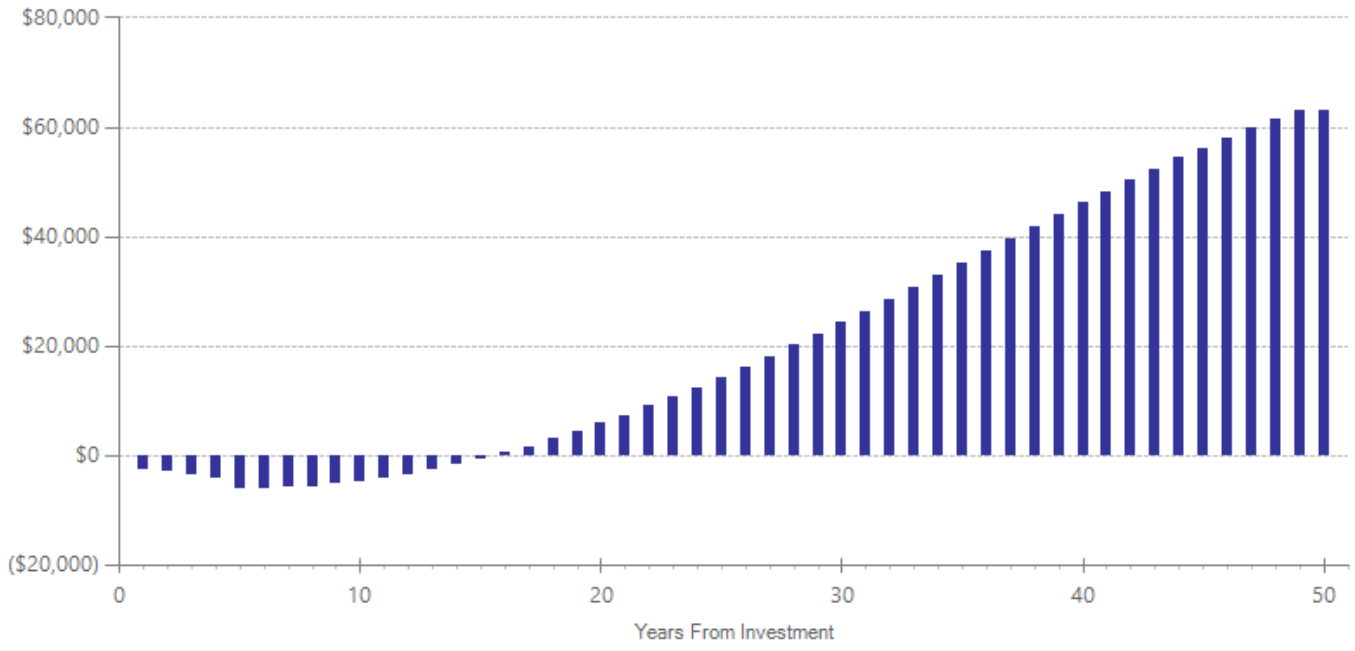
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$10,188	2015	Present value of net program costs (in 2018 dollars)	($1,589)
Comparison costs	$8,695	2015	Cost range (+ or -)	20 %

WSIPP estimates the total cost of one year of dual enrollment by taking the difference between WSIPP's per-student estimate of the total expenditures per community and technical college (CTC) student and WSIPP's per-student estimate of the total cost of regular K-12 education. The average Running Start student in Washington enrolls in 11 credits per quarter (Cowan & Goldhaber, 2015). This equates to a 0.73 of a student FTE (based on a full-time load of 15 credits). WSIPP's estimates are based on this average credit load.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 4-year college	17	2	20206	0.053	0.205	18	0.053	0.205	18	-0.014	0.959
Grade point average^	17	2	275	0.106	0.061	17	n/a	n/a	n/a	0.228	0.023
Graduate with 2-year degree	17	1	1700	-0.270	0.035	21	-0.270	0.035	21	-0.270	0.001
Graduate with 4-year degree	17	1	9723	0.196	0.013	23	0.196	0.013	23	0.196	0.001
High school graduation	17	4	22848	0.177	0.114	18	0.177	0.114	18	0.193	0.210

^WSIPP's benefit-cost model does not monetize this outcome.

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Citations Used in the Meta-Analysis

Cowan, J., & Goldhaber, D. (2015). How much of A ``Running Start'' do dual enrollment programs provide students? *Review of Higher Education, 38*(3), 425-460.

Karp, M.M., Calcagno, J.C., Hughes, K.L., Jeong, D.W., & Bailey, T.R. (2007). *The postsecondary achievement of participants in dual enrollment: An analysis of student outcomes in two states.* St. Paul, MN : National Research Center for Career and Technical Education.

Rodriguez, O., Belfield, C., Hughes, K.L., & National Center for Postsecondary Research (Ed). (2012). *Bridging college and careers: Using dual enrollment to enhance careerand technical education pathways.* Ncpr Brief.

Speroni, C. (2012). *High school dual enrollment programs: Are we fast-tracking students too fast?* Ncpr Brief. New York: National Center for Postsecondary Education.

Summer outreach counseling (for high school graduates)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Throughout the summer, counselors provide support and outreach on financial aid tasks, informational barriers, and social or emotional challenges related to the college transition. Counselors may reach out via email, in-person consultations, phone, text, or instant messages. Summer outreach counseling occurs during the three months between high school graduation and the first year of college.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$3,206	Benefit to cost ratio	$154.33
Participants	$7,989	Benefits minus costs	$15,526
Others	$4,963	Chance the program will produce benefits greater than the costs	89 %
Indirect	($531)		
Total benefits	$15,628		
Net program cost	($101)		
Benefits minus cost	$15,526		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$9,789	$4,167	$5,528	$0	$19,485
Costs of higher education	($1,800)	($961)	($565)	($481)	($3,807)
Adjustment for deadweight cost of program	$0	$0	$0	($51)	($51)
Totals	$7,989	$3,206	$4,963	($531)	$15,628

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

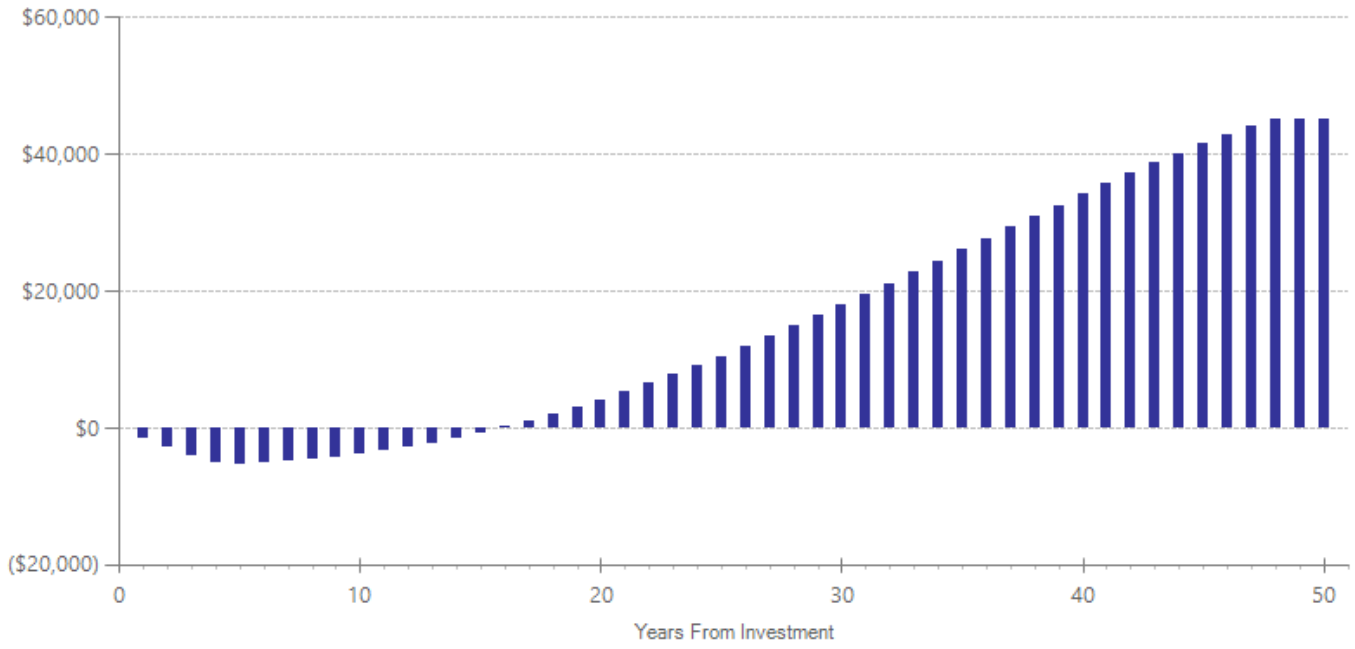
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$87	2009	Present value of net program costs (in 2018 dollars)	($101)
Comparison costs	$0	2009	Cost range (+ or -)	20 %

Costs come from studies included in the meta-analysis. We calculate a weighted average of costs across the studies included in the meta-analysis. Costs include counselor time, peer mentor time, and material and postage occurring during the summer months after high school graduation.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 2-year college	18	2	1015	-0.026	0.072	18	-0.026	0.072	18	-0.026	0.721
Enroll in 4-year college	18	2	1015	0.118	0.053	18	0.118	0.053	18	0.118	0.025
Enroll in any college^	18	5	4697	0.102	0.033	18	n/a	n/a	n/a	0.137	0.030

^WSIPP's benefit-cost model does not monetize this outcome.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Castleman, B.L., & Page, L.C. (2015). Summer nudging: Can personalized text messages and peer mentor outreach increase college going among low-income high school graduates? *Journal of Economic Behavior & Organization, 115*(3), 144-160.

Castleman, B.L., Arnold, K., & Wartman, K.L. (2012). Stemming the tide of summer melt: An experimental study of the effects of post-high school summer intervention on low-income students' college enrollment. *Journal of Research on Educational Effectiveness, 5*(1), 1-17.

Castleman, B.L., Page, L.C., & Schooley, K. (2014). The forgotten summer: Does the offer of college counseling after high school mitigate summer melt among college-intending, low-income high school graduates? *Journal of Policy Analysis and Management, 33*(2), 320-344.

Castleman, B.L., Owen, L., & Page, L.C. (2015). Stay late or start early? Experimental evidence on the benefits of college matriculation support from high schools versus colleges. *Economics of Education Review, 47,* 168-179.

Daugherty, L. (2012). *Summer Link: A counseling intervention to address the transition from high school to college in a large urban district.* Paper presented at the 2012 Fall Conference of the Association for Public Policy Analysis and Management, Baltimore, MD.

Performance-based scholarships (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Performance-based scholarship programs provide students with financial incentives to remain in college, often targeting low-income young adults. Scholarships are provided when students fulfill certain academic benchmarks such as maintaining a 2.0 GPA or enrolling in college. There are no initial academic requirements for the receipt of performance-based aid. Students usually receive their aid in monthly or quarterly installments.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$962	Benefit to cost ratio	$3.37
Participants	$3,393	Benefits minus costs	$3,752
Others	$2,095	Chance the program will produce benefits greater than the costs	71 %
Indirect	($1,116)		
Total benefits	$5,335		
Net program cost	($1,583)		
Benefits minus cost	$3,752		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$3,785	$1,611	$2,208	$0	$7,605
Costs of higher education	($392)	($649)	($113)	($325)	($1,479)
Adjustment for deadweight cost of program	$0	$0	$0	($791)	($791)
Totals	$3,393	$962	$2,095	($1,116)	$5,335

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

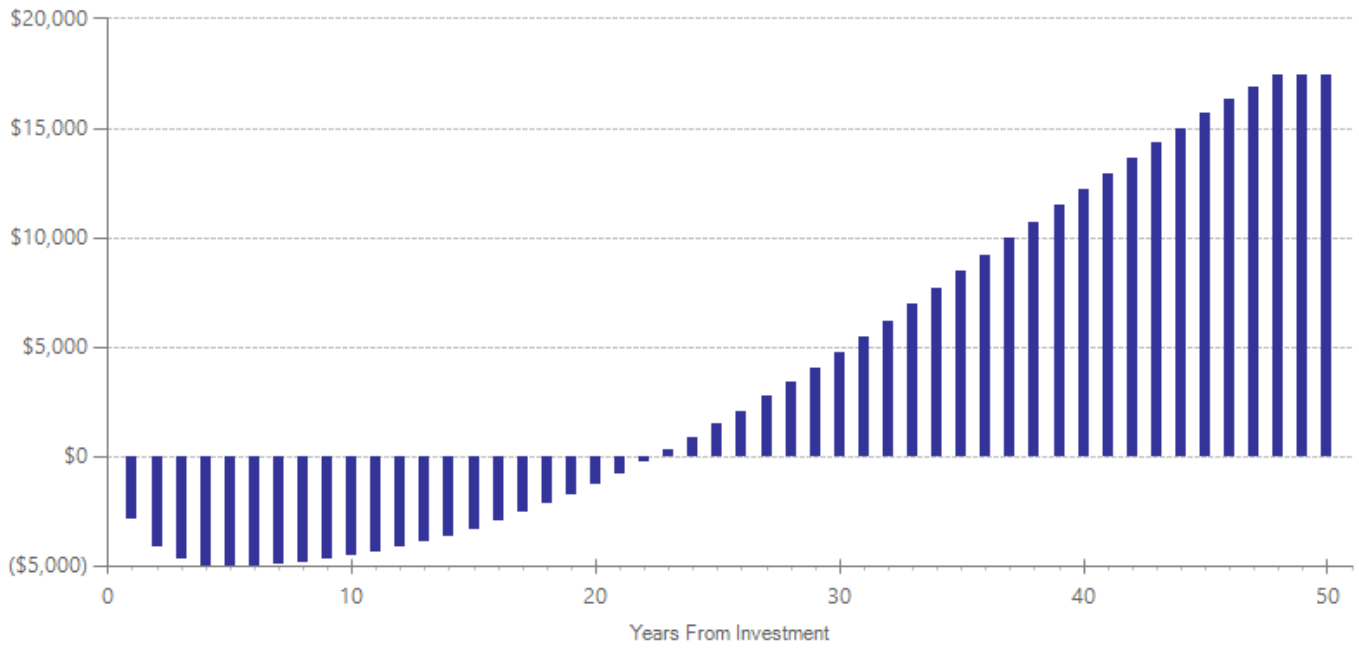
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,275	2014	Present value of net program costs (in 2018 dollars)	($1,583)
Comparison costs	$0	2014	Cost range (+ or -)	20 %

Costs include scholarship payments, administrative costs of providing scholarships, and student support services. Source: Mayer et al. (2015). Evaluation and start-up costs are excluded. Performance-based scholarships are in addition to standard programming received by the comparison group. Performance-based scholarship programs duration varied, but on average, the program lasted one to two years.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 2-year college	18	1	1361	0.115	0.039	18	0.115	0.039	18	0.115	0.003
Enroll in 4-year college	18	1	1361	0.000	0.039	18	0.000	0.039	18	0.000	1.000
Graduate with any degree^	18	1	1547	0.014	0.044	23	n/a	n/a	n/a	0.014	0.758
Persistence into 2nd year^^	18	1	1547	0.138	0.052	19	n/a	n/a	n/a	0.138	0.008
Persistence into 3rd year^^	18	1	1547	0.050	0.045	20	n/a	n/a	n/a	0.050	0.265
Persistence into 4th year^^	18	1	1547	0.088	0.042	21	n/a	n/a	n/a	0.088	0.038

^WSIPP's benefit-cost model does not monetize this outcome.

^^WSIPP does not include this outcome when conducting benefit-cost analysis for this program.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Mayer, A.K., Patel, R., Rudd, T., & Ratledge, A. (2015). *Designing scholarships to improve college success: Final report on the Performance-Based Scholarship Demonstration.* New York, NY: Manpower Demonstration Research Corporation.

Text message reminders (for 2-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Text message reminders provide college students with a range of information about available student services and financial aid. In the studies included in this meta-analysis, college students were encouraged to re-file for financial aid or were advised of available tutoring and advising resources available on campus. Students were sent 12 to 40 text messages during the first year of college.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$477	Benefit to cost ratio	$100.26
Participants	$2,245	Benefits minus costs	$3,660
Others	$1,267	Chance the program will produce benefits greater than the costs	96 %
Indirect	($291)		
Total benefits	$3,697		
Net program cost	($37)		
Benefits minus cost	$3,660		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$2,401	$1,022	$1,267	$0	$4,690
Costs of higher education	($156)	($546)	$0	($273)	($974)
Adjustment for deadweight cost of program	$0	$0	$0	($18)	($18)
Totals	$2,245	$477	$1,267	($291)	$3,697

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

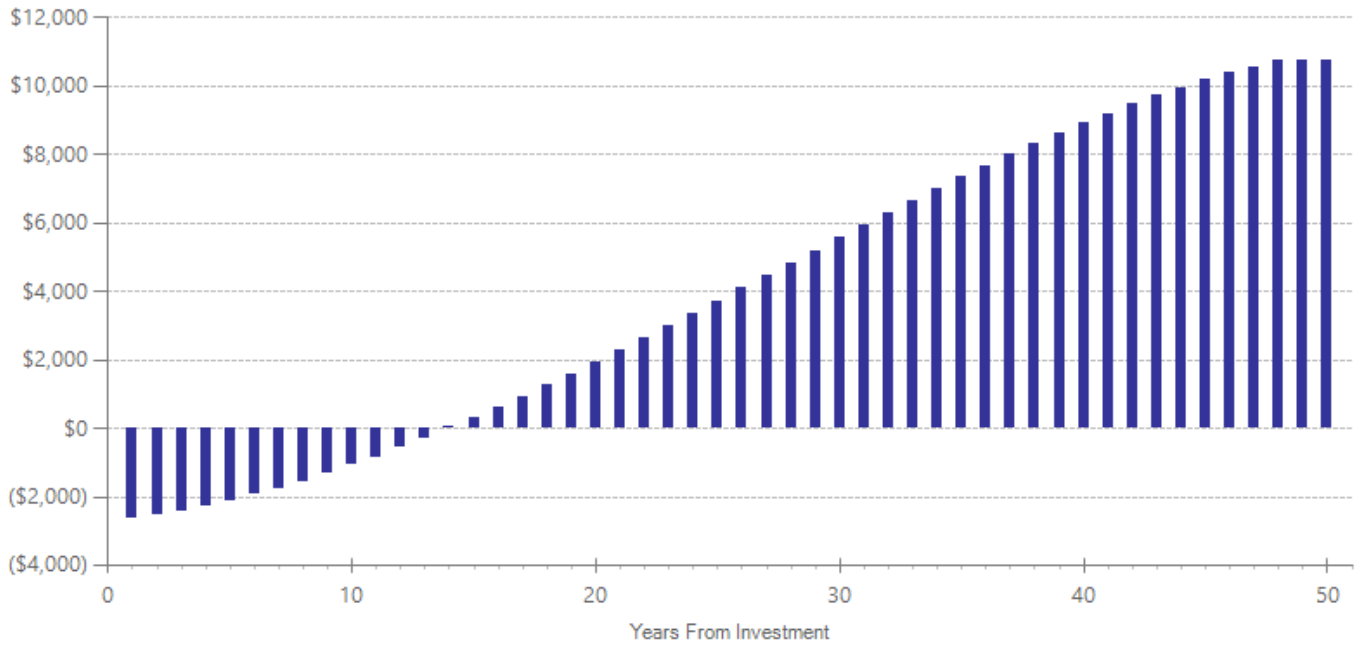
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$35	2016	Present value of net program costs (in 2018 dollars)	($37)
Comparison costs	$0	2016	Cost range (+ or -)	10 %

Costs include the cost of text message delivery and the staff costs to hire an advisor to respond to text messages. Source: Castleman & Page (2016).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Persistence into 2nd year	18	1	115	0.331	0.178	19	0.331	0.178	19	0.331	0.063

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

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Citations Used in the Meta-Analysis

Castleman, B.L., & Page, L.C. (2016). Freshman year financial aid nudges: An experiment to increase FAFSA renewal and college persistence. *Journal of Human Resources, 51*(2), 389-415.

Text message reminders (for high school students and graduates)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated January 2018.

Program Description: Text message reminders target college-intending high school students and graduates. Students receive automated text message reminders on financial aid and college enrollment tasks as well as prompts to reach out for help from designated organizations and counselors if needed. The duration of programs varied between six weeks and six months prior to a student's expected fall term in college.

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	$637	Benefit to cost ratio	$336.40
Participants	$1,745	Benefits minus costs	$3,342
Others	$1,097	Chance the program will produce benefits greater than the costs	59 %
Indirect	($128)		
Total benefits	$3,352		
Net program cost	($10)		
Benefits minus cost	$3,342		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$2,073	$882	$1,192	$0	$4,147
Costs of higher education	($327)	($246)	($95)	($123)	($791)
Adjustment for deadweight cost of program	$0	$0	$0	($5)	($5)
Totals	$1,745	$637	$1,097	($128)	$3,352

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

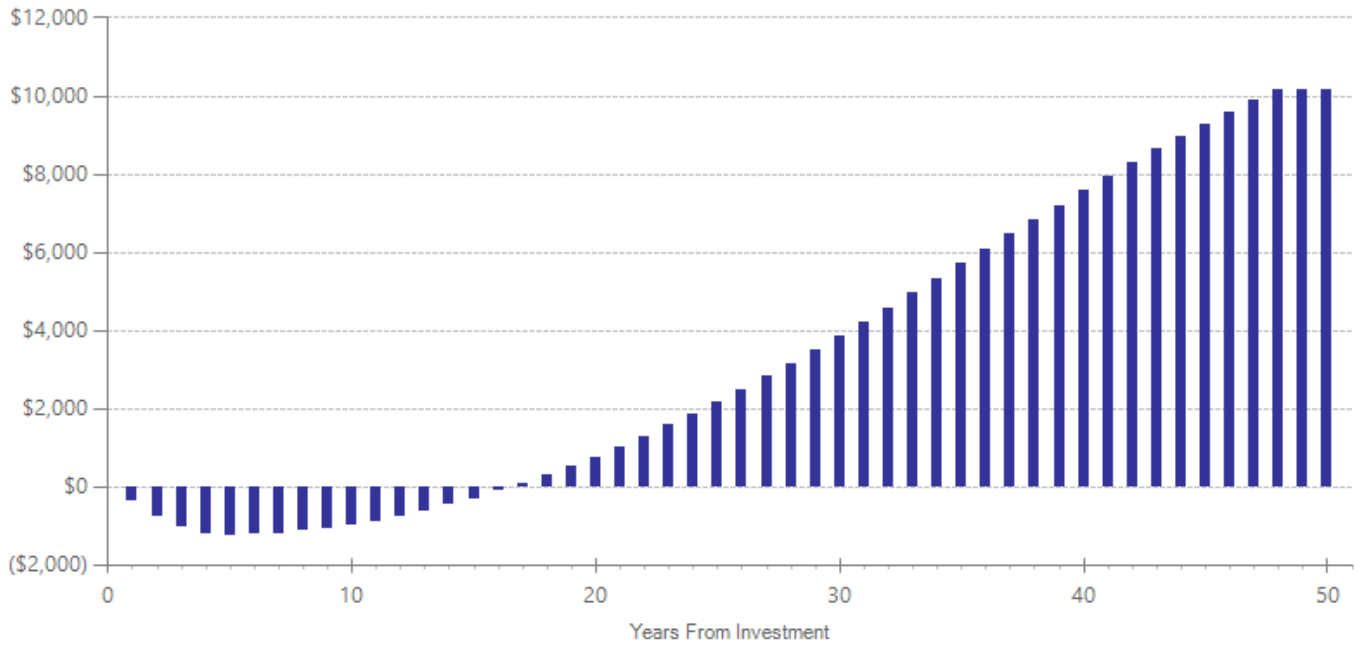
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$9	2009	Present value of net program costs (in 2018 dollars)	($10)
Comparison costs	$0	2009	Cost range (+ or -)	25 %

Costs include the cost of text message delivery and staff costs for the counselor hired to respond to text messages. Sources: Castleman & Page (2015) and Page & Gehlbach (2017).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 2-year college	18	2	6269	0.025	0.080	18	0.025	0.080	18	0.025	0.756
Enroll in 4-year college	18	2	6269	0.012	0.057	18	0.012	0.057	18	0.012	0.832

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

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Page, L.C., & Gehlbach, H. (2017). How an artificially intelligent virtual assistant helps students navigate the road to college. *AERA Open, 3*(4), 1-12.

Student success courses (for 4-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated September 2017.

Program Description: This topic explores the impact of student success courses and similar freshman seminars at 4-year colleges and universities. Included studies examine the impact of a for-credit course designed to teach first-time students nonacademic skills and increase college readiness. The content of these courses can vary widely but generally includes topics like study skills, time management, academic planning, college orientation, and personal wellness.

Courses excluded from this topic include courses that are not for credit, bundled freshman courses, and courses built into living and learning communities (where all students in the course lived in on the same floor or in the same dorm).

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	$705	Benefit to cost ratio	$5.66
Participants	$1,844	Benefits minus costs	$2,888
Others	$1,534	Chance the program will produce benefits greater than the costs	64 %
Indirect	($576)		
Total benefits	$3,508		
Net program cost	($620)		
Benefits minus cost	$2,888		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$2,908	$1,238	$1,534	$0	$5,680
Costs of higher education	($1,064)	($533)	$0	($266)	($1,863)
Adjustment for deadweight cost of program	$0	$0	$0	($310)	($310)
Totals	$1,844	$705	$1,534	($576)	$3,508

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

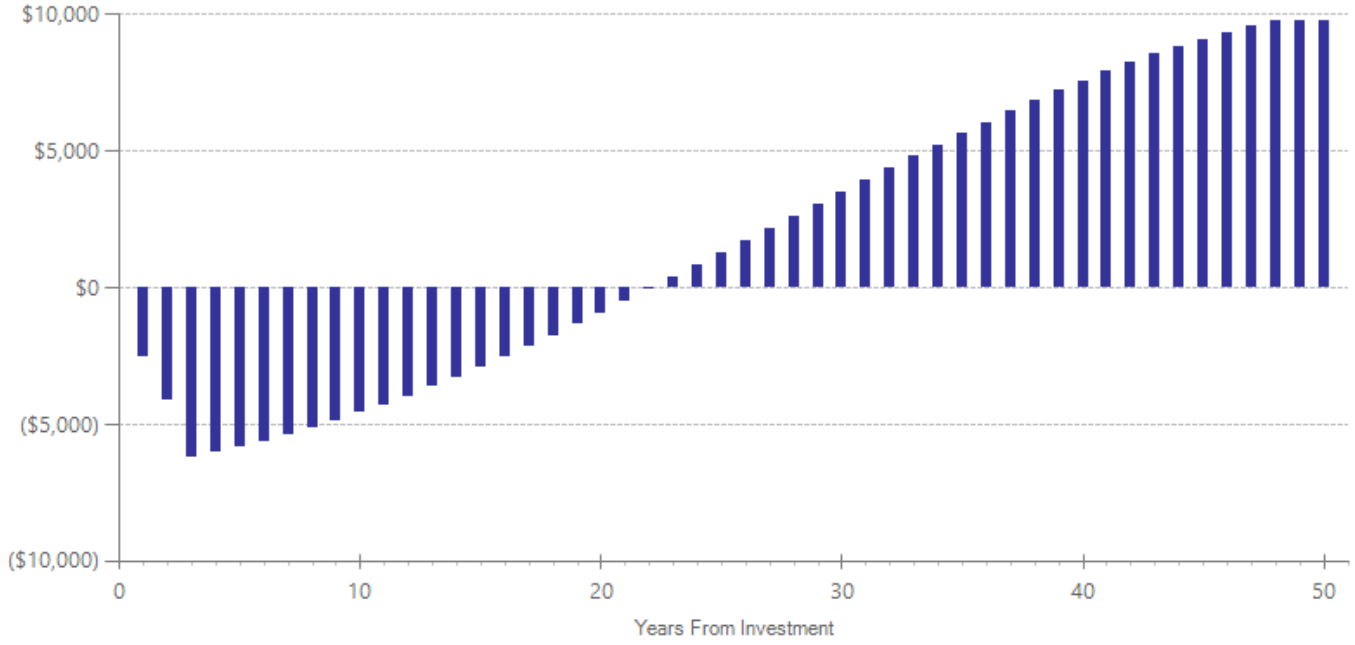
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$504	2006	Present value of net program costs (in 2018 dollars)	($620)
Comparison costs	$0	2016	Cost range (+ or -)	30 %

Costs are based on the per-participant costs reported in in an evaluation of the Enhanced Opening Doors program (Weiss et al., 2011), which contains a student success course component. We estimate the per-participant cost as the total budgeted amount for the comparable student success course components, divided by the total number of budgeted classes. Additional adjustments are also made to account for the higher per-student expenditures at 4-year colleges relative to 2-year colleges. Weiss, M., Brock, T., Sommo, C., Rudd, T., & Turner, M.C. (2011). Serving community college students on probation: Four-year findings from Chaffey College's Opening Doors program. New York, NY: MDRC.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
College grade point average^	18	1	54	0.047	0.157	19	n/a	n/a	n/a	0.089	0.573
Persistence into 2nd year	18	4	671	0.143	0.071	19	0.143	0.071	19	0.269	0.005
Persistence into 3rd year	18	1	181	0.087	0.140	20	0.087	0.140	20	0.164	0.243
Persistence into 4th year	18	1	94	0.092	0.194	21	0.092	0.194	21	0.173	0.374
Persistence within 1st year	18	3	332	0.298	0.185	18	0.298	0.185	18	0.377	0.012

^WSIPP's benefit-cost model does not monetize this outcome.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Boudreau, C.A., & Kromrey, J.D. (1994). A longitudinal study of the retention and academic performance of participants in freshmen orientation course. *Journal of College Student Development, 35* (6), 444-49.

Clark, M.H., & Cundiff, N.L. (2011). Assessing the effectiveness of a college freshman seminar using propensity score adjustments. *Research in Higher Education, 52* (6), 616-639.

Hendel, D.D. (2006). Efficacy of participating in a first-year seminar on student satisfaction and retention. *Journal of College Student Retention: Research, Theory & Practice, 8* (4), 413-423.

Hoops, L.D., Yu, S.L., Burridge, A.B., & Wolters, C.A. (2015). Impact of a student success course on undergraduate academic outcomes. *Journal of College Reading and Learning, 45* (2), 123-146.

Strumpf, G., & Hunt, P. (1993). The effects of an orientation course on the retention and academic standing of entering freshmen, controlling for the volunteer effect. *Journal of the Freshman Year Experience, 5* (1), 7-14

College advising provided by a peer mentor (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Students in the 11th and 12th grade receive postsecondary education planning support from peer mentors. The peer mentors in the evaluations included in this meta-analysis are undergraduate or graduate students. The peer mentor assists the student with the college application process and gives advice and encouragement on the student's plans to go attend college. The student meets with their peer mentor in person at the high school, but interactions also take place via text message, email, or over the phone. The length and frequency of interaction with a peer mentor ranges from meeting during the month when students are applying to college (three hours per week for one month) to one hour per month for the entire school year.

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	$484	Benefit to cost ratio	$2.35
Participants	$1,171	Benefits minus costs	$1,113
Others	$863	Chance the program will produce benefits greater than the costs	51 %
Indirect	($580)		
Total benefits	$1,939		
Net program cost	($825)		
Benefits minus cost	$1,113		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Crime	$0	($24)	($59)	($12)	($95)
Labor market earnings associated with high school graduation	($5,481)	($2,333)	($3,005)	$0	($10,820)
Labor market earnings associated with higher education	$7,405	$3,152	$4,173	$0	$14,730
Costs of higher education	$597	$394	$179	$197	$1,367
Adjustment for deadweight cost of program	($1,349)	($705)	($425)	($765)	($3,244)
Totals	$1,171	$484	$863	($580)	$1,939

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

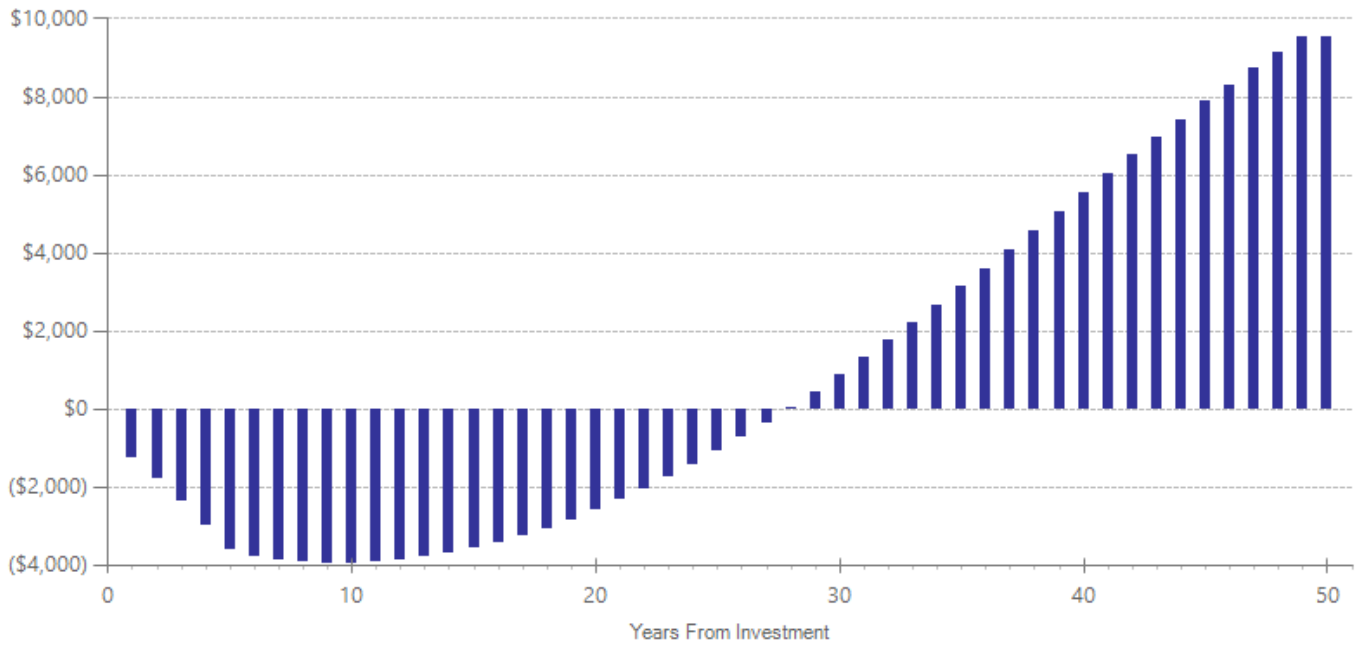
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$708	2009	Present value of net program costs (in 2018 dollars)	($825)
Comparison costs	$0	2009	Cost range (+ or -)	10 %

The per-participant cost of treatment is the weighted average estimate for studies included in the analysis. We calculate the total cost per study using peer mentoring time (estimated using the federal minimum wage) and stipends from Bos et al. (2012).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Enroll in 2-year college	17	2	1552	-0.031	0.044	18	-0.031	0.044	18	-0.031	0.474
Enroll in 4-year college	17	2	1552	0.105	0.043	18	0.105	0.043	18	0.105	0.015
Grade point average^	17	1	1038	-0.022	0.041	18	n/a	n/a	n/a	-0.022	0.593
High school graduation	17	1	1038	-0.088	0.054	18	-0.088	0.054	18	-0.088	0.106

^WSIPP's benefit-cost model does not monetize this outcome.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Bos, J.M., Berman, J., Kane, T.J., & Tseng, F.M. (2012). *The impacts of SOURCE: A program to support college enrollment through near-peer, low-cost student advising.* Working paper.

Carrell, S.E., & Sacerdote, B. (2012). *Late interventions matter too: The case of college coaching New Hampshire.* Cambridge, MA: National Bureau of Economic Research.

Student success courses (for 2-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated September 2017.

Program Description: This topic explores the impact of student success courses and similar freshman seminars at community and technical colleges. Included studies examine the impact of a for-credit course designed to teach first-time students nonacademic skills and increase college readiness. The content of these courses can vary widely but generally includes topics like study skills, time management, academic planning, college orientation, and personal wellness.

Courses excluded from this topic include courses that are not for credit, bundled freshman courses, and courses built into living and learning communities (where all students in the course lived on the same floor or in the same dorm).

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	$48	Benefit to cost ratio	$2.13
Participants	$456	Benefits minus costs	$329
Others	$337	Chance the program will produce benefits greater than the costs	66 %
Indirect	($222)		
Total benefits	$620		
Net program cost	($290)		
Benefits minus cost	$329		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$472	$201	$327	$0	$1,000
Costs of higher education	($16)	($153)	$11	($77)	($236)
Adjustment for deadweight cost of program	$0	$0	$0	($145)	($145)
Totals	$456	$48	$337	($222)	$620

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

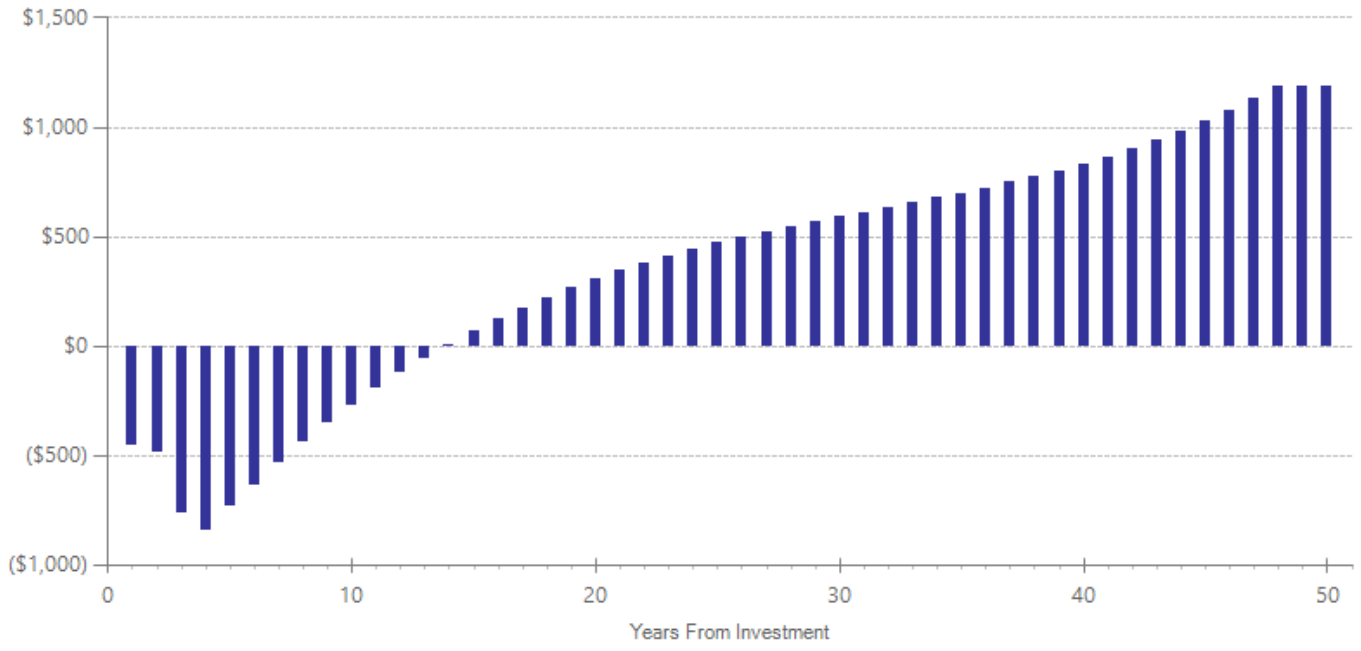
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$236	2006	Present value of net program costs (in 2018 dollars)	($290)
Comparison costs	$0	2016	Cost range (+ or -)	25 %

Costs are based on the per-participant costs reported in an evaluation of the Enhanced Opening Doors program (Weiss et al., 2011), which contains a student success course component. We estimate the per-participant cost as the total budgeted amount for the comparable student success course components, divided by the total number of budgeted classes. Weiss, M., Brock, T., Sommo, C., Rudd, T., & Turner, M.C. (2011). Serving community college students on probation: Four-year findings from Chaffey College's Opening Doors program. New York, NY: MDRC.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
College grade point average^	18	1	86	0.024	1.808	21	n/a	n/a	n/a	0.024	0.990
Graduate with 2-year degree	18	1	12245	0.026	0.015	21	0.026	0.015	21	0.048	0.001
Persistence into 2nd year	18	1	458	0.007	0.066	19	0.007	0.066	19	0.007	0.912
Persistence within 1st year	18	1	458	0.038	0.066	18	0.038	0.066	18	0.038	0.568

^WSIPP's benefit-cost model does not monetize this outcome.

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Citations Used in the Meta-Analysis

Glass, J.C., & Garrett, M.S. (1995). Student participation in a college orientation course, retention, and grade point average. *Community College Journal of Research and Practice, 19*(2), 117-132.

Rutschow E.Z., Cullinan, D. & Welbeck, R. (2012). *Keeping students on course: An impact study of a student success course at Guildord Technical Community College*. New York: MRDC.

Zeidenberg, M., Jenkins, D., & Calcagno, J.C. (2007). *Do student success courses actually help community college students succeed?* (CCRC Brief Number 36). New York: Community College Research Center.

Learning communities—linked developmental and student success courses (for 2-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated July 2017.

Program Description: Linked learning communities co-enroll undergraduate students in two or more courses with the aim to improve academic achievement through increased social and curricular integration. Learning community instructors, sometimes with assistance from a coordinator, integrate curricula by creating lesson plans and shared assignments that facilitate collaboration among students and connections between courses.

In this meta-analysis, students were in their first year at a community college and required developmental education. Student cohorts were co-enrolled in a developmental math or reading course linked with a student success course, which provided lessons focused on time management practices, goal setting and planning, study skills, and using academic and campus resources. Students were enrolled in a learning community for one semester.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$51	Benefit to cost ratio	$0.46
Participants	$227	Benefits minus costs	($218)
Others	$134	Chance the program will produce benefits greater than the costs	36 %
Indirect	($229)		
Total benefits	$183		
Net program cost	($401)		
Benefits minus cost	($218)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$253	$108	$134	$0	$495
Costs of higher education	($26)	($57)	$0	($28)	($111)
Adjustment for deadweight cost of program	$0	$0	$0	($201)	($201)
Totals	$227	$51	$134	($229)	$183

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

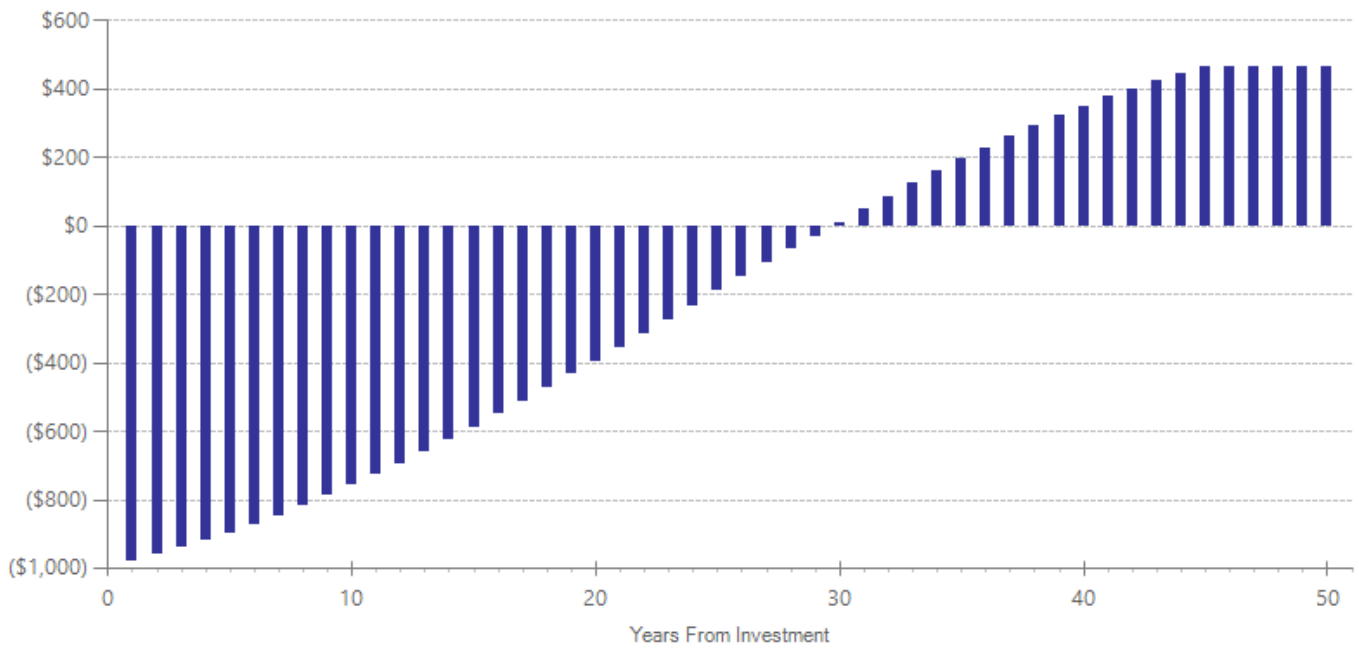
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$381	2016	Present value of net program costs (in 2018 dollars)	($401)
Comparison costs	$0	2016	Cost range (+ or -)	20 %

Costs are based on a weighted average of per-participant costs published in Weiss et al. (2010) and Weissman et al. (2011). Estimates include the direct cost to operate a linked learning community for one semester, including instructor time, coordinator time, student services, and additional student supports like tutors and/or materials.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Persistence into 2nd year	21	1	709	-0.009	0.065	22	-0.009	0.065	22	-0.009	0.883
Persistence within 1st year	21	2	1470	0.054	0.043	21	0.054	0.043	21	0.054	0.211
Remedial credits earned^	21	2	1470	0.031	0.059	22	n/a	n/a	n/a	0.031	0.604

^WSIPP's benefit-cost model does not monetize this outcome.

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Citations Used in the Meta-Analysis

Weiss, M.J., Visher, M.G., Wathington, H., & National Center for Postsecondary Research. (2010). *Learning communities for students in developmental reading: An impact study at Hillsborough Community College.* New York: National Center for Postsecondary Research.

Weissman, E., Butcher, K.F., Schneider, E., Teres J., Collado, H. Greenberg, D. & Welbeck, R. (2011). *Learning Communities for Students in Developmental Math: Impact Studies at Queensborough and Houston Community Colleges.* New York: National Center for Postsecondary Research.

Brief information interventions (for high school students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated November 2017.

Program Description: Brief information interventions are communications, such as physical mail and brief conversations, intended to help high school students and their families make accurate judgments about the costs and benefits of attending college. The interventions do not encourage students to attend specific colleges, are non-intrusive, and are designed to reduce confusion about college and financial aid options. The target population is low-income high school seniors, especially those who would be more likely to apply to college if they knew more about the availability of financial aid. Intervention intensity varies among programs—while some programs mail two to three generic letters, others mail packets of information customized to students' locations and characteristics (e.g. family income).

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	($22)	Benefit to cost ratio	($2.04)
Participants	($63)	Benefits minus costs	($230)
Others	($37)	Chance the program will produce benefits greater than the costs	43 %
Indirect	($33)		
Total benefits	($155)		
Net program cost	($76)		
Benefits minus cost	($230)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	($77)	($33)	($43)	$0	($152)
Costs of higher education	$14	$11	$5	$5	$35
Adjustment for deadweight cost of program	$0	$0	$0	($38)	($38)
Totals	($63)	($22)	($37)	($33)	($155)

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

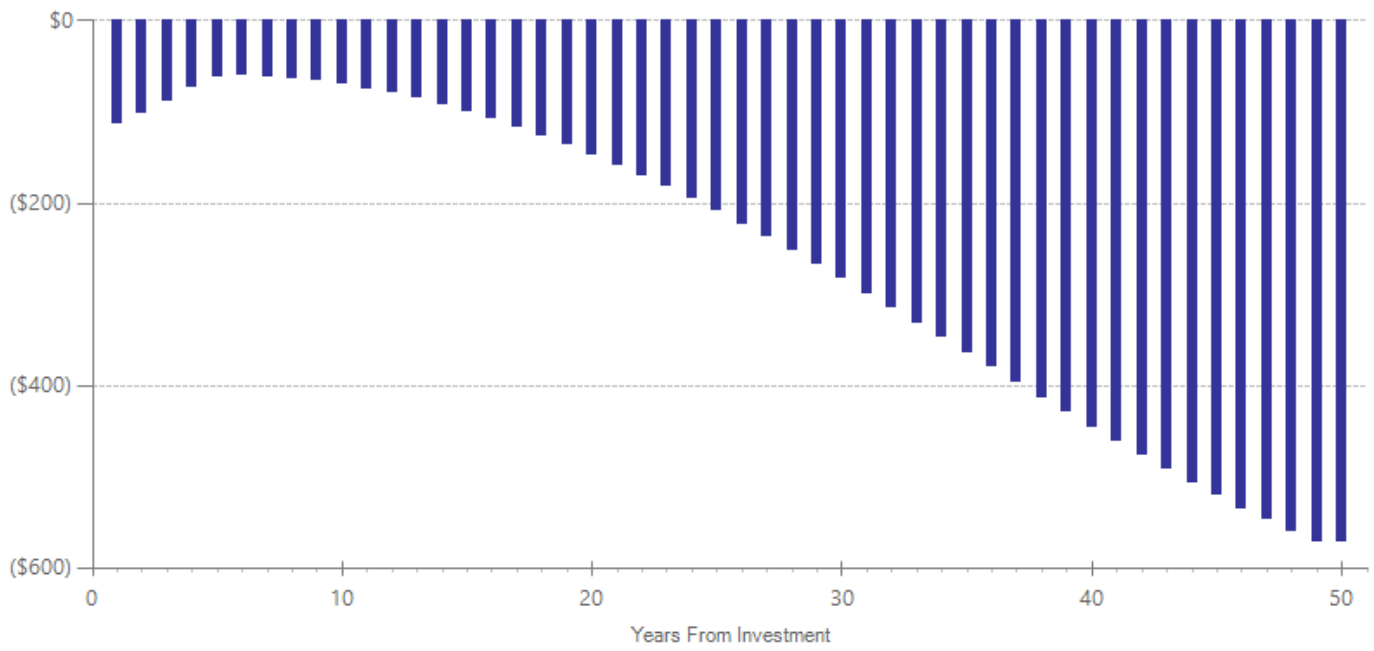
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$65	2009	Present value of net program costs (in 2018 dollars)	($76)
Comparison costs	$0	2009	Cost range (+ or -)	50 %

Program implementation requires management of a computer database and a process scaled to print and mail documents to hundreds of thousands of students. The per-participant cost reflects a weighted average cost of the programs analyzed in the meta-analysis: Hoxby & Turner (2013), Bird et al. (2015), and Bettinger et al. (2012).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Apply to 4-year college^	17	2	114478	0.110	0.113	18	n/a	n/a	n/a	0.110	0.331
Enroll in 2-year college	17	2	63872	0.002	0.023	18	0.002	0.023	18	0.002	0.923
Enroll in 4-year college	17	2	63872	-0.003	0.009	18	-0.003	0.009	18	-0.003	0.738
File a FAFSA^	17	2	966	-0.070	0.045	18	n/a	n/a	n/a	-0.070	0.126

^WSIPP's benefit-cost model does not monetize this outcome.

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An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Bergman, P., Denning, J.T., & Manoli, D. (2016). *Is information enough? evidence from a tax credit information experiment with 1,000,000 students.* Working Paper.

Bettinger, E.P., Long, B.T., Oreopoulos, P., & Sanbonmatsu, L. (2012). The role of application assistance and information in college decisions: Results from the H&R Block FAFSA Experiment. *The Quarterly Journal of Economics, 127*(3), 1205–1242.

Bird, K.A., Castleman, B.L., Goodman, J., & Lamberton, C. (2017). *Nudging at a national scale: experimental evidence from a FAFSA completion campaign.* EdPolicy Works Working Paper Series No 54.

Blagg, K., Chingos, M.M., Graves, C., Nicotera, A., & Shaw, L. (2017). *Rethinking consumer information in higher education (Education Policy Program).* Washington, DC: Urban Institute.

Hoxby, C., & Turner, S. (2013). *Expanding college opportunities for high-achieving, low income students, (SIEPR Discussion Paper No. 12-014).* Stanford, CA: Stanford Institute for Economic Policy Research.

Learning communities—linked developmental and college courses (for 2-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated July 2017.

Program Description: Linked learning communities co-enroll undergraduate students in two or more courses with the aim to improve academic achievement through increased social and curricular integration. Learning community instructors, sometimes with assistance from a coordinator, integrate curricula by creating lesson plans and shared assignments that facilitate collaboration among students and connections between courses.

In this meta-analysis, students were in their first year at a community college and required developmental education. Student cohorts were co-enrolled in a developmental English, math, or reading course linked with at least one other course, typically a college-level course (e.g. English composition or American history). In all programs, students were enrolled in a learning community for one semester. While a model of linking developmental education with college level courses exists in all studies examined, there was some variation. Some linked a developmental education course with one or more courses, while others provided additional supports like tutoring and vouchers for textbooks. There was also varying levels of collaboration and curricular integration between instructors, coordinators, and school faculty across studies. Students were enrolled in a learning community for one semester.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$98	Benefit to cost ratio	$0.29
Participants	$426	Benefits minus costs	($649)
Others	$250	Chance the program will produce benefits greater than the costs	17 %
Indirect	($509)		
Total benefits	$265		
Net program cost	($914)		
Benefits minus cost	($649)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$474	$202	$250	$0	$926
Costs of higher education	($48)	($103)	$0	($52)	($203)
Adjustment for deadweight cost of program	$0	$0	$0	($457)	($457)
Totals	$426	$98	$250	($509)	$265

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

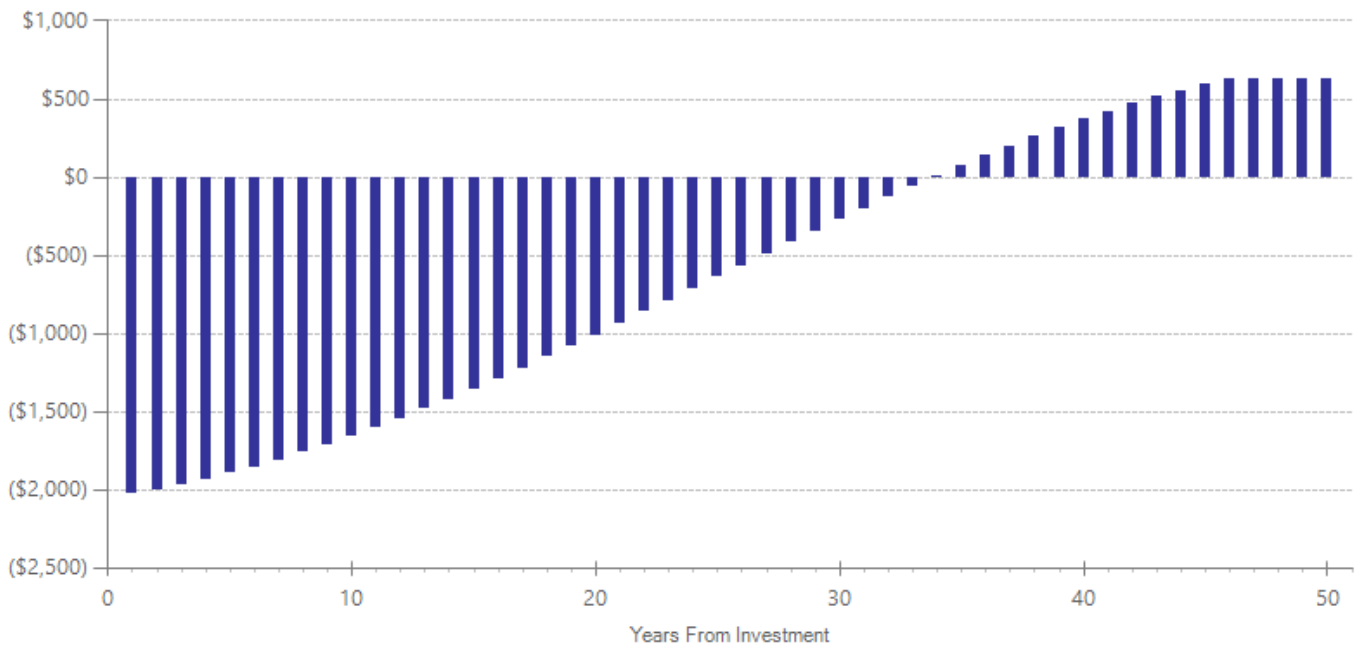
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$868	2016	Present value of net program costs (in 2018 dollars)	($914)
Comparison costs	$0	2016	Cost range (+ or -)	20 %

Costs are based on a weighted average of per-participant costs published in Sommo et al. (2012), Weissman et al. (2012), and Weissman et al. (2011). Estimates include the direct cost to operate a linked learning community for one semester, including instructor time, coordinator time, student services, and additional student supports like tutors and/or materials specific to some programs.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Persistence into 2nd year	20	2	1377	0.048	0.040	21	0.048	0.040	21	0.048	0.229
Persistence within 1st year	20	4	2738	0.026	0.028	20	0.026	0.028	20	0.026	0.360
Remedial credits earned^	20	4	2738	0.091	0.044	21	n/a	n/a	n/a	0.091	0.038

^WSIPP's benefit-cost model does not monetize this outcome.

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WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Scrivener, S., Bloom, D., LeBlanc, A., Paxson, C., Rouse, C.E., & Sommo, C. (2008). *A good start: Two-year effects of a freshmen learning community program at Kingsborough Community College.* New York, NY: MDRC.

Weissman, E., Butcher, K.F., Schneider, E., Teres J., Collado, H. Greenberg, D. & Welbeck, R. (2011). *Learning communities for students in developmental math: Impact studies at Queensborough and Houston community colleges.* New York: National Center for Postsecondary Research.

Weissman, E., Cullinan, D., Cerna, O., Richman, P., & Grossman, A. (2012). *Learning communities for students in Developmental English: Impact studies at Merced College and the Community College of Baltimore County.* New York: National Center for Postsecondary Research.

Text message reminders (for 4-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Text message reminders provide college students with a range of information about available student services and financial aid. In the studies included in this meta-analysis, college students were encouraged to re-file for financial aid or were advised of available tutoring and advising resources available on campus. Students were sent 12 to 40 text messages during the first year of college.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	($134)	Benefit to cost ratio	($28.14)
Participants	($572)	Benefits minus costs	($1,074)
Others	($412)	Chance the program will produce benefits greater than the costs	12 %
Indirect	$81		
Total benefits	($1,037)		
Net program cost	($37)		
Benefits minus cost	($1,074)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	($781)	($332)	($412)	$0	($1,525)
Costs of higher education	$209	$198	$0	$99	$506
Adjustment for deadweight cost of program	$0	$0	$0	($18)	($18)
Totals	($572)	($134)	($412)	$81	($1,037)

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

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[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

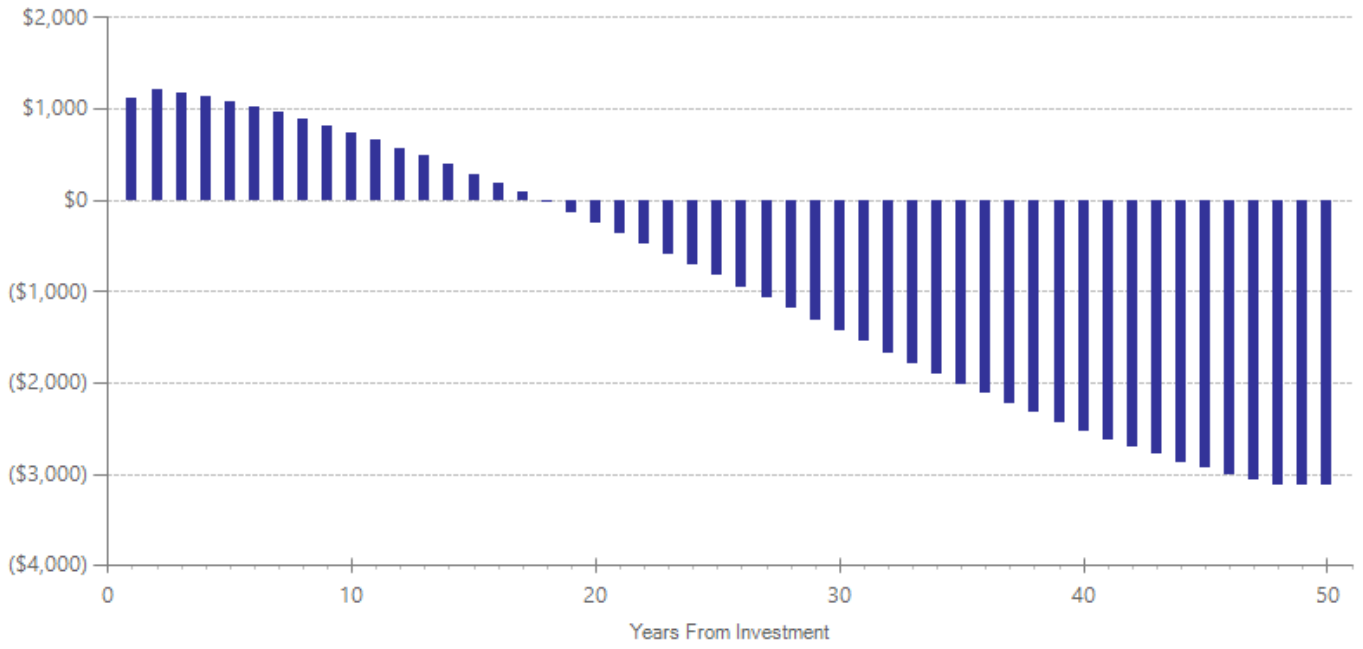
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$35	2016	Present value of net program costs (in 2018 dollars)	($37)
Comparison costs	$0	2016	Cost range (+ or -)	10 %

Costs include the cost of text message delivery and the staff costs to hire an advisor to respond to text messages. Source: Castleman & Page (2016).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Persistence into 2nd year	18	1	297	-0.169	0.143	19	-0.169	0.143	19	-0.169	0.235

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Citations Used in the Meta-Analysis

Castleman, B.L., & Page, L.C. (2016). Freshman year financial aid nudges: An experiment to increase FAFSA renewal and college persistence. *Journal of Human Resources, 51*(2), 389-415.

Performance-based scholarships (for 4-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Performance-based scholarship programs provide students with financial incentives to remain in college, often targeting low-income young adults. Scholarships are provided when students fulfill certain academic benchmarks such as maintaining a 2.0 GPA or enrolling in college. There are no initial academic requirements for the receipt of performance-based aid. Students usually receive their aid in monthly or quarterly installments over one or more terms.

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	$154	Benefit to cost ratio	($0.07)
Participants	$785	Benefits minus costs	($3,157)
Others	$445	Chance the program will produce benefits greater than the costs	11 %
Indirect	($1,582)		
Total benefits	($198)		
Net program cost	($2,959)		
Benefits minus cost	($3,157)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$844	$359	$445	$0	$1,648
Costs of higher education	($59)	($206)	$0	($103)	($367)
Adjustment for deadweight cost of program	$0	$0	$0	($1,479)	($1,479)
Totals	$785	$154	$445	($1,582)	($198)

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

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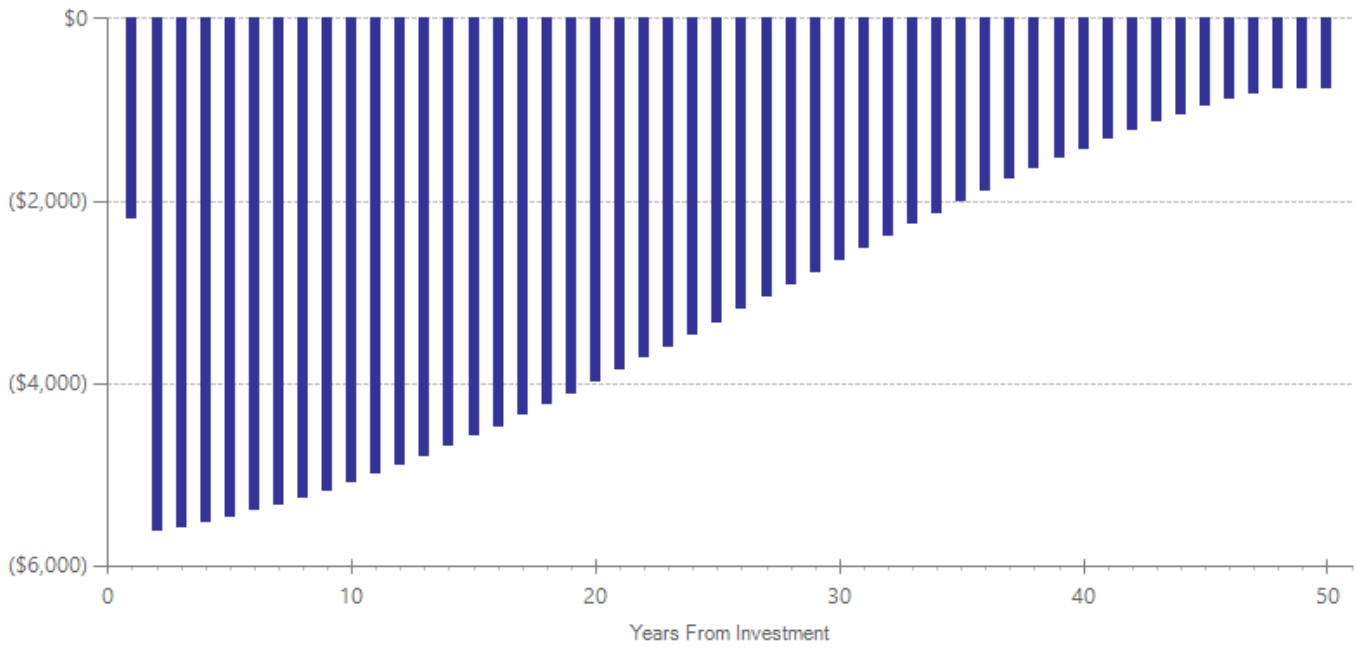
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$1,414	2015	Present value of net program costs (in 2018 dollars)	($2,959)
Comparison costs	$0	2015	Cost range (+ or -)	20 %

Costs include scholarship payments, administrative costs of providing scholarships, and student support services. Source: Mayer et al. (2015). Evaluation and start-up costs are excluded. Performance-based scholarships are in addition to standard programming received by the comparison group. Performance-based scholarship programs duration varied, but on average, the program lasted one to two years.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Graduate with any degree^	18	1	536	0.109	0.075	23	n/a	n/a	n/a	0.109	0.143
Persistence into 2nd year	18	1	536	-0.008	0.081	19	-0.008	0.081	19	-0.008	0.920
Persistence into 3rd year	18	1	536	0.094	0.099	20	0.094	0.099	20	0.094	0.344
Persistence into 4th year	18	1	536	-0.019	0.089	21	-0.019	0.089	21	-0.019	0.828

^WSIPP's benefit-cost model does not monetize this outcome.

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Citations Used in the Meta-Analysis

Mayer, A.K., Patel, R., Rudd, T., & Ratledge, A. (2015). *Designing scholarships to improve college success: Final report on the Performance-Based Scholarship Demonstration*. New York, NY: Manpower Demonstration Research Corporation.

Performance-based scholarships (for 2-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated December 2016.

Program Description: Performance-based scholarship programs provide students with financial incentives to remain in college, often targeting low-income young adults. Scholarships are provided when students fulfill certain academic benchmarks such as maintaining a 2.0 GPA or enrolling in college. There are no initial academic requirements for the receipt of performance-based aid. Students usually receive their aid in monthly or quarterly installments over one or more terms.

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$10	Benefit to cost ratio	($0.40)
Participants	$197	Benefits minus costs	($3,876)
Others	$116	Chance the program will produce benefits greater than the costs	1 %
Indirect	($1,428)		
Total benefits	($1,104)		
Net program cost	($2,771)		
Benefits minus cost	($3,876)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$221	$94	$116	$0	$431
Costs of higher education	($24)	($84)	$0	($42)	($150)
Adjustment for deadweight cost of program	$0	$0	$0	($1,386)	($1,386)
Totals	$197	$10	$116	($1,428)	($1,104)

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

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Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$2,019	2015	Present value of net program costs (in 2018 dollars)	($2,771)
Comparison costs	$0	2015	Cost range (+ or -)	20 %

Costs include scholarship payments, administrative costs of providing scholarships, and student support services. Source: Mayer et al. (2015). Evaluation and start-up costs are excluded. Performance-based scholarships are in addition to standard programming received by the comparison group. Performance-based scholarship programs duration varied, but on average, the program lasted one to two years.

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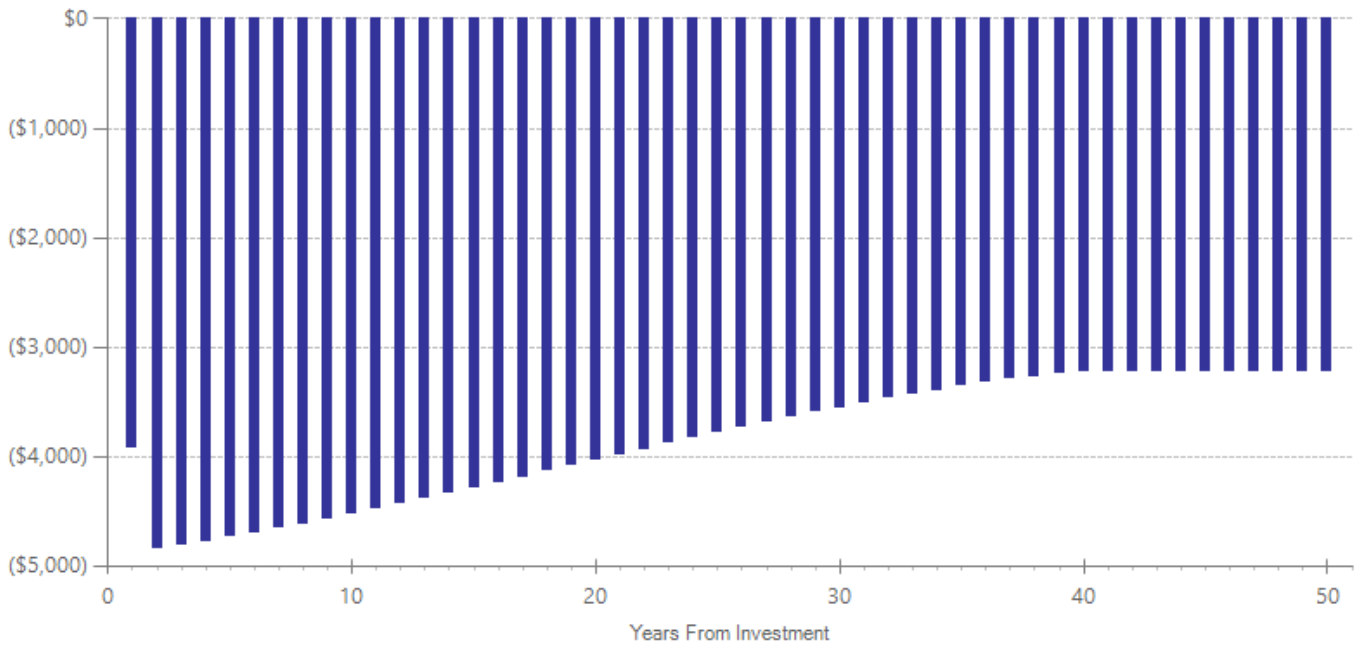
Detailed Annual Cost Estimates Per Participant



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Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
College grade point average^	26	1	366	0.148	0.483	26	n/a	n/a	n/a	0.148	0.759
Graduate with any degree^	26	3	2036	0.055	0.053	29	n/a	n/a	n/a	0.055	0.305
Persistence into 2nd year	26	3	2036	0.052	0.046	27	0.052	0.046	27	0.052	0.259
Persistence into 3rd year	26	2	1425	-0.001	0.102	28	-0.001	0.102	28	-0.001	0.992
Persistence into 4th year^^	26	1	751	0.054	0.063	29	n/a	n/a	n/a	0.054	0.387
Persistence into 5th year^^	26	1	751	0.136	0.065	30	n/a	n/a	n/a	0.136	0.035
Remedial credits earned^	26	1	505	0.250	0.481	26	n/a	n/a	n/a	0.250	0.603

^WSIPP's benefit-cost model does not monetize this outcome.

^^WSIPP does not include this outcome when conducting benefit-cost analysis for this program.

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Richburg-Hayes, L., Brock, T., LeBlanc, A., Paxson, C., Rouse, C.E., & Barrow, L. (2009). *Rewarding persistence: Effects of a performance-based scholarship program for low-Income parents.* New York, NY: Manpower Demonstration Research Corporation.

Intensive advising (for 2-year college students)

Higher Education

Benefit-cost estimates updated December 2019. Literature review updated November 2017.

Program Description: Intensive advising is a comprehensive and personalized form of academic advising intended to increase persistence, feelings of social integration, and academic performance. Academic counselors contact students frequently, and students are expected—or required—to meet with their advisors frequently. Advisors help students explore matters related to course selection, career choices, study habits, and personal or family issues. The populations in this meta-analysis were full-time freshman students at public 2-year colleges. Students receive intensive advising during their first two semesters of college. While student-to-counselor ratios in typical counseling programs can average more than 1,000 to 1, intensive advising can require student-to-counselor ratios of less than to 200 to 1.

Benefit-Cost Summary Statistics Per Participant

Benefits to:			
Taxpayers	($224)	Benefit to cost ratio	($4.30)
Participants	($1,393)	Benefits minus costs	($4,525)
Others	($1,888)	Chance the program will produce benefits greater than the costs	17 %
Indirect	($165)		
Total benefits	($3,670)		
Net program cost	($854)		
Benefits minus cost	($4,525)		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings associated with higher education	$1,006	$428	$531	$0	$1,966
Costs of higher education	($140)	($303)	$0	($151)	($594)
Adjustment for deadweight cost of program	($2,260)	($350)	($2,419)	($14)	($5,043)
Totals	($1,393)	($224)	($1,888)	($165)	($3,670)

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

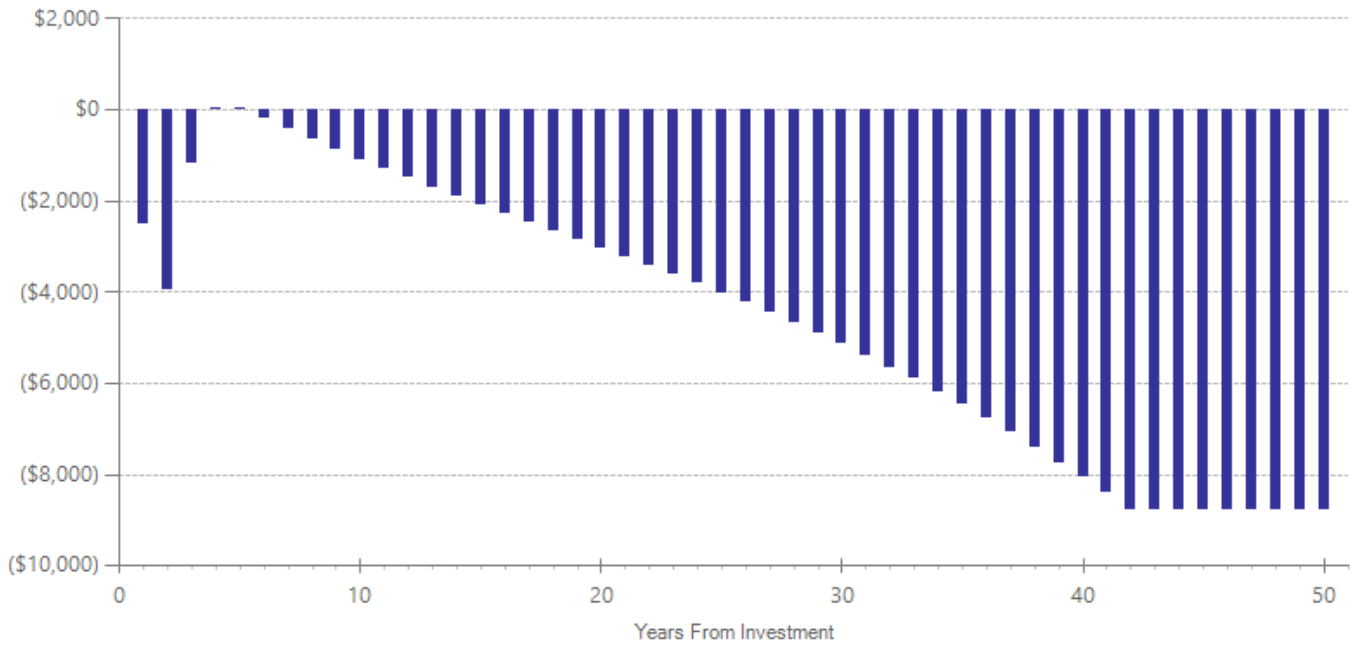
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$733	2009	Present value of net program costs (in 2018 dollars)	($854)
Comparison costs	$0	2009	Cost range (+ or -)	10 %

Total costs include counselor and staff time using average Washington State compensation costs (including benefits) (as reported by the Office of Financial Management). The cost estimate includes a $300 annual stipend as reported by Scrivener & Weiss (2009).

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
College grade point average^	24	2	1093	-0.006	0.059	27	n/a	n/a	n/a	-0.006	0.917
Transfer from 2- to 4-year college	24	1	1073	-0.077	0.058	27	-0.077	0.058	27	-0.077	0.181
Graduate with 2-year degree	24	1	1073	-0.105	0.323	27	-0.105	0.323	27	-0.105	0.744
Persistence into 2nd year	24	1	1073	0.098	0.053	27	0.098	0.053	27	0.098	0.064
Persistence into 3rd year	24	1	1073	0.079	0.056	27	0.079	0.056	27	0.079	0.155
Remedial credits earned^	24	1	1073	0.086	0.043	27	n/a	n/a	n/a	0.086	0.046

^WSIPP's benefit-cost model does not monetize this outcome.

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An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Conklin, J.F. (2009). *The impact of developmental and intrusive academic advising on grade point average, retention, and satisfaction with advising and the nursing program among first semester nontraditional associate degree nursing students.* (Doctoral dissertation). Walden University.

Scrivener, S., & Weiss, M.J. (2009). *More guidance, better results? Three-year effects of an enhanced student services program at two community colleges.* New York, NY: Manpower Demonstration Research Corporation

Accelerated Study in Associate Programs (ASAP)

Higher Education

Literature review updated October 2017.

Program Description: Accelerated Study in Associate Programs (ASAP) is a program intended to increase graduation rates among community college students. ASAP includes (1) mandatory full-time study; (2) financial support; (3) frequent, intensive advising; (4) learning communities; and (5) condensed, blocked course schedules. The target population is low-income, first-time freshman students who intend to study full time. Students can remain in ASAP until they leave college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
College grade point average	2	3717	0.030	0.023	23	0.056	0.018
Transfer from 2- to 4-year college	2	1452	0.183	0.077	25	0.247	0.001
Graduate with 2-year degree	3	4786	0.382	0.100	24	0.660	0.001
Graduate with 4-year degree	1	1001	0.164	0.262	27	0.309	0.226
Persistence into 2nd year	3	4786	0.198	0.044	23	0.332	0.001
Persistence within 1st year	1	460	0.402	0.095	23	0.402	0.001
Remedial credits earned	1	451	0.237	0.067	24	0.237	0.001

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Citations Used in the Meta-Analysis

Kolenovic, Z., Linderman, D., & Karp, M.M. (2013). Improving student outcomes via comprehensive supports: three-year outcomes from CUNY's Accelerated Study in Associate Programs (ASAP). *Community College Review, 41*(4), 271-291.

Scrivener, S., Weiss, M.J., Ratledge, A., Rudd, T., Sommo, C., & Fresques, H. (2015). *Doubling graduation rates: Three-year effects of CUNY's Accelerated Study in Associate Programs (ASAP) for developmental education students.* New York, NY: Manpower Demonstration Research Corporation.

Sommo, C., & Ratledge, A. (2016). *Bringing CUNY Accelerated Study in Associate Programs (ASAP) to Ohio: Early findings from a demonstration in three community colleges.* Policy brief. MDRC.

Strumbos, D., & Kolenovic, Z. (2017). *Six-year outcomes of ASAP students: transfer and degree attainment (ASAP evaluation brief).* New York City, NY: The City University of New York.

Strumbos, D., Kolenovic, Z., & Tavares, A.L. (2016). *CUNY Accelerated Study in Associate Programs (ASAP): Evidence from six cohorts and lessons for expansion.* In S. Whalen (Ed.), Proceedings of the 12th National Symposium on Student Retention, Norfolk, Virginia. Norman, OK: The University of Oklahoma.

Community college promise programs (for high school students)

Higher Education

Literature review updated August 2017.

Program Description: Community college promise programs are place-based scholarship programs. Typically, promise programs provide free tuition for at least one year of community college in a specific region and have minimal academic requirements. Promise programs also have an early outreach component so that students are aware of the program and its requirements early in their high school career. Our analysis reflects the impact of a specific community college promise program, Knox Achieves (later Tennessee Achieves). It is a last dollar program, meaning it covers remaining need after other aid is taken into account and covers up to five continuous semesters of tuition at any Tennessee public community college. It also has a high school mentorship component and a community service requirement.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Enroll in 2-year college	1	2071	0.754	0.030	18	0.754	0.001
Enroll in 4-year college	1	2071	-0.209	0.039	18	-0.209	0.001
High school graduation	1	2071	0.262	0.055	18	0.262	0.001

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

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Citations Used in the Meta-Analysis

Carruthers, C.K., & Fox, W.F. (2015). *Aid for all: College coaching, financial aid, and post-secondary persistence in Tennessee.* (Working paper #2015-06). Knoxville, TN: Haslam College of Business, The University of Tennessee, Knoxville.

Early commitment programs (for middle and high school students)

Higher Education

Literature review updated December 2016.

Program Description: Early commitment programs offer assured college financial assistance early in students' academic careers, conditional on meeting certain program requirements. We focus on programs where students were assured assistance by the 10th grade, and the program requirements were low enough that students would be reasonably certain that they would be able to receive aid. We distinguish these programs from merit programs by excluding programs with a test score requirement and/or a minimum GPA requirement of 3.0 or higher. The programs included in the meta-analysis cover up to 100% of college tuition and fees at eligible colleges and universities for four years, conditional on meeting initial scholarship requirements and continued satisfactory academic performance in college. One program included in the meta-analysis also provided academic (tutoring/counseling) and college application support in high school.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Crime	1	45393	-0.010	0.007	18	0.010	0.179
Enroll in 2-year college	2	12841	0.013	0.020	18	0.025	0.208
Enroll in 4-year college	3	16386	0.106	0.058	18	0.200	0.062
Grade point average	1	88374	-0.015	0.004	18	-0.015	0.001
Graduate with 2-year degree	1	855	0.029	0.047	21	0.056	0.669
Graduate with 4-year degree	2	2764	0.070	0.067	23	0.149	0.236
High school graduation	2	100991	0.108	0.114	18	0.082	0.548
Persistence into 4th year	1	855	-0.060	0.047	22	-0.114	0.043

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Citations Used in the Meta-Analysis

Ash, J.W. (2015). *A promise kept in El Dorado? An evaluation of the impact of a universal, place based college scholarship on K-12 achievement and high school graduation. (Doctoral dissertation, University of Arkansas).*

Bartik, T.J., Hershbein, B., & Lachowska, M. (2015). *The effects of the Kalamazoo Promise Scholarship on college enrollment, persistence, and completion.* Upjohn Institute Working Paper 15-229. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research

Bozick, R., Gonzalez, G., & Engberg, J. (2015). Using a merit-based scholarship program to increase rates of college enrollment in an urban school district: The case of the Pittsburgh Promise. *Journal of Student Financial Aid, 45*(2), 2-24.

Goldhaber, D., Long, M., Gratz, T., & Rooklyn, J. (2017). *The effects of Washington's College Bound Scholarship Program on high school grades, high school completion, and incarceration.* CEDR Working Paper No. 05302017-2-1. University of Washington, Seattle, WA.

St. John, E.P., Gross, J.P.K., Musoba, G.D., & Chung, A.S. (2005). *A step toward college success: Assessing attainment among Indiana's Twenty-First Century Scholars.* Indianapolis, IN: Lumina Foundation for Education.

Toutkoushian, R.K., Hossler, D., Desjardins, S.L., McCall, B.P., & Canche, M.G. (2015). The effect of participating in Indiana's Twenty-First Century Scholars program on college enrollments. *Review of Higher Education, 39*(1), 59-95.

Need-based grants (for college students)

Higher Education

Literature review updated December 2017.

Program Description: Need-based grants provide means-tested financial assistance to low-income students. Need-based grants can come from many sources and in various forms. In this meta-analysis, we focus on need-based federal and state grants with minimal eligibility requirements. Example programs in this review include the Federal Pell Grant Program and state grant programs similar to Washington's State Need Grant. Grants funded by private entities may also be included if their implementation is similar to that of federal and state need-based grants. We exclude institutional need-based aid, as well as other grant programs that have conditions for aid receipt other than income (such as work study programs or merit-based aid). The studies in this meta-analysis evaluate the effects of need-based grants for students who are already enrolled in college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
College grade point average	7	39463	0.017	0.011	22	0.017	0.117
Earnings*	1	13860	0.053	0.022	25	0.053	0.015
Transfer from 2- to 4-year college	1	397	0.019	0.071	22	0.019	0.793
Graduate with 2-year degree	2	772	-0.004	0.105	22	-0.004	0.973
Graduate with 4-year degree	2	14460	0.101	0.015	24	0.101	0.001
Persistence into 2nd year	8	37497	0.051	0.017	20	0.080	0.003
Persistence into 3rd year	4	1820	0.023	0.037	21	0.023	0.526
Persistence within 1st year	4	7797	0.082	0.030	19	0.152	0.001

*The effect size for this outcome indicates percentage change, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

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Citations Used in the Meta-Analysis

Anderson, D.M. (2015). *Essays in public economics*. (Doctoral dissertation).

Bert, M.R. (2013). *Evaluating the impact of Ohio's College Opportunity Grant on first year student success.* (Doctoral dissertation). Cambridge, MA: Harvard Graduate School of Education.

Bettinger, E. (2015). Need-based aid and college persistence: The effects of the Ohio College Opportunity Grant. *Educational Evaluation and Policy Analysis, 37* (1), 102S-119S.

Chen, R., & DesJardins, S. (2008). Exploring the effects of financial aid on the gap in student dropout risks by income level. *Research in Higher Education, 49*(1), 1-18.

Davidson, J.C. (2015). The effects of a state need-based access grant on traditional and nontraditional student persistence. *Higher Education Policy, 28* (2), 235-257.

Denning, J.T., Marx, B.M., & Turner, L.J. (2017). *ProPelled: The effects of grants on graduation, earnings, and welfare.* Cambridge, Mass: National Bureau of Economic Research.

Friedmann, E.Z. (2016). *Addressing disparities in postsecondary success: The role of need-based financial aid.* (Doctoral dissertation). University of California, Davis.

Goldrick-Rab, S., Kelchen, R., Harris, D., & Benson, J. (2016). Reducing income inequality in educational attainment: experimental evidence on the impact of financial aid on college completion. *American Journal of Sociology, 121*(6), 1762-1817.

Mendoza, P., Mendez, J.P., & Malcom, Z. (2009). Financial aid and persistence in community colleges: Assessing the effectiveness of federal and state financial aid programs in Oklahoma. *Community College Review, 37* (2), 112-135.

St. John, E.P., Hu, S., & Weber, J. (2001). State policy and the affordability of public higher education: The influence of state grants on persistence in Indiana. *Research in Higher Education, 42*(4), 401-428.

Need-based grants (for high school students and graduates)

Higher Education

Literature review updated December 2017.

Program Description: Need-based grants provide means-tested financial assistance to low-income students. Need-based grants can come from many sources and in various forms. In this meta-analysis, we focus on need-based federal and state grants with minimal eligibility requirements. Example programs in this review include the Federal Pell Grant Program and state grant programs similar to Washington's State Need Grant. Grants funded by private entities may also be included if their implementation is similar to that of federal and state need-based grants. We exclude institutional need-based aid, as well as other grant programs that have conditions for aid receipt other than income (such as work study programs or merit-based aid). The studies in this meta-analysis evaluate the effects of need-based grants for students who are still attending high school or have recently graduated high school and have not yet enrolled in college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Enroll in 2-year college	1	3776	0.003	0.029	19	0.003	0.927
Enroll in 4-year college	1	3485	0.097	0.033	19	0.097	0.003
Enroll in any college	7	33407	0.131	0.049	21	0.131	0.008
Graduate with 2-year degree	1	4423	0.004	0.028	21	0.004	0.881
Graduate with 4-year degree	2	4875	0.169	0.028	24	0.169	0.001
Persistence into 2nd year	2	3967	0.199	0.146	19	0.199	0.174

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

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Citations Used in the Meta-Analysis

Carruthers, C.K., & Welch, J.G. (2015). *Not whether, but where? Pell grants and college choices.* Knoxville, TN: University of Tennessee.

Castleman, B.L. & Long, B.T. (2013). *Looking beyond enrollment: The causal effect of need-based grants on college access, persistence, and graduation.* Cambridge, Mass: National Bureau of Economic Research.

Castleman, B.L., Long, B.T., & Mabel, Z. (2018). Can Financial aid help to address the growing need for STEM education? The effects of need-based grants on the completion of science, technology, engineering, and math courses and degrees. *Journal of Policy Analysis and Management, 37*(1), 136-166.

Dynarski, S.M. (2003). Does aid matter? Measuring the effect of student aid on college attendance and completion. *American Economic Review, 93*(1), 279-288.

Kane, T.J. (1994). College entry by blacks since 1970: The role of college costs, family background, and the returns to education. *Journal of Political Economy, 102*(5), 878-911.

Seftor, N.S., & Turner, S.E. (2002). Back to school: Federal student aid policy and adult college enrollment. *The Journal of Human Resources, 37*(2), 336-352.

Merit aid (for high school students)

Higher Education

Literature review updated December 2016.

Program Description: Students receive merit aid for college based on prior academic achievement, such as SAT/ACT scores or high school GPA. Students may be able to renew their merit aid awards each year if they continue to reach certain academic benchmarks. Merit aid rewards students for past achievements and encourages them to continue meeting high academic standards. Studies included examine effects of aid prior to enrolling in college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Enroll in 2-year college	5	37583	0.000	0.055	18	0.000	0.995
Enroll in 4-year college	5	39282	0.060	0.038	18	0.060	0.114
Enroll in any college	8	439323	0.067	0.035	18	0.073	0.039
Graduate with 2-year degree	4	400331	-0.006	0.002	21	-0.006	0.008
Graduate with 4-year degree	4	400331	-0.015	0.016	23	-0.015	0.333
Persistence into 2nd year	2	5672	0.015	0.045	19	0.015	0.729
Persistence into 4th year	1	20769	-0.063	0.012	21	-0.063	0.001

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Citations Used in the Meta-Analysis

Castleman, B.L. (2014). *The impact of partial and full merit scholarships on college entry and success: Evidence from the Florida Bright Futures Scholarship Program* (EdPolicy Works Working Paper Series No. 17). Charlottesville, VA: EdPolicyWorks, University of Virginia.

Cohodes, S.R., & Goodman, J.S. (2014). Merit aid, college quality, and college completion: Massachusetts' Adams scholarship as an in-kind subsidy. *American Economic Journal: Applied Economics, 6*(4), 251-285.

Domina, T. (2014). Does merit aid program design matter? A cross-cohort analysis. *Research in Higher Education, 55*(1), 1-26.

Dynarski, S. (2004). The new merit aid. In C.M. Hoxby (Ed.), *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 63-100). Chicago, IL: University of Chicago Press.

Sjoquist, D.L., & Winters, J.V. (2015). State merit-based financial aid programs and college attainment. *Journal of Regional Science, 55*(3), 364-390.

Merit aid with financial need requirements (for high school students)

Higher Education

Literature review updated December 2016.

Program Description: Students receive merit aid in college based on prior academic achievement, such as SAT/ACT scores or high school GPA. Programs included in this review also require students to meet financial need requirements (e.g. meet Pell eligibility) to be eligible to receive the scholarship. The thresholds for academic and financial eligibility vary across included programs but all recipients must exhibit academic merit and financial need. Scholarship programs reviewed include Gates Millennium Scholarship, Dell Scholars Program, Susan Thompson Buffet Foundation Scholarship, and California's Cal Grant.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
College grade point average	2	525	0.110	0.077	22	0.110	0.152
Enroll in 2-year college	1	991	-0.234	0.066	18	-0.234	0.001
Enroll in 4-year college	4	13696	0.144	0.043	18	0.144	0.001
Graduate with 4-year degree	2	379	0.244	0.325	23	0.244	0.451
Persistence into 2nd year	2	791	0.035	0.064	19	0.035	0.591
Persistence into 3rd year	2	735	0.218	0.069	20	0.218	0.002
Persistence into 4th year	2	578	0.139	0.091	21	0.139	0.128
Persistence into 5th year	1	210	-0.041	0.158	22	-0.041	0.796

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Angrist, J.D., Autor, D.H., Hudson, S., & Pallais, A. (2014). *Leveling up: Early results from a randomized evaluation of post-secondary aid.* Cambridge, MA: National Bureau of Economic Research.

Boatman, A., & Long, B.T. (2016). Does financial aid impact college student engagement?: Evidence from the Gates Millennium Scholars program. *Research in Higher Education, 57*(6), 653-681.

DesJardins, S.L., & McCall, B.P. (2008). *The impact of the Gates Millennium Scholars program on the retention, college finance- and work-related choices, and future educational aspirations of low-income minority students.* Unpublished manuscript.

DesJardins, S.L., & McCall, B.P. (2014). The impact of the Gates Millennium Scholars Program on college and post-college related choices of high ability, low-income minority students. *Economics of Education Review, 38*(2), 124-138.

Kane, T.J. (2003). *A quasi-experimental estimate of the impact of financial aid on college-going.* Cambridge, MA: National Bureau of Economic Research.

Page, L.C., Castleman, B.L., & Sahedewo, G.A. (2016). *More than dollars for scholars: The impact of the Dell Scholars Program on college access, persistence and degree attainment.* SSRN working paper.

Tuition sticker price increase at 2-year college (for high school students and graduates)

Higher Education

Literature review updated August 2017.

Program Description: Studies included in this meta-analysis estimate the effects of a change in the price of tuition at 2-year colleges on students' college outcomes, including the likelihood that a student will enroll in college. Results are presented as "elasticities" and are interpreted as the percent change in an outcome we expect from a 1% increase in tuition price.

This meta-analysis includes only studies that examine tuition price without subtracting federal Pell grants from full price values. In addition, this meta-analysis includes only studies that use individual-level data in their analyses. Results of group-level analyses can differ from the results of analyses of the individuals within the same groups. The studies in this meta-analysis evaluate the effects of a tuition price increase for students who are still attending high school or have recently graduated high school and have not yet enrolled in college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Apply to 4-year college**	1	1424316	-0.037	0.001	18	-0.037	0.001
Enroll in 2-year college**	5	597044	-0.144	0.042	18	-0.144	0.001
Enroll in 4-year college**	4	593969	0.021	0.021	18	0.021	0.320
Enroll in any college**	15	3220756	-0.199	0.043	18	-0.199	0.001
Graduate with 2-year degree**	1	294089	-0.280	0.127	21	-0.280	0.027
Graduate with 4-year degree**	2	379267	0.200	0.249	23	0.200	0.422
Graduate with any degree**	3	16594	-0.413	0.457	23	-0.413	0.367

**The effect size for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Baschnagel, C.N. (2015). *The price sensitivity of demand for higher education among non-traditional students.* (Doctoral dissertation). College Park, MD: University of Maryland.

Benson, J. (2010). *State policies and community college students: Do high school and finance policy reforms promote postsecondary attainment?* (Unpublished doctoral dissertation). Madison, WI: University of Wisconsin-Madison

Cardiff-Hicks, B. (2013). *The effect of tuition subsidies on student college choices* (Unpublished manuscript). Palo Alto, CA: Stanford University.

Chin, A., & Juhn, C. (2010). *Does reducing college costs improve educational outcomes for undocumented immigrants?: Evidence from state laws permitting undocumented immigrants to pay in-state tuition at state colleges and universities.* Cambridge, Mass: National Bureau of Economic Research.

Darolia, R., & Potochnick, S. (2015). Educational "when," "where," and "how": implications of in-state resident tuition policies for Latino undocumented immigrants. *The Review of Higher Education, 38*(4), 507-535.

Denning, J.T. (2017). College on the cheap: Consequences of community college tuition reductions. *American Economic Journal: Economic Policy, 9*(2), 155-188.

Flores, S.M. (2010). State dream acts: The effect of in-state resident tuition policies and undocumented Latino students. *Review of Higher Education, 33*(2), 239-283.

Flores, S.M. (2010). The first state dream act: In-state resident tuition and immigration in Texas. *Educational Evaluation and Policy Analysis, 32*(4), 435-455.

Hilmer, M.J. (1998). Post-secondary fees and the decision to attend a university or a community college. *Journal of Public Economics, 67*(3), 329-348.

Kane, T.J. (1995). *Rising public college tuition and college entry: How well do public subsidies promote access to college?.* Cambridge, MA: National Bureau of Economic Research.

Kaushal, N. (2008). In-state tuition for the undocumented: education effects on Mexican young adults. *Journal of Policy Analysis and Management, 27*(4), 771-792.

Kennan, J. (2015). *Spatial variation in higher education financing and the supply of college graduates.* Cambridge, MA: National Bureau of Economic Research.

Kim, J.Y. (2011). *An analysis of the effects of state financial aid policy on the timing of postsecondary enrollment: A focus on income and race differences* (Doctoral dissertation). ProQuest LLC, Ann Arbor, MI.

McFarlin, I. (2007). *Do public subsidies promote college access and completion? Evidence from community college districts.* Ann Arbor, MI: University of Michigan, Ann Arbor.

McFarlin, Jr. I., Martorell, P., McCall, B.P. (2017). *Do public subsidies improve college attainment and labor market outcomes?* Evidence from community college taxing district expansions. Working Paper.

Rouse, C.E. (1994). What to do after high school: The two-year versus four-year college enrollment decision. Choices and Consequences: *Contemporary Policy Issues in Education,* 59–88.

St. John, E. (1990). Price response in enrollment decisions: An analysis of the High School and Beyond sophomore cohort. *Research in Higher Education, 31*(2), 161-176.

Tuition sticker price increase at 4-year college (for high school students and graduates)

Higher Education

Literature review updated August 2017.

Program Description: Studies included in this meta-analysis estimate the effects of a change in the price of tuition at 4-year colleges on students' college outcomes, including the likelihood that a student will enroll in college. Results are presented as "elasticities" and are interpreted as the percent change in an outcome we expect from a 1% increase in tuition price.

This meta-analysis includes only studies that examine tuition price without subtracting federal Pell grants from full price values. In addition, this meta-analysis includes only studies that use individual-level data in their analyses. Results of group-level analyses can differ from the results of analyses of the individuals within the same groups. The studies in this meta-analysis evaluate the effects of a tuition price increase for students who are still attending high school or have recently graduated high school and have not yet enrolled in college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Apply to 4-year college**	1	1424316	-0.037	0.001	18	-0.037	0.001
Enroll in 2-year college**	1	10254	0.106	0.046	18	0.106	0.022
Enroll in 4-year college**	4	38227	-0.280	0.086	18	-0.280	0.001
Enroll in any college**	23	3264722	-0.117	0.024	18	-0.117	0.001
Graduate with any degree**	2	9774	-0.895	0.300	23	-0.895	0.003

**The effect size for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Baschnagel, C.N. (2015). *The price sensitivity of demand for higher education among non-traditional students.* (Doctoral dissertation).

Chin, A., & Juhn, C. (2010). *Does reducing college costs improve educational outcomes for undocumented immigrants?: Evidence from state laws permitting undocumented immigrants to pay in-state tuition at state colleges and universities.* Cambridge, Mass: National Bureau of Economic Research.

Kane, T.J. (1995). *Rising public college tuition and college entry: How well do public subsidies promote access to college?.* Cambridge, MA: National Bureau of Economic Research.

Knight, B.G., & Schiff, N.M. (2016). *The out-of-state tuition distortion.* Working Paper Series, 22996.

Cardiff-Hicks, B. (2013). *The effect of tuition subsidies on student college choices* (Unpublished manuscript). Palo Alto, CA: Stanford University.

Darolia, R., & Potochnick, S. (2015). Educational "when," "where," and "how": implications of in-state resident tuition policies for Latino undocumented immigrants. *The Review of Higher Education, 38*(4), 507-535.

Flores, S.M. (2010). State dream acts: The effect of in-state resident tuition policies and undocumented Latino students. *Review of Higher Education, 33*(2), 239-283.

Flores, S.M. (2010). The first state dream act: In-state resident tuition and immigration in Texas. *Educational Evaluation and Policy Analysis, 32*(4), 435-455.

Hilmer, M.J. (1998). Post-secondary fees and the decision to attend a university or a community college. *Journal of Public Economics, 67*(3), 329-348.

Kane, T.J. (1995). *Rising public college tuition and college entry: How well do public subsidies promote access to college?.* Cambridge, MA: National Bureau of Economic Research.

Kaushal, N. (2008). In-state tuition for the undocumented: education effects on Mexican young adults. *Journal of Policy Analysis and Management, 27*(4), 771-792.

Kennan, J. (2015). *Spatial variation in higher education financing and the supply of college graduates.* National Bureau of Economic Research.

Kim, J.Y. (2011). *An analysis of the effects of state financial aid policy on the timing of postsecondary enrollment: A focus on income and race differences* (Doctoral dissertation). ProQuest LLC, Ann Arbor, MI.

Rouse, C.E. (1994). What to do after high school: The two-year versus four-year college enrollment decision. *Choices and Consequences: Contemporary Policy Issues in Education,* 59–88.

St. John, E. (1990). Price response in enrollment decisions: An analysis of the High School and Beyond sophomore cohort. *Research in Higher Education, 31*(2), 161-176.

Tuition sticker price increase at 4-year college (for 4-year college students)

Higher Education

Literature review updated August 2017.

Program Description: Studies included in this meta-analysis estimate the effects of a change in the price of tuition at 4-year colleges on students' college outcomes, including the likelihood that a student will enroll in college. Results are presented as "elasticities" and are interpreted as the percent change in an outcome we expect from a 1% increase in tuition price.

This meta-analysis includes only studies that examine tuition price without subtracting federal Pell grants from full price values. In addition, this meta-analysis includes only studies that use individual-level data in their analyses. Results of group-level analyses can differ from the results of analyses of the individuals within the same groups. The studies in this meta-analysis evaluate the effects of an increase in tuition price for students who are already enrolled in college.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Persistence into 5th year**	2	7653	0.282	0.221	24	0.282	0.202
Persistence within 1st year**	1	61481	-0.064	0.012	18	-0.064	0.001

**The effect size for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Bryan, B.J. (2013). *The financial nexus of college choice and persistence at for-profit institutions.* (Doctoral dissertation). Columbia, SC: University of South Carolina.

Conger, D., & Turner, L.J. (2017). *The effect of price shocks on undocumented students' college attainment and completion. Journal of Public Economics, 148,* 92–114.

Summer bridge (for high school graduates)

Higher Education

Literature review updated December 2016.

Program Description: Summer bridge programs enroll first-year college students during the summer before the student's first semester of college. Students usually take academic remedial courses and participate in academic and college skills workshops to assist with the college transition. These programs often target low-income, minority, and/or low-performing students.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Enroll in any college	1	793	-0.015	0.084	18	-0.015	0.861
Graduate with any degree	1	413	0.130	0.063	23	0.245	0.001
Remedial credits earned	1	793	-0.112	0.056	20	-0.112	0.046

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Barnett, E.A., Bork, R.H., Mayer, A.K., Pretlow, J., Wathington, H.D., & Weiss, M.J. (2012). *Bridging the gap: An impact study of eight developmental summer bridge programs in Texas.* New York, NY: National Center for Postsecondary Research, Teachers College, Columbia University.

Douglas, D., & Attewell, P. (2014). The bridge and the troll underneath: Summer bridge programs and degree completion. *American Journal of Education, 121*(1), 87-109.

Tuition sticker price increase at 2-year college (for college students)

Higher Education

Literature review updated August 2017.

Program Description: The study in this analysis estimates the effects of a change in the price of tuition at 2-year colleges on students' likelihood of persisting from the beginning to the end of their first year of college. The result is presented as an "elasticity" and is interpreted as the percent change in an outcome we expect from a 1% increase in tuition price.

The study in this meta-analysis examines tuition price without subtracting federal Pell grants from full price values. In addition, the study uses individual-level data in its evaluation. Results of group-level analyses can differ from the results of analyses of the individuals within the same groups. The study in this analysis evaluates the effects of an increase in tuition price for students who are already enrolled in college. The population in the study is undocumented/illegal immigrants. Because undocumented/illegal immigrants experience a unique legal environment, it is unclear to what extent the results of this analysis are generalizable to the broader student population in Washington.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
Persistence within 1st year**	1	33513	-0.088	0.093	18	-0.088	0.343

**The effect size for this outcome represents an elasticity, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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Citations Used in the Meta-Analysis

Conger, D. & Turner, L.J. (2015). *The impact of tuition increases on undocumented college students' attainment.* Cambridge, MA: National Bureau of Economic Research.

Merit aid (for college students)

Higher Education

Literature review updated December 2016.

Program Description: Undergraduate students receive merit aid based on prior academic achievement, such as SAT/ACT scores or high school grade point average. Students may be able to renew their merit aid awards each year if they continue to reach certain academic benchmarks. Merit aid rewards students for past achievements and encourages them to continue meeting high academic standards. Merit aid for college students focuses on the effects of merit aid for those already enrolled in college. In this meta-analysis, effects on 2-year graduation and transfer from 2-year to 4-year college were based on a single study focusing on 2-year institutions.

Meta-Analysis of Program Effects

Outcomes measured	No. of effect sizes	Treatment N	Adjusted effect size and standard error			Unadjusted effect size (random effects model)	
			ES	SE	Age	ES	p-value
College grade point average	5	21120	0.028	0.014	23	0.029	0.040
Earnings*	3	12122	0.040	0.021	26	0.040	0.056
Employment	3	12122	-0.007	0.018	26	-0.007	0.711
Transfer from 2- to 4-year college	1	11898	0.042	0.273	22	0.042	0.878
Graduate with 2-year degree	1	9518	0.077	0.280	21	0.077	0.783
Graduate with 4-year degree	4	14059	0.149	0.057	23	0.149	0.009

*The effect size for this outcome indicates percentage change, not a standardized mean difference effect size.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

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Citations Used in the Meta-Analysis

Binder, M., & Ganderton, P.T. (2002). *Musical chairs in higher education: Incentive effects of a merit-based state scholarship program.* Working paper, Department of Economics, Albuquerque: The University of Mexico.

Lee, J. (2014). *Does merit-based aid promote degree attainment?* Unpublished manuscript.

Scott-Clayton, J. E. & Zafar, B. (2016). *Financial aid, debt management, and socioeconomic outcomes: Post-college effects of merit-based aid.* (NBER Working Paper 22574). Cambridge, MA: National Bureau of Economic Research.

Scott-Clayton, J. (2011). On money and motivation: A quasi-experimental analysis of financial incentives for college achievement. *Journal of Human Resources, 46*(3), 614-646.

Welch, J.G. (2015). *Three essays on the economics of higher education: How students and colleges respond to financial aid programs* (Unpublished doctoral dissertation). Knoxville, TN: University of Tennessee-Knoxville.

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Washington State Institute for Public Policy

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