

## Behavioral parent training (BPT) for children with ADHD

### Children's Mental Health: Attention Deficit Hyperactivity Disorder

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

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

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](#).

**Program Description:** Behavioral parent training targets parents of children with attention-deficit hyperactivity disorder (ADHD). Parents receive psychoeducation about ADHD and are taught child behavior management techniques, usually with a practice component. Some programs may include additional components for children, but parent behavior is the focus. Many studies utilize or build on Barkley's Defiant Children program. This review also includes programs originally developed for a population with disruptive behavior disorders that were then applied to an ADHD population, including the Triple P—Positive Parenting Program, Incredible Years, Helping the Noncompliant Child, and Parent-Child Interaction Therapy. All children in the included studies were diagnosed with ADHD or met clinical levels of ADHD symptoms. Therapies were provided in individual, group, and remote modalities, with 8-12 weekly sessions over a period of two to five months.

#### Benefit-Cost Summary Statistics Per Participant

##### Benefits to:

Taxpayers	\$3,061	Benefit to cost ratio	\$19.69
Participants	\$3,822	Benefits minus costs	\$8,724
Others	\$1,735	Chance the program will produce	
Indirect	\$573	benefits greater than the costs	74 %
<b>Total benefits</b>	<b>\$9,191</b>		
<b>Net program cost</b>	<b>(\$467)</b>		
<b>Benefits minus cost</b>	<b>\$8,724</b>		

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](#).

## Meta-Analysis of Program Effects

Outcomes measured	Treatment age	Primary or secondary participant	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	p-value
					ES	SE	Age	ES	SE	Age		
Attention-deficit/hyperactivity disorder symptoms	5	Primary	14	781	-0.144	0.073	5	0.000	0.141	6	-0.391	0.001
Disruptive behavior disorder symptoms	5	Primary	13	610	-0.137	0.086	5	-0.076	0.061	8	-0.490	0.001
Externalizing behavior symptoms	5	Primary	1	47	-0.475	0.229	5	-0.261	0.178	8	-0.475	0.029
Global functioning <sup>^</sup>	5	Primary	1	71	0.272	0.188	5	n/a	n/a	n/a	0.533	0.005
Internalizing symptoms	5	Primary	1	47	-0.417	0.217	5	-0.417	0.217	7	-0.417	0.054
Anxiety disorder <sup>^^</sup>	35	Secondary	1	14	-0.762	0.442	35	n/a	n/a	n/a	-1.904	0.001
Major depressive disorder	35	Secondary	3	55	-0.333	0.297	35	-0.173	0.364	37	-1.057	0.123
Parental stress <sup>^</sup>	35	Secondary	7	285	-0.093	0.118	35	n/a	n/a	n/a	-0.327	0.006

<sup>^</sup>WSIPP's benefit-cost model does not monetize this outcome.

<sup>^^</sup>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](#).

## Detailed Monetary Benefit Estimates Per Participant

Affected outcome:	Resulting benefits: <sup>1</sup>	Benefits accrue to:				
		Taxpayers	Participants	Others <sup>2</sup>	Indirect <sup>3</sup>	Total
Externalizing behavior symptoms	Criminal justice system	\$98	\$0	\$212	\$49	\$359
Externalizing behavior symptoms	Labor market earnings associated with high school graduation	\$236	\$554	\$302	\$0	\$1,093
Internalizing symptoms	K-12 grade repetition	\$6	\$0	\$0	\$3	\$9
Externalizing behavior symptoms	K-12 special education	\$288	\$0	\$0	\$144	\$432
Externalizing behavior symptoms	Health care associated with externalizing behavior symptoms	\$784	\$222	\$809	\$392	\$2,207
Externalizing behavior symptoms	Costs of higher education	(\$37)	(\$56)	(\$17)	(\$19)	(\$129)
	<i>Subtotals</i>	<i>\$1,375</i>	<i>\$720</i>	<i>\$1,307</i>	<i>\$570</i>	<i>\$3,972</i>
From secondary participant						
Major depressive disorder	Labor market earnings associated with major depression	\$1,270	\$2,983	\$0	\$0	\$4,253
Major depressive disorder	Health care associated with major depression	\$415	\$117	\$428	\$207	\$1,168
Major depressive disorder	Mortality associated with depression	\$1	\$2	\$0	\$29	\$33
	<i>Subtotals</i>	<i>\$1,686</i>	<i>\$3,103</i>	<i>\$428</i>	<i>\$237</i>	<i>\$5,453</i>
Program cost	Adjustment for deadweight cost of program	\$0	\$0	\$0	(\$233)	(\$233)
<b>Totals</b>		<b>\$3,061</b>	<b>\$3,822</b>	<b>\$1,735</b>	<b>\$573</b>	<b>\$9,191</b>

<sup>1</sup>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.

<sup>2</sup>"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.

<sup>3</sup>"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

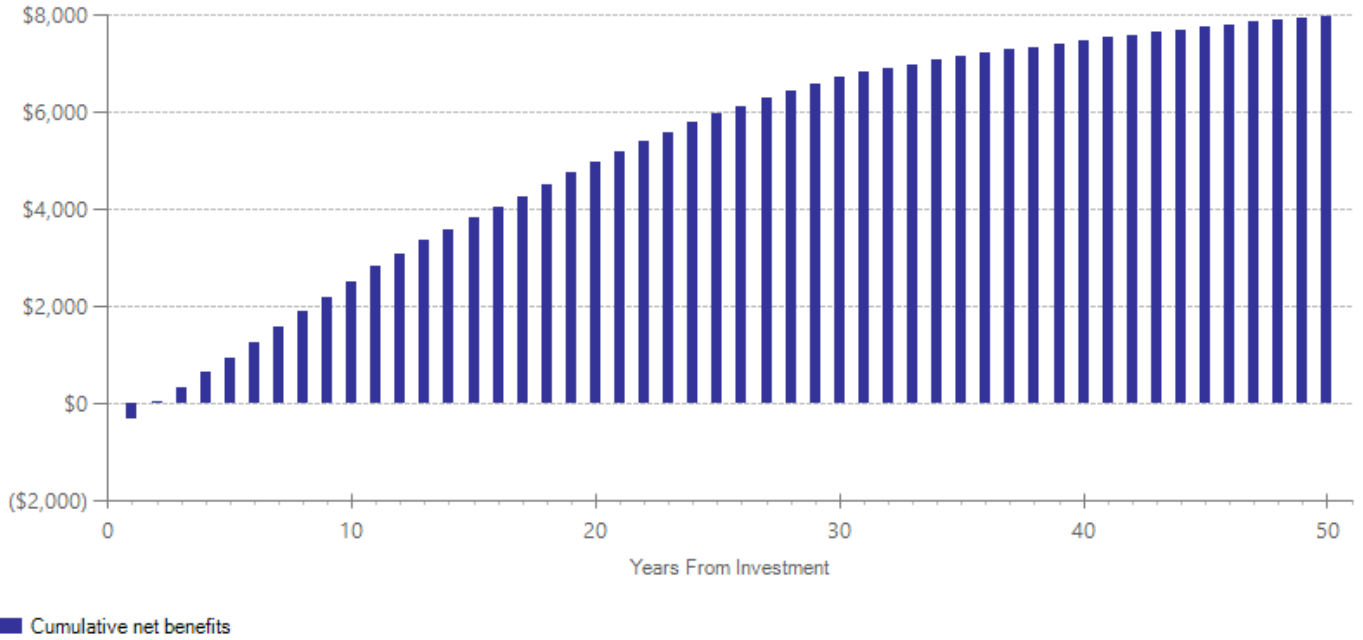
## Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary
Program costs	\$1,468	2015	Present value of net program costs (in 2018 dollars) (\$467)
Comparison costs	\$956	2010	Cost range (+ or -) 20 %

This program is typically delivered over a two- or three- month period, with sessions delivered on a weekly basis. Per-participant cost estimates are based on weighted average therapist time, as reported in the treatment studies. Hourly therapist cost is based on the actuarial estimates of reimbursement by modality (Mercer. (2016). Mental health and substance use disorder services data book for the state of Washington). For comparison group costs, we use 2010 Washington State DSHS data to estimate the average reimbursement rate for child and adolescent attention-deficit hyperactivity disorder (ADHD).

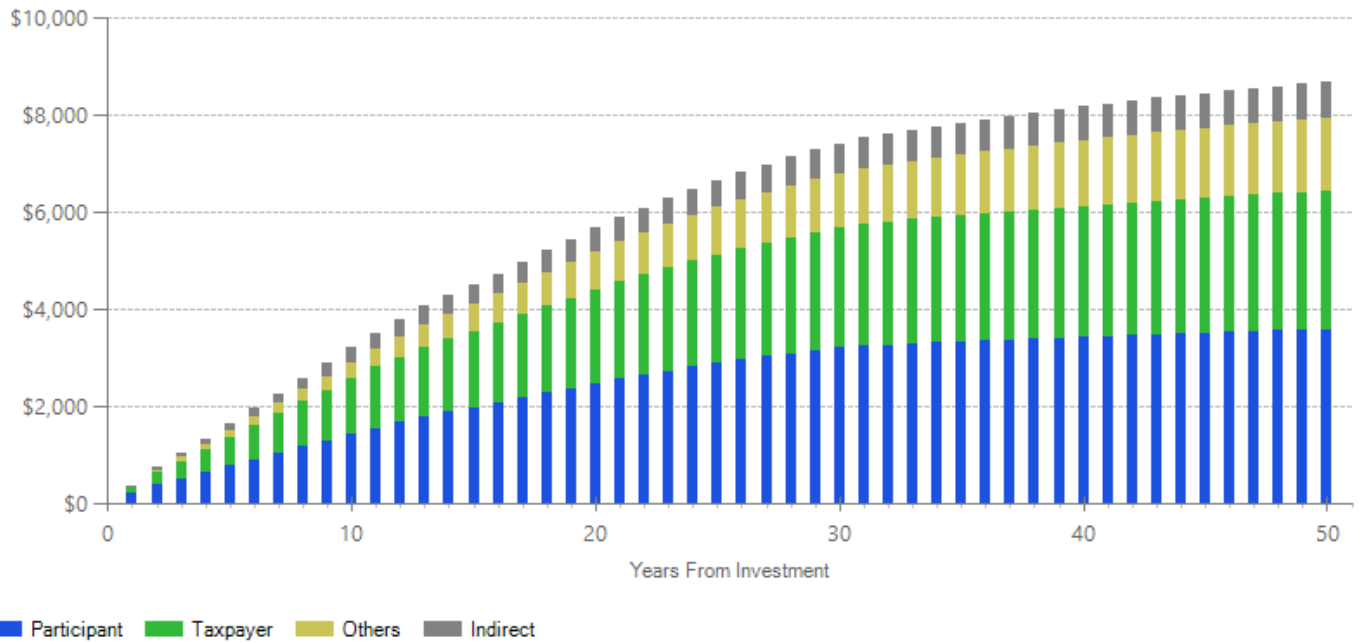
The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty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

## Benefits Minus Costs Over Time (Cumulative Discounted Dollars)

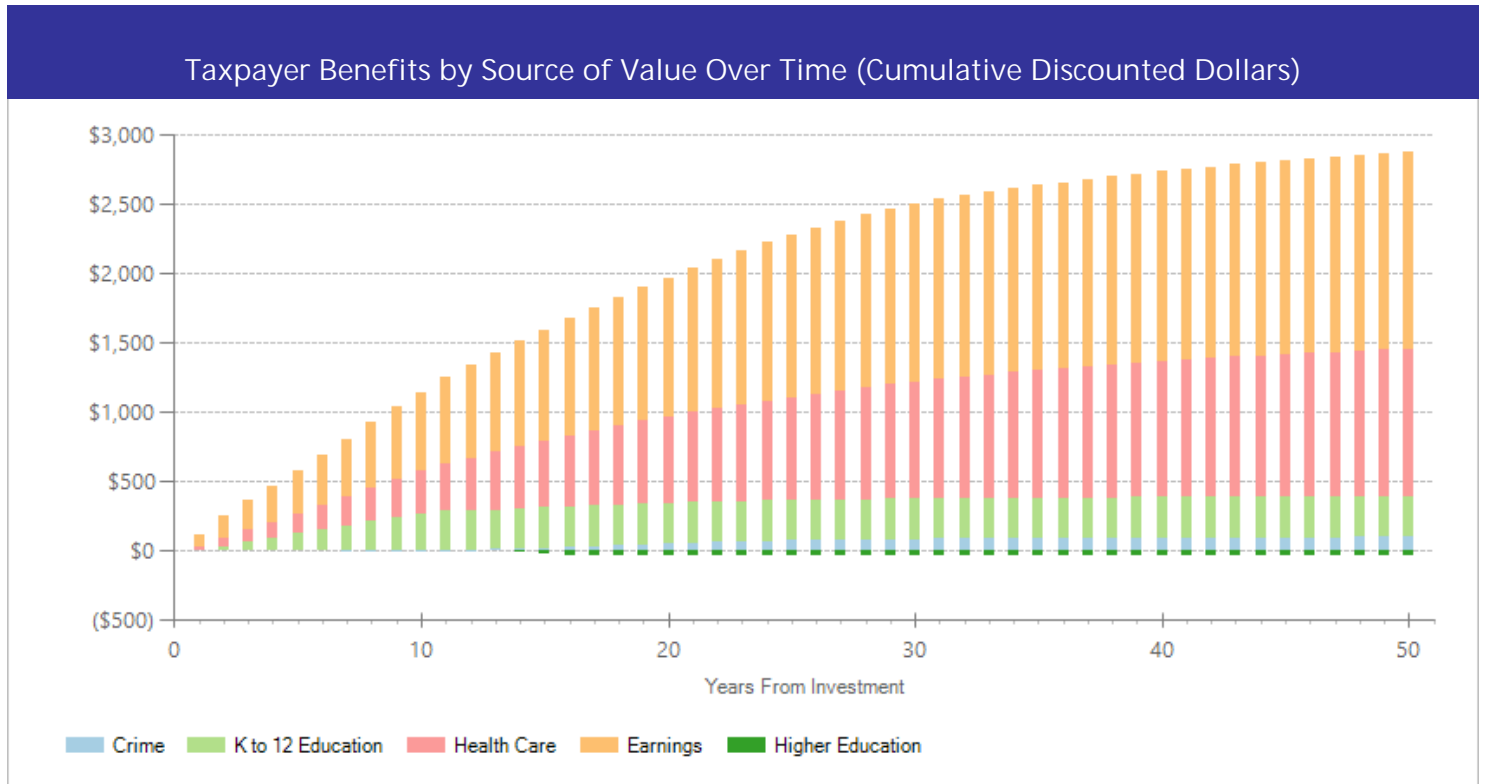


The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in discounted dollars. If the dollars are negative (bars below \$0 line), the cumulative benefits do not outweigh the cost 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.

## Benefits by Perspective Over Time (Cumulative Discounted Dollars)



The graph above illustrates the breakdown of the estimated cumulative benefits (not including program costs) per-participant for the first fifty years beyond the initial investment in the program. These cash flows provide a breakdown of the classification of dollars over time into four perspectives: taxpayer, participant, others, and indirect. "Taxpayers" includes expected savings to government and expected increases in tax revenue. "Participants" includes expected increases in earnings and expenditures for items such as health care and college tuition. "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. "Indirect benefits" includes estimates of the changes in the value of a statistical life and changes in the deadweight costs of taxation. If a section of the bar is below the \$0 line, the program is creating a negative benefit, meaning a loss of value from that perspective.



The graph above focuses on the subset of estimated cumulative benefits that accrue to taxpayers. The cash flows are divided into the source of the value.

## Citations Used in the Meta-Analysis

- Abikoff, H.B., Thompson, M., Laver-Bradbury, C., Long, N., Forehand, R.L., Miller, B.L., . . . Sonuga-Barke, E. (2014). Parent training for preschool ADHD: A randomized controlled trial of specialized and generic programs. *Journal of Child Psychology and Psychiatry*, 56(6), 618-631.
- Aghebati, A., Gharraee, B., Shoshtari, M.H., & Gohari, M.R. (2014). Triple P-Positive Parenting Program for mothers of ADHD children. *Iranian Journal of Psychiatry and Behavioral Sciences*, 8(1), 59-65.
- Au, A., Lau, K.M., Wong, A.H.C., Lam, C., Leung, C., Lau, J., & Lee, Y.K. (2014). The efficacy of a group Triple P (Positive Parenting Program) for Chinese parents with a child diagnosed with ADHD in Hong Kong: A pilot randomised controlled study. *Australian Psychologist*, 49(3), 151-162.
- Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-Positive Parenting Program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of Abnormal Child Psychology*, 30(6), 571-587.
- Chacko, A., Wymbs, B.T., Wymbs, F.A., Pelham, W.E., Swanger-Gagne, M.S., Girio, E., . . . O'Connor, B. (2009). Enhancing traditional behavioral parent training for single mothers of children with ADHD. *Journal of Clinical Child & Adolescent Psychology*, 38(2), 206-218.
- DuPaul, G. J., Kern, L., Belk, G., Custer, B., Daffner, M., Hatfield, A., & Peek, D. (2017). Face-to-face versus online behavioral parent training for young children at risk for ADHD: Treatment engagement and outcomes. *Journal of Clinical Child and Adolescent Psychology*, 1-15.
- Fabiano, G.A., Pelham, W.E., Cunningham, C.E., Yu, J., Gangloff, B., Buck, M., . . . Gera, S. (2012). A waitlist-controlled trial of behavioral parent training for fathers of children with ADHD. *Journal of Clinical Child and Adolescent Psychology*, 41(3), 337-345.
- Jones, K., Daley, D., Hutchings, J., Bywater, T., & Eames, C. (2007). Efficacy of the Incredible Years basic parent training programme as an early intervention for children with conduct problems and ADHD. *Child: Care, Health And Development*, 33(6), 749-756.
- Matos, M., Bauermeister, J.J., & Bernal, G. (2009). Parent-Child Interaction Therapy for Puerto Rican preschool children with ADHD and behavior problems: A pilot efficacy study. *Family Process*, 48(2), 232-252.
- Pfiffner, L.J., Zalecki, C., Kaiser, N.M., Villodas, M., McBurnett, K., Hinshaw, S.P., . . . Zalecki, C. (2014). A two-site randomized clinical trial of integrated psychosocial treatment for ADHD-inattentive type. *Journal of Consulting and Clinical Psychology*, 82(6), 1115-1127.
- Sonuga-Barke, E.J.S., Barton, J., Daley, D., Hutchings, J., Maishman, T., Raftery, J., . . . Thompson, M.J.J. (2018). A comparison of the clinical effectiveness and cost of specialised individually delivered parent training for preschool attention-deficit/hyperactivity disorder and a generic, group-based programme: A multi-centre, randomised controlled trial of the New Forest Parenting Programme versus Incredible Years. *European Child & Adolescent Psychiatry*, 17(6), 797-809.

- Sonuga-Barke, E.J.S., Daley, D., Thompson, M., Laver-Bradbury, C., & Weeks, A. (2001). Parent-based therapies for preschool attention-deficit/hyperactivity disorder: A randomized, controlled trial with a community sample. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(4), 402-408.
- Sonuga-Barke, E.J.S., Thompson, M., Daley, D., & Laver-Bradbury, C. (2004). Parent training for attention deficit/hyperactivity disorder: Is it as effective when delivered as routine rather than as specialist care? *British Journal of Clinical Psychology, 43*(4), 449-457.
- Van den Hoofdakker, B.J., Van der Veen-Mulders, L., Sytema, S., Emmelkamp, P.M.G., Minderaa, R.B., & Nauta, M.H. (2007). Effectiveness of behavioral parent training for children with ADHD in routine clinical practice: A randomized controlled study. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(10), 1263-1271.

For further information, contact:  
(360) 664-9800, [institute@wsipp.wa.gov](mailto:institute@wsipp.wa.gov)

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