# Good Behavior Game

## Public Health & Prevention: School-based

Benefit-cost estimates updated December 2016. Literature review updated April 2012.

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: The Good Behavior Game is a two-year classroom management strategy designed to improve aggressive/disruptive classroom behavior and prevent later criminality. After teachers establish shared behavior expectations in their classroom, teams of students play the game throughout the day and may receive rewards by minimizing negative behaviors. The program is universal and can be applied to general populations of early elementary school children (1st and 2nd grades).

### Benefit-Cost Summary Statistics Per Participant

Benefits to:

| | | | |
|---|---|---|---|
| Taxpayers | $2,671 | Benefit to cost ratio | $64.18 |
| Participants | $4,308 | Benefits minus costs | $10,181 |
| Others | $3,099 | Chance the program will produce benefits greater than the costs | 71 % |
| Indirect | $264 | | |
| Total benefits | $10,342 | | |
| Net program cost | ($161) | | |
| Benefits minus cost | $10,181 | | |

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). 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 | $152 | $326 | $78 | $555 |
| Labor market earnings associated with high school graduation | $4,372 | $1,985 | $1,999 | $0 | $8,356 |
| K-12 grade repetition | $0 | $8 | $0 | $4 | $12 |
| K-12 special education | $0 | $35 | $0 | $18 | $53 |
| Health care associated with smoking | $224 | $687 | $850 | $345 | $2,105 |
| Property loss associated with alcohol abuse or dependence | $8 | $0 | $14 | $0 | $22 |
| Costs of higher education | ($295) | ($196) | ($91) | ($99) | ($681) |
| Adjustment for deadweight cost of program | $0 | $0 | $0 | ($81) | ($81) |
| Totals | $4,308 | $2,671 | $3,099 | $264 | $10,342 |

[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.

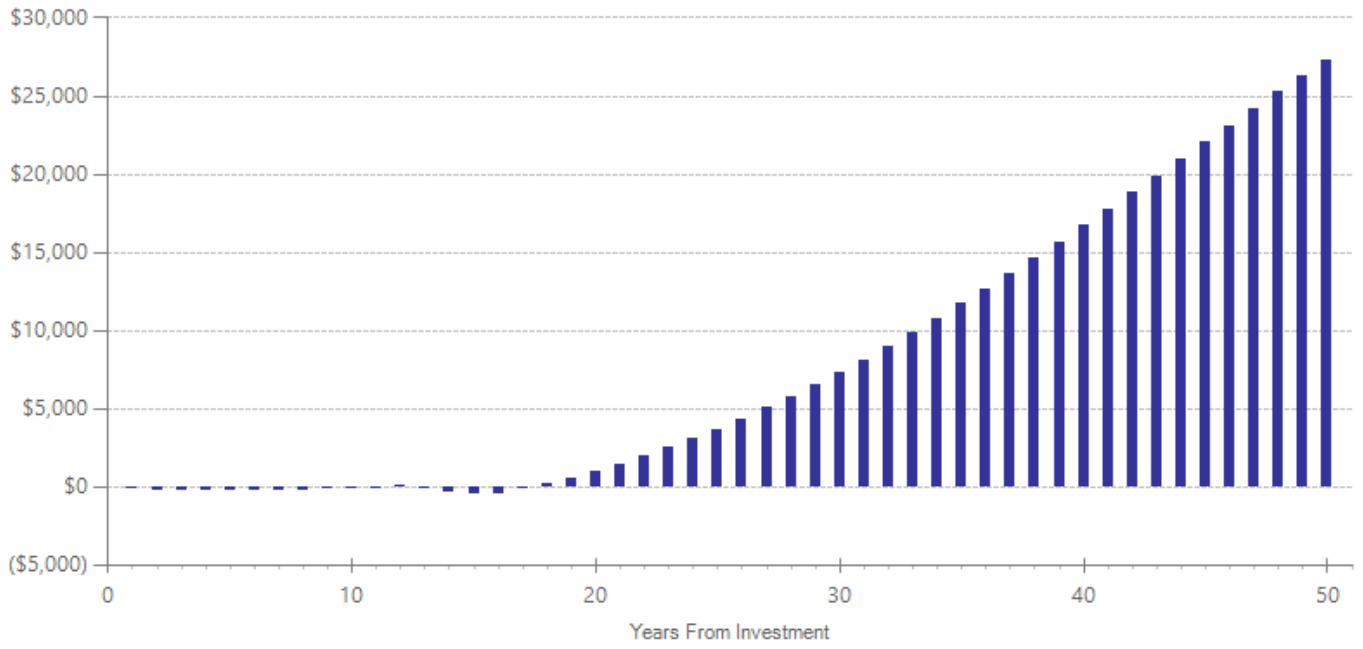
## Detailed Annual Cost Estimates Per Participant

| | Annual cost | Year dollars | Summary | |
|---|---|---|---|---|
| Program costs | $78 | 2011 | Present value of net program costs (in 2015 dollars) | ($161) |
| Comparison costs | $0 | 2011 | Cost range (+ or -) | 10 % |

Costs include teacher training, classroom supplies, district GBG coach training, subcontractor support, and travel costs. The estimate is based on training for 30 teachers and one coach over two years and a cumulative 3,375 students served in GBG classrooms over five years. Information for this cost estimate was provided by Jeanne Poduska, American Institutes for Research.

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 | 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 |
| Crime | 1 | 239 | -0.041 | 0.193 | 20 | -0.041 | 0.193 | 30 | -0.108 | 0.582 |
| High school graduation | 1 | 175 | 0.062 | 0.119 | 20 | 0.062 | 0.119 | 20 | 0.162 | 0.174 |
| Smoking before end of middle school | 2 | 540 | -0.088 | 0.071 | 12 | -0.088 | 0.071 | 15 | -0.231 | 0.002 |
| Regular smoking | 1 | 175 | -0.225 | 0.090 | 20 | -0.225 | 0.090 | 30 | -0.593 | 0.001 |
| Alcohol abuse or dependence | 1 | 176 | -0.231 | 0.128 | 20 | -0.231 | 0.128 | 30 | -0.609 | 0.001 |
| Major depressive disorder | 2 | 399 | -0.135 | 0.124 | 20 | -0.070 | 0.152 | 22 | -0.178 | 0.160 |
| Illicit drug abuse or dependence | 1 | 175 | -0.115 | 0.089 | 20 | -0.115 | 0.089 | 30 | -0.304 | 0.001 |
| Anxiety disorder | 2 | 399 | -0.192 | 0.165 | 20 | -0.100 | 0.201 | 22 | -0.192 | 0.242 |
| Externalizing behavior symptoms | 1 | 425 | -0.437 | 0.084 | 12 | -0.208 | 0.098 | 15 | -0.437 | 0.001 |
| Suicide attempts | 1 | 178 | -0.074 | 0.169 | 20 | -0.074 | 0.169 | 25 | -0.195 | 0.279 |
| Antisocial personality disorder | 1 | 179 | -0.112 | 0.128 | 20 | -0.112 | 0.128 | 25 | -0.295 | 0.032 |

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


Kellam, S.G., & Anthony, J.C. (1998). Targeting early antecedents to prevent tobacco smoking: Findings from an epidemiologically based randomized field trial. *American Journal of Public Health, 88*(10), 1488-1495.

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



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