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December 2019

Updated Inventory of Programs for the Prevention and Treatment of Youth Cannabis Use

Initiative 502 (I-502), passed by Washington voters in 2012, legalized the limited adult possession and private consumption of cannabis/marijuana, as well as its licensing, production, and sale. The law directs the Washington State Institute for Public Policy (WSIPP) to conduct a benefit-cost evaluation of the implementation of I-502.[1] State law also requires the Health Care Authority's Division of Behavioral Health and Recovery (DBHR) to expend substance abuse prevention funding derived from cannabis revenues on programs demonstrated to be effective. Specifically, the law requires at least 85% of programs funded by cannabis revenues to be evidence-based or research-based and up to 15% to be promising practices.[2]

In this report, we provide an inventory of evidence-based, research-based, and promising programs intended for the prevention or treatment of youth substance use (the Youth Cannabis Inventory). The programs reviewed include those nominated by DBHR as well as similar programs from WSIPP's current set of inventories that have been evaluated for cannabis outcomes.[3] We rate the level of evidence for each program using the same methods used in other WSIPP inventories, as described below.

This December 2019 report is the fourth update of our Youth Cannabis Inventory and reflects changes from WSIPP's ongoing work updating systematic research reviews and BC model. We undertook this update at the direction of the 2018 Legislature.[4]

Section I of this report describes our approach to creating the inventory, including WSIPP's approach to synthesizing research evidence, program classification definitions, and the program classification process. In Section II, we describe how program classifications might change over time. Section III lists updates to the current inventory. Section IV includes limitations. The complete updated inventory is attached at the end of this report.

[1] RCW 69.50.550.
[2] RCW 69.50.540.
[3] Miller, M., Goodvin, R., Grice, J., Hoagland, C., & Westley, E. (2016). *Updated Inventory of evidence-based and research-based practices: Prevention and intervention services for adult behavioral health.* (Doc. No. 16-09-4101). Olympia: Washington State Institute for Public Policy; Cramer, J., Bitney, K., & Wanner, P. (2018). *Updated inventory of evidence- and research-based practices: Washington's K–12 Learning Assistance Program.* (Doc. No. 18-06-2201). Olympia: Washington State Institute for Public Policy; and EBPI & WSIPP. (2019). *Updated inventory of evidence-based, research-based, and promising practices: For prevention and intervention services for children and juveniles in the child welfare, juvenile justice, and mental health systems.* (Doc. No. E2SHB2536-10). Olympia: Washington State Institute for Public Policy.
[4] The 2018 Legislature directed WSIPP to "update the inventory of programs for the prevention and treatment of youth cannabis use published in December 2016." Engrossed Substitute Senate Bill 6032, Chapter 299, Laws of 2018, Section 606(18)(a).

I. Creating the Youth Cannabis Inventory

This section describes WSIPP's standard approach to creating the Youth Cannabis Inventory.[5] We describe WSIPP's standard approach to meta-analysis and benefit-cost (BC) analysis and discuss the program classification definitions used in WSIPP's inventories.

WSIPP's Standard Approach to Meta-Analysis & Benefit-Cost Analysis

The Washington State Legislature often directs WSIPP to study the effectiveness and assess the potential benefits and costs of programs and policies that could be implemented in Washington State. These studies are designed to provide policymakers with objective information about which programs or policy options ("programs") work to achieve desired outcomes (e.g., reduced crime or improved health) and what the long-term economic consequences of these options are likely to be.

WSIPP implements a rigorous three-step research approach to undertake this type of study. Through these three steps we:

1) Identify what works (and what does not). We systematically review all rigorous research evidence and estimate the program's effect on a desired outcome or set of outcomes. The evidence may indicate that a program worked (i.e., had a desirable effect on outcomes), caused harm (i.e. had an undesirable effect on outcomes), or had no detectable effect one way or the other.
2) Assess the return on investment. Given the estimated effect of a program from Step 1, we estimate—in dollars and cents—how much it would benefit people in Washington to implement the program and how much it would cost the taxpayers to achieve this result. We use WSIPP's benefit-cost model to develop standardized, comparable results that illustrate the expected return on investment. We present these results with a net present value for each program, on a per-participant basis. We also consider to whom monetary benefits accrue: program participants, taxpayers, and other people in society.
3) Determine the risk of investment. We assess the riskiness of our conclusions by calculating the probability that a program will at least "break-even" if critical factors—like the actual cost to implement the program and the precise effect of the program—are lower or higher than our estimates.

We follow a set of standardized procedures (see Exhibit 1) for each of these steps. These standardized procedures support the rigor of our analysis and allow programs to be compared on an apples-to-apples basis.

For full detail on WSIPP's methods, see WSIPP's Technical Documentation.[6]

[5] WSIPP's approach to creating the inventory is the same approach we use for legislatively directed inventories in other policy areas, including children's service, adult behavioral health, adult corrections, and the K-12 Learning Assistance Program (LAP).
[6] WSIPP's meta-analytic and benefit-cost methods are described in detail in our Technical Documentation. Washington State Institute for Public Policy. (December 2019). *Benefit-cost technical documentation.* Olympia, WA: Author.

Exhibit 1

WSIPP's Three-Step Approach

Step 1: Identify what works (and what does not)

We conduct a meta-analysis—a quantitative review of the research literature—to determine if the weight of the research evidence indicates whether desired outcomes are achieved, on average.

WSIPP follows several key protocols to ensure a rigorous analysis for each program examined.

- Search for all studies on a topic—We systematically review the national and international research literature and consider all available studies on a program, regardless of their findings. That is, we do not "cherry pick" studies to include in our analysis.
- Screen studies for quality—We only include rigorous studies in our analysis. We require that a study reasonably attempt to demonstrate causality using appropriate statistical techniques. For example, studies must include both treatment and comparison groups with an intent-to-treat analysis. Studies that do not meet our minimum standards are excluded from analysis.
- Determine the average effect size—We use a formal set of statistical procedures to calculate an average effect size for each outcome, which indicates the expected magnitude of change caused by the program (e.g., tutoring by adults) for each outcome of interest (e.g., standardized test scores).

Step 2: Assess the return on investment

WSIPP has developed, and continues to refine, an economic model to provide internally consistent monetary valuations of the benefits and costs of each program on a per-participant basis.

Benefits to individuals and society may stem from multiple sources. For example, a program that reduces the need for publicly funded substance use treatment services decreases taxpayer costs. If that program also improves participants' educational outcomes, it will increase their expected labor market earnings. Finally, if a program reduces crime, it will reduce expected costs to crime victims.

We also estimate the cost required to implement an intervention. If the program is operating in Washington State, our preferred method is to obtain the service delivery and administrative costs from state or local agencies. When this approach is not possible, we estimate costs using the research literature, using estimates provided by program developers, or using a variety of sources to construct our own cost estimate.

Step 3: Determine the risk of investment

Any tabulation of benefits and costs involves a degree of uncertainty about the inputs used in the analysis, as well as the bottom-line estimates. An assessment of risk is expected in any investment analysis, whether in the private or public sector.

To assess the riskiness of our conclusions, we look at thousands of different scenarios through a Monte Carlo simulation. In each scenario, we vary a number of key factors in our calculations (e.g., expected effect sizes, program costs) using estimates of error around each factor. The purpose of this analysis is to determine the probability that a particular program or policy will produce benefits that are equal to or greater than costs if the real-world conditions are different than our baseline assumptions.

Program Classification Definitions

WSIPP classifies programs using the same approach and definitions that we use for legislatively directed inventories in other policy areas.[7] In 2012, WSIPP and the University of Washington's Evidence Based Practice Institute (EBPI) received a legislative assignment to identify evidence-based and research-based practices for children. To prepare an inventory of evidence-based, research-based, and promising practices and services, the bill required WSIPP and EBPI to publish descriptive definitions of these terms.[8]

Exhibit 2 contains the definitions currently in statute prior to the passage of the 2012 law as well as the suggested definitions for evidence-based and research-based developed by WSIPP and EBPI as required by the law. We use these definitions across all of WSIPP's inventories—including the Youth Cannabis Inventory.

As of 2017, WSIPP defines two separate categories to distinguish between programs producing null results (no significant effect on desired outcomes) and those producing poor (undesirable) outcomes and has standardized the application of these definitions (see Exhibit 2). In addition, if there is sufficient evidence of desirable effects on some outcomes but undesirable effects on other outcomes, we note the mixed results next to the program rating on the inventory.

It is important to note that a wide variety of outcomes may be examined for a given program. Our evidence ratings are based on all relevant outcomes reported in the research, so it is possible that a given program is effective in preventing or treating the use of some substances but not others. It is also possible that a program is effective for related outcomes such as crime or risky sexual behavior but not for substance use. In addition to the overall evidence rating for each program, we also denote which programs have demonstrated evidence of effectiveness for preventing or treating cannabis use. Complete detailed results with specific outcome effects for each program can be found on WSIPP's website.[9]

[7] EBPI & WSIPP (2019).

[8] The suggested definitions, originally published in 2012, were subsequently enacted by the 2013 Legislature for adult behavioral health services with slight modifications to relevant outcomes; however, they have not been enacted for the children's services inventory. Thus, we classify programs according to the statutory and proposed definitions (See: Second Substitute Senate Bill 5732, Chapter 338, Laws of 2013).

[9] Washington State Institute for Public Policy. *Benefit-cost results*. Olympia, WA: Author.

Exhibit 2

Current Law and Suggested Definitions

	Current law definition for children's mental health and juvenile justice	Suggested definitions for children's services developed by WSIPP & EBPI
Evidence-based	A program or practice that has had multiple site random controlled trials across heterogeneous populations demonstrating that the program or practice is effective for the population.	A program or practice that has been tested in heterogeneous or intended populations with multiple randomized and/or statistically controlled evaluations, or one large multiple-site randomized and/or statistically controlled evaluation, where the weight of the evidence from a systematic review demonstrates sustained improvements in at least one of the following outcomes: child abuse, neglect, or the need for out of home placement; crime; children's mental health; education; or employment. Further, "evidence-based" means a program or practice that can be implemented with a set of procedures to allow successful replication in Washington and, when possible, has been determined to be cost-beneficial.
Research-based	A program or practice that has some research demonstrating effectiveness but that does not yet meet the standard of evidence-based practices.	A program or practice that has been tested with a single randomized and/or statistically controlled evaluation demonstrating sustained desirable outcomes; or where the weight of the evidence from a systematic review supports sustained outcomes as identified in the term "evidence-based" in RCW (the above definition) but does not meet the full criteria for evidence-based. Further, "research-based" means a program or practice that can be implemented with a set of procedures to allow successful replication in Washington.
Promising practices	A practice that presents, based upon preliminary information, potential for becoming a research-based or consensus-based practice.	A program or practice that, based on statistical analyses or a well-established theory of change, shows potential for meeting the "evidence-based" or "research-based" criteria, which could include the use of a program that is evidence-based for outcomes other than the alternative use.
Null	*Not applicable*	A program or practice for which the results from a random-effects meta-analysis of multiple evaluations or one large multiple-site evaluation are not statistically significant for relevant outcomes.
Poor	*Not applicable*	A program or practice for which the results from a random-effects meta-analysis of multiple evaluations or one large multiple-site evaluation indicate that the practice produces undesirable effects.

To assemble the inventory, we operationalize each criterion in the statutory and suggested definitions. These are the same criteria WSIPP has used in assembling inventories in other policy areas including children's services, adult behavioral health, adult corrections, and the Learning Assistance Program (LAP). The criteria are as follows:

1) Weight of evidence. To meet the evidence-based definition, results from a random-effects meta-analysis (p-value < 0.20)[10] of multiple evaluations or one large multiple-site evaluation must indicate the practice achieves the desired outcome(s). To meet the research-based definition, one single-site evaluation must indicate the practice achieves the desired outcomes (p-value < 0.20).

   If results from a random-effects meta-analysis of multiple evaluations are not statistically significant (p-value > 0.20) for desired outcomes, the practice may be classified as "Null." If results from a random-effects meta-analysis of multiple evaluations or one large multiple-site evaluation indicate that a practice produces undesirable effects (p-value < 0.20), the practice may be classified as producing poor outcomes.

2) Benefit-cost. The proposed definition of evidence-based practices requires that, when possible, a benefit-cost analysis be conducted. We use WSIPP's benefit-cost model to determine whether a program meets this criterion.[11] Programs that do not have at least a 75% chance of a positive net present value do not meet the benefit-cost test. The WSIPP model uses Monte Carlo simulation to test the probability that benefits exceed costs. The 75% standard was deemed an appropriate measure of risk aversion.

3) Heterogeneity. To be designated as evidence-based, the state statute requires that a program has been tested on a "heterogeneous" population. We operationalize heterogeneity in two ways. First, the proportion of program participants who are children/youth of color must be greater than or equal to the proportion of children/youth of color aged 0 to 17 in Washington. From the 2010 Census, for children aged 0 through 17 in Washington, 68% were white and 32% were children/youth of color.[12] Thus, if the weighted average of program participants in the outcome evaluations of the program is at least 32% children/youth of color, then the program is considered to have been tested in a heterogeneous population.

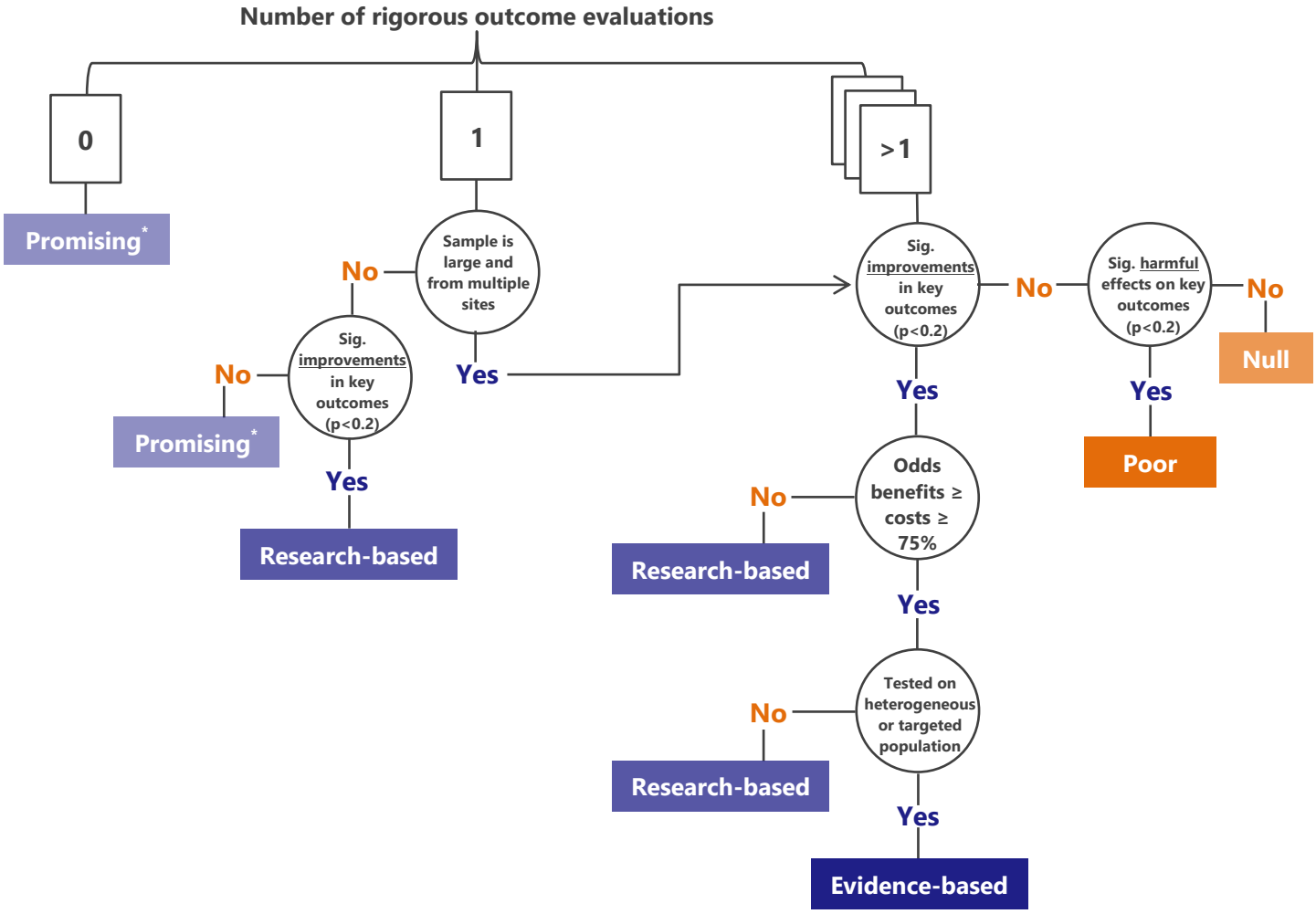
   Second, the heterogeneity criterion can also be achieved if at least one of a program's outcome evaluations was conducted with K–12 students in Washington and a subgroup analysis demonstrates the program is effective for children/youth of color (p < 0.20).
   Programs whose evaluations do not meet either of these two criteria do not meet the heterogeneity definition.

[10] Statisticians often rely on a metric, the p-value, to determine whether an effect is significant. The p-value is a measure of the likelihood that the difference could occur by chance—values range from 0 (highly significant) to 1 (no significant difference). For the purposes of WSIPP's inventories, p-values less than 0.20 (a 20% likelihood that the difference could occur by chance) are considered statistically significant findings. We use a p-value of 0.20 (instead of the more conventional p-value of 0.05) in order to avoid classifying programs with desirable benefit-cost results as promising. After considerable analysis, we found that a typical program that WSIPP has analyzed may produce benefits that exceed costs roughly 75% of the time with a p-value cut-off of up to 0.20. Thus, we determined that programs with p-values < 0.20 on desired outcomes should be considered research-based.
[11] For information about WSIPP's benefit-cost model see WSIPP (2019).
[12] United States Census Bureau, 2010.

Exhibit 3 illustrates WSIPP's process for implementing these criteria.

Exhibit 3

Decision Tree for Program Classification
For WSIPP's Inventories of Evidence-Based, Research-Based, and Promising Practices



Note:
* Considered promising if based on a logic model or well-established theory of change; RCW 71.24.025.

II. Why Classifications Change Across Iterations of the Inventory

The inventory is a snapshot that changes as new evidence and information are incorporated. While the definitions of evidence-based, research-based, and promising practices have not changed since 2012, programs may be classified differently with each update. This could be due to changes in our meta-analyses, changes in our standard benefit-cost (BC) model, or both.

- Changes to program analyses. When we update our review of a program or intervention ("program"), we conduct a complete literature search, update our meta-analyses, and construct new program costs. We may also make improvements to our meta-analytic methods to reflect current best practices.

  We update our meta-analyses for specific programs when they are nominated for review (see Section I) or when we receive legislative assignments or Board-approved projects that direct us to do so. Program updates are always contingent upon capacity and funding to execute these requests.

- Changes in WSIPP's standard benefit-cost model. WSIPP makes continuous improvements to our BC model. WSIPP uses a standard BC model across topic areas, including child welfare, juvenile justice, K-12 education, adult behavioral health, substance use, and more. When we make changes in our BC model, those changes are applied to all programs currently reported on our website and reflect our most up-to-date estimates of the valuation of programmatic benefits.

  We make updates to our BC model when we have legislative assignments or Board-approved projects that provide resources to do so.

Our goal when implementing updates and revisions is to report rigorous, up-to-date, relevant information that addresses the needs of stakeholders.

Exhibit 4 provides a representative list of the types of changes that WSIPP might make in a given update cycle. The exhibit includes the type of change, the rationale for the change, and the program classifications potentially impacted by the change.

The definitions for classifications of poor, null, promising, and research-based programs all rely on unadjusted effect sizes from WSIPP's meta-analyses. Therefore, any changes we make that can affect unadjusted effect sizes may have implications for these program classifications. Changes to our benefit-cost findings, however, affect only whether a program is classified as evidence-based.

Exhibit 4

Potential Changes to WSIPP's Meta-Analyses and Benefit-Cost Model
And Implications for Inventory Program Classifications

Change	Rationale for change	Meta/BC analysis elements potentially affected[^]	Program classifications[*] potentially impacted
Changes to program analyses			
Split programs into more specific analyses	Stakeholder requests; changes in policy contexts (e.g., call for more specific findings about key populations) or new research literature makes separate analyses desirable; improved ability to conduct BC analyses for specific populations	Unadjusted effect sizes[#] Adjusted effect sizes Placement of effects in time Program costs	All levels of program classification
Add new research literature	New research is found in literature search; studies we could not include previously become usable due to improvements in statistical methods or ability to include new outcomes	Unadjusted effect sizes Adjusted effect sizes Placement of effects in time Program costs	All levels of program classification
Remove research literature that was previously included	Re-review indicates that a study does not meet criteria for rigor; studies pertain to populations or program implementations that are no longer included in the scope of the analysis; changes in our statistical methods mean we can no longer include certain measures of effect sizes	Unadjusted effect sizes Adjusted effect sizes Placement of effects in time Program costs	All levels of program classification
Update meta-analytic methods	Improvements to our statistical calculations; changes in best practices in the field of meta-analysis	Unadjusted effect sizes Adjusted effect sizes	All levels of program classification
Change adjustment factors[**] (adjustments to effect sizes)	Meta-regression analysis based on our most current meta-analyses indicate need for a change in adjustment factors	Adjusted effect sizes	Evidence-based classification only
Revise the persistence of effects over time[^^]	New research or investigations based on our most current meta-analyses indicate the need for a change in the way we estimate the persistence of effects over time	Adjusted effect sizes Placement of effects in time	Evidence-based classification only
Update program cost estimate	More up-to-date costs are available from agencies in Washington; the revised meta-analysis included a different mix of studies that represent a different length or intensity of the program	Program costs	Evidence-based classification only

Changes to WSIPP's standard benefit-cost model			
Update economic parameters (inflation, discount rates, etc.)	Updated data sources or new research becomes available that allows for more current parameters to be used in the model; changes in best practices in the field of benefit-cost analysis	Benefits associated with measured outcomes	Evidence-based classification only
Revisions to model populations (e.g., changes to base rates of certain conditions)	Updated data sources or new research becomes available that allows for more current parameters to be used in the model	Benefits associated with measured outcomes	Evidence-based classification only
Revisions to relationships between outcomes	Updated data sources or new research becomes available that allows for more current parameters to be used in the model	Benefits associated with measured outcomes	Evidence-based classification only

Notes:
WSIPP may make other modifications, at researcher discretion, to ensure that our analyses represent the best evidence synthesis given the information we have available. For more detail on our approach, see WSIPP's Technical Documentation.
^ This column lists the components of our meta/BC analyses that may be affected by the relevant type of change. All of these elements have the potential to impact our benefit-cost findings.
* Classifications use suggested definitions described in Exhibit 2 and Exhibit 3.
# Splitting programs into more specific analyses may result in changes to unadjusted effect sizes and their standard errors. In particular, standard errors may become larger (and statistical significance may decrease) when there are fewer individual studies contributing to a weighted average effect size.
** WSIPP makes adjustments to the effect sizes estimated through meta-analyses to account for potential bias due to characteristics of the included studies. These adjusted effect sizes reflect our best estimate of the true effect of an intervention. We then use these adjusted effects to estimate the monetary benefits of the program. For detail on WSIPP's effect sizes adjustments, see Section 2.4 of our Technical Documentation.
^^ WSIPP's benefit-cost model calculates the net present value of a program by estimating the long-term changes to annual cash and resource flow. In order to do so, we estimate the effects of a program over time. Rather than simply assume that a near-term effect size (and standard error) persist in perpetuity, we estimate how and whether program effects persist over time using research evidence and our own analyses. For detail on WSIPP's approach to modeling the persistence of effects over time, see Section 2.7 of our Technical Documentation.

III. Updates to the Inventory as of December 2019

This section lists programs that are new to the inventory and programs with classification changes as of December 2019. The complete inventory begins on page 14 and contains 38 prevention programs and 7 treatment programs.

WSIPP has updated 15 analyses for previously reviewed programs since the last inventory was published in December 2018. As discussed in Section II, these updates could encompass including new research evidence, removing studies from the set of included studies, dividing certain categories of programs into two or more specific programs, updating statistical calculations, and/or updating program costs.

Due to these changes, WSIPP reclassified one program:

Project ALERT: Null

The classification changed from research-based (in December 2018) to null (in December 2019), due to adding new research literature and updates to our statistical methods.

We also divided the "school-based tobacco prevention programs" program into two separate analyses, due to stakeholder interest in the specific programs included in the analysis. We removed school-based tobacco prevention programs from the inventory and now report on two new programs:

Project Towards No Tobacco Use: Evidence-based

Project SHOUT (Students Helping Others Understand Tobacco: Null

In November 2019, WSIPP completed an update to our BC model that reflects ongoing improvements to inputs and calculations across a variety of policy areas. We revised BC analyses using WSIPP's updated model for all eligible programs on the inventory.[13] This type of update can have implications for whether programs on the inventory meet the suggested BC criterion for evidence-based practice, described in Section I. This year, this update did not impact the classification of any program on this inventory.

Finally, we updated the names of some programs for clarity. These programs are listed below:

Marijuana Education Initiative Impact Awareness curriculum. Previously called *Marijuana Education Initiative*.

Multidimensional Treatment Foster Care (MTFC) (vs. group homes) for court-involved youth. Previously called *Multidimensional Treatment Foster Care (MTFC)*.

[13] WSIPP conducts a benefit-cost analysis when program outcomes can be linked to benefits (future economic consequences), program costs can be estimated, the analysis sample size meets our standard requirements, and WSIPP's benefit-cost model includes an appropriate population for modeling benefits and costs over time.

Multisystemic Therapy-Substance Abuse (MST-SA) for court-involved youth. Previously called *Multisystemic Therapy (MST) for juveniles with substance use disorder*.

Positive Family Support/Family Check-Up. Previously called *Family Check-Up (also known as Positive Family Support)*.

Project STAR (Students Taught Awareness and Resistance; also known as the Midwestern Prevention Project). Previously called *Project STAR*.

PROSPER (PROmoting School-community-university Partnerships to Enhance Resilience). Previously called *PROSPER*.

IV. Limitations

The benefit-cost analyses in this report reflect only those outcomes that were measured in the studies we reviewed. We focus primarily on outcomes that are "monetizable" with the current WSIPP benefit-cost model. "Monetizable" means that we can link the outcome to future economic consequences, such as labor market earnings, criminal justice involvement, or health care expenditures. At this time we are unable to monetize some relevant outcomes, such as attitudes towards drug use or intentions to use.

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Program/intervention	Level of evidence	Effective for cannabis	Benefit-cost percentage	Reason program does not meet suggested evidence-based criteria	Percent youth of color
Prevention					
Alcohol Literacy Challenge (for college students)	◉		50%	Benefit-cost/heterogeneity	24%
Alcohol Literacy Challenge (for high school students)	P		58%	Single evaluation	33%
Athletes Training and Learning to Avoid Steroids (ATLAS)	Null			Weight of the evidence	22%
Brief intervention for youth in medical settings	◉		46%	Benefit-cost	65%
Caring School Community (formerly Child Development Project)	Null		60%	Weight of the evidence	47%
Communities That Care	●		86%		36%
Compliance checks for alcohol	◉			Heterogeneity	25%
Compliance checks for tobacco	◉			Heterogeneity	28%
Coping Power Program	◉		58%	Benefit-cost	75%
Curriculum-Based Support Groups (CBSG)	P			Weight of the evidence	90%
Familias Unidas	◉		67%	Benefit-cost	100%
Family Matters	◉		73%	Benefit-cost/heterogeneity	22%
Guiding Good Choices (formerly Preparing for the Drug Free Years)	◉		51%	Single evaluation	1%
InShape	◉		50%	Single evaluation	28%
keepin' it REAL	Null		62%	Weight of the evidence	83%
LifeSkills Training	◉		62%	Benefit-cost	38%
Lions Quest Skills for Adolescence	◉	✓	70%	Benefit-cost	74%
Marijuana Education Initiative Impact Awareness curriculum	P		50%	Single evaluation	88%
Mentoring: Big Brothers Big Sisters Community-Based (taxpayer costs only)	◉		41%	Benefit-cost	57%
Mentoring: Community-based (taxpayer costs only)	◉		66%	Benefit-cost	85%
Multicomponent environmental interventions to prevent youth alcohol use	◉		29%	Benefit-cost/heterogeneity	19%
Multicomponent environmental interventions to prevent youth tobacco use	◉		82%	Heterogeneity	21%
Positive Action	●	✓	94%		57%
Positive Family Support/Family Check-Up	◉	✓	70%	Benefit-cost	40%
Project ALERT	Null		42%	Weight of the evidence	28%

● Evidence-based ◉ Research-based **P** Promising **Null** Null outcomes See definitions and notes on page 16.

Notes:

✓ At least one cannabis outcome with a meta-analytic effect size estimate demonstrating reduced cannabis use with a p-value < 0.20.

Many interventions produce effects on more than one type of outcome. This is especially true for prevention programs which often target multiple issues. WSIPP analyzes all relevant outcomes, and the evidence rating and benefit-cost results for a given program are often based on a variety of different outcomes, such as school achievement, substance use, mental health, and crime. In the column to the right of the level of evidence, we denote with a check mark those programs that have evidence of effectiveness for cannabis use specifically ($p < 0.20$). In addition to the overall level of evidence for a program, it is important to consider the specific outcomes the program has achieved to determine suitability for a given application. Each program name in the table links to a results page where a table, "Meta-Analysis of Program Effects," lists all of the outcomes analyzed for each program.

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Updated Inventory of Programs for the Prevention and Treatment of Youth Cannabis Use

Program/intervention	Level of evidence	Effective for cannabis	Benefit-cost percentage	Reason program does not meet suggested evidence-based criteria	Percent youth of color
Prevention (continued)					
Project Northland	◉		53%	Benefit-cost	55%
Project SHOUT (Students Helping Others Understand Tobacco)	Null			Weight of the evidence	43%
Project STAR (Students Taught Awareness and Resistance; also known as the Midwestern Prevention Project)	◉	✓	67%	Benefit-cost/heterogeneity	5%
Project SUCCESS	Null		38%	Weight of the evidence	37%
Project Towards No Drug Abuse	◉		54%	Benefit-cost	70%
Project Towards No Tobacco Use	●		78%		40%
PROSPER (PROmoting School-community-university Partnerships to Enhance Resilience)	◉	✓	55%	Benefit-cost/heterogeneity	15%
Protecting You/Protecting Me	P			Weight of the evidence	92%
Raising Healthy Children	Null			Weight of the evidence	18%
SPORT	◉		51%	Benefit-cost	49%
STARS (Start Taking Alcohol Risks Seriously) for Families	P			Single evaluation	66%
Strengthening Families for Parents and Youth 10-14	Null		61%	Weight of the evidence	19%
Strong African American Families	◉		55%	Benefit-cost	100%
Strong African American Families—Teen	◉		57%	Benefit-cost	100%
Teen Intervene	◉	✓	60%	Benefit-cost/heterogeneity	29%
Treatment					
Adolescent Assertive Continuing Care (ACC)	◉	✓	39%	Benefit-cost/heterogeneity	27%
Adolescent Community Reinforcement Approach (A-CRA)	◉			Single evaluation	59%
Functional Family Therapy (FFT) for adolescents with substance use disorder	◉		35%	Benefit-cost	74%
Multidimensional Family Therapy (MDFT)	◉	✓	28%	Benefit-cost	87%
Multidimensional Treatment Foster Care (MTFC) (vs. group homes) for court-involved youth	◉		91%	Heterogeneity	23%
Multisystemic Therapy-Substance Abuse (MST-SA) for court-involved youth	◉	✓	58%	Benefit-cost	65%
Teen Marijuana Check-Up (TMCU)	◉	✓	49%	Benefit-cost	35%

● Evidence-based ◉ Research-based **P** Promising **Null** Null outcomes See definitions and notes on page 16.

Notes:
✓ At least one cannabis outcome with a meta-analytic effect size estimate demonstrating reduced cannabis use with a p-value < 0.20.
Many interventions produce effects on more than one type of outcome. This is especially true for prevention programs which often target multiple issues. WSIPP analyzes all relevant outcomes, and the evidence rating and benefit-cost results for a given program are often based on a variety of different outcomes, such as school achievement, substance use, mental health, and crime. In the column to the right of the level of evidence, we denote with a check mark those programs that have evidence of effectiveness for cannabis use specifically ($p < 0.20$). In addition to the overall level of evidence for a program, it is important to consider the specific outcomes the program has achieved to determine suitability for a given application. Each program name in the table links to a results page where a table, "Meta-Analysis of Program Effects," lists all of the outcomes analyzed for each program.

Definitions and Notes:

Level of Evidence:

Evidence-based: A program or practice that has been tested in heterogeneous or intended populations with multiple randomized and/or statistically-controlled evaluations, or one large multiple-site randomized and/or statistically-controlled evaluation, where the weight of the evidence from a systematic review demonstrates sustained improvements in at least one of the following outcomes: child abuse, neglect, or the need for out of home placement; crime; children's mental health; education; or employment. Further, "evidence-based" means a program or practice that can be implemented with a set of procedures to allow successful replication in Washington and, when possible, has been determined to be cost-beneficial.

Research-based: A program or practice that has been tested with a single randomized and/or statistically-controlled evaluation demonstrating sustained desirable outcomes; or where the weight of the evidence from a systematic review supports sustained outcomes as identified in the term "evidence-based" in RCW (the above definition) but does not meet the full criteria for "evidence-based."

Promising practice: A program or practice that, based on statistical analyses or a well-established theory of change, shows potential for meeting the "evidence-based" or "research-based" criteria, which could include the use of a program that is evidence-based for outcomes other than the alternative use.

Null outcome(s): If results from multiple evaluations or one large multiple-site evaluation indicate that a program has no significant effect on outcomes of interest ($p > 0.20$), a program is classified as producing "null outcomes."

Poor outcome(s): If results from multiple evaluations or one large multiple-site evaluation indicate that a program produces undesirable effects ($p < 0.20$), a program is classified as producing "poor outcomes."

Reason the Program May Not Meet Evidence-Based Criteria:

Benefit-cost: The proposed definition of evidence-based practices requires that, when possible, a benefit-cost analysis be conducted. We use WSIPP's benefit-cost model to determine whether a program meets this criterion. Programs that do not have at least a 75% chance of a positive net present value do not meet the benefit-cost test. The WSIPP model uses Monte Carlo simulation to test the probability that benefits exceed costs. The 75% standard was deemed an appropriate measure of risk aversion.

Heterogeneity: To be designated as evidence-based under current law or the proposed definition, a program must have been tested on a "heterogeneous" population. We operationalized heterogeneity in two ways. First, the proportion of program participants who are children/youth of color must be greater than or equal to the proportion of children/youth of color aged 0 to 17 in Washington State. From the 2010 Census, for children aged 0 through 17 in Washington, 68% were white and 32% were children/youth of color. Thus, if the weighted average of program participants had at least 32% children/youth of color then the program was considered to have been tested on a heterogeneous population.

Second, the heterogeneity criterion can also be achieved if at least one of the studies has been conducted on youth in Washington and a subgroup analysis demonstrates the program is effective for children/youth of color ($p < 0.20$). Programs passing the second test are marked with a ^.

Mixed results: If findings are mixed from different measures (e.g., undesirable outcomes for behavior measures and desirable outcomes for test scores), the program does not meet evidence-based criteria.

No rigorous evaluation measuring outcome of interest: The program has not yet been tested with a rigorous outcome evaluation.

Single evaluation: The program does not meet the minimum standard of multiple evaluations or one large multiple-site evaluation contained in the current or proposed definitions.

Weight of evidence: Results from a random-effects meta-analysis ($p > 0.20$) indicate that the weight of the evidence does not support desired outcomes, or results from a single large study indicate the program is not effective.

Other Definition:

Benefit-cost percentage: Benefit-cost estimation is repeated many times to account for uncertainty in the model. This represents the percentage of repetitions producing overall benefits that exceed costs. Programs with a benefit-cost percentage of at least 75% are considered to meet the "cost-beneficial" criterion in the "evidence-based" definition above.

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