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.

Cognitive behavioral therapy (CBT) for adult anxiety

Adult Mental Health: Anxiety


Program Description: Cognitive-behavioral therapies (CBT) include various components, such as cognitive restructuring, behavioral activation, emotion regulation, exposure, communication skills, and problem-solving. Most commonly, treatments in this review provided 10 to 20 therapeutic hours per client in an individual or group modality. Most studies in this analysis focused on a single anxiety disorder (generalized anxiety, obsessive-compulsive, panic, social phobia) with aspects of the treatment tailored to the specific disorder. This review excludes studies of CBT for post-traumatic stress disorder.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Benefits minus cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit to cost ratio</td>
<td>$55.83</td>
</tr>
<tr>
<td>Benefits minus costs</td>
<td>$32,632</td>
</tr>
<tr>
<td>Chance the program will produce benefits greater than the costs</td>
<td>100 %</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Benefits to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Participants</td>
</tr>
<tr>
<td>Labor market earnings associated with anxiety disorder</td>
<td>$21,985</td>
</tr>
<tr>
<td>Health care associated with anxiety disorder</td>
<td>$219</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$22,204</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$1,458</td>
<td>2015</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$814</td>
<td>2008</td>
<td>Cost range (+ or -)</td>
</tr>
</tbody>
</table>

This therapy typically takes place over 10 to 20 weekly sessions. Per-participant costs are based on therapist time as reported in the studies, multiplied by DSHS reimbursement rates reported in Mercer (2014) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2015.

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.
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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>36</td>
<td>32</td>
<td>726</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major depressive disorder ^^</td>
<td>36</td>
<td>19</td>
<td>384</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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


Acceptance and Commitment Therapy for adult anxiety

Adult Mental Health: Anxiety


Program Description: Acceptance and Commitment Therapy for anxiety aims to increase client acceptance of negative thoughts and feelings and to reduce the negative behavioral impact of anxiety. Acceptance and Commitment Therapy relies on six core processes of change: 1) acceptance; 2) learning to view thoughts as hypotheses rather than facts, 3) being present, 4) viewing the self as context for experience, 5) identifying core values, and 6) acting based on those values. These core principles are applied through various exercises and through homework.

Treatments in this review provided 7 to 18 hours per client of either group or individual therapy in an outpatient setting. Comparison groups were either on a waitlist for treatment or received treatment as usual. This review excludes studies of acceptance and commitment therapy for other disorders.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>$6,992</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>$15,314</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>$554</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>$44</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>$22,904</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>($449)</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
<tr>
<td>$22,455</td>
</tr>
<tr>
<td>Benefit to cost ratio</td>
</tr>
<tr>
<td>$51.00</td>
</tr>
<tr>
<td>Benefits minus costs</td>
</tr>
<tr>
<td>$22,455</td>
</tr>
<tr>
<td>Chance the program will produce benefits</td>
</tr>
<tr>
<td>greater than the costs</td>
</tr>
<tr>
<td>84 %</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from changes to:</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Labor market earnings associated with anxiety disorder</td>
</tr>
<tr>
<td>$15,163</td>
</tr>
<tr>
<td>$6,455</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$21,618</td>
</tr>
<tr>
<td>Health care associated with anxiety disorder</td>
</tr>
<tr>
<td>$152</td>
</tr>
<tr>
<td>$537</td>
</tr>
<tr>
<td>$554</td>
</tr>
<tr>
<td>$268</td>
</tr>
<tr>
<td>$1,511</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>($225)</td>
</tr>
<tr>
<td>($225)</td>
</tr>
<tr>
<td>Totals</td>
</tr>
<tr>
<td>$15,314</td>
</tr>
<tr>
<td>$6,992</td>
</tr>
<tr>
<td>$554</td>
</tr>
<tr>
<td>$44</td>
</tr>
<tr>
<td>$22,904</td>
</tr>
</tbody>
</table>

1In 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.
These therapies took place over 8-16 weekly sessions; total length of treatment averaged 12 weeks. The per-participant cost of treatment by modality (individual or group) was weighted by the treatment Ns reported in the studies. Cost per session is $40.04/session for group and $122.25/session for individual (2015 dollars). This rate is based on actuarial tables reported in Mercer (2014) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2015. The comparison group costs are from the average Medicaid expenditures for anxiety treatment in Washington in 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.

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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety disorder</td>
<td>31</td>
<td>4</td>
<td>74</td>
<td>ES SE Age ES SE Age ES p-value</td>
<td>ES p-value</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.395 0.175 31 0.205 0.214 33 -0.710 0.004</td>
<td></td>
</tr>
</tbody>
</table>

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**


Program Description: Collaborative primary care for anxiety integrates behavioral health and primary care services to treat patients with anxiety disorders including panic disorder, generalized anxiety disorder, and social anxiety disorder. In the collaborative care model, a care manager coordinates with a primary care provider and other specialists, like a psychologist or psychiatrist, to develop measurement-based treatment plans for individual patients. Care managers can be mental health providers (e.g., psychologists) or non-behavioral specialists (e.g., registered nurses or social workers) and are located in primary care settings. In this review, patients received treatment for 6 to 12 months.

Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Taxpayers</th>
<th>Participants</th>
<th>Others</th>
<th>Benefit to cost ratio</th>
<th>Benefits minus costs</th>
<th>Chance the program will produce benefits greater than the costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>$4,133</td>
<td></td>
<td></td>
<td></td>
<td>$15.27</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>$9,001</td>
<td></td>
<td></td>
<td></td>
<td>$12,368</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>$353</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>($253)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>$13,235</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($866)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>$12,368</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others²</th>
<th>Indirect³</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor market earnings</td>
<td>$8,903</td>
<td>$3,790</td>
<td>$0</td>
<td>$0</td>
<td>$12,694</td>
</tr>
<tr>
<td>Health care</td>
<td>$97</td>
<td>$342</td>
<td>$353</td>
<td>$171</td>
<td>$964</td>
</tr>
<tr>
<td>Mortality</td>
<td>$1</td>
<td>$0</td>
<td>$0</td>
<td>$10</td>
<td>$10</td>
</tr>
<tr>
<td>Adjustment for deadweight</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($433)</td>
<td>($433)</td>
</tr>
<tr>
<td>Totals</td>
<td>$9,001</td>
<td>$4,133</td>
<td>$353</td>
<td>($253)</td>
<td>$13,235</td>
</tr>
</tbody>
</table>

1In 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.

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Detailed Annual Cost Estimates Per Participant

<table>
<thead>
<tr>
<th></th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$834</td>
<td>2016</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2016</td>
<td>Cost range (+ or -)</td>
</tr>
</tbody>
</table>


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.

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.
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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>43</td>
<td>4</td>
<td>691</td>
<td>-0.244</td>
<td>0.088</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>43</td>
<td>1</td>
<td>116</td>
<td>-0.097</td>
<td>0.291</td>
</tr>
<tr>
<td>Employment **</td>
<td>43</td>
<td>1</td>
<td>82</td>
<td>0.236</td>
<td>0.293</td>
</tr>
<tr>
<td>Hospitalization **</td>
<td>43</td>
<td>1</td>
<td>116</td>
<td>0.144</td>
<td>0.450</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>43</td>
<td>2</td>
<td>198</td>
<td>-0.109</td>
<td>0.164</td>
</tr>
</tbody>
</table>

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**Citations Used in the Meta-Analysis**

Cognitive behavioral therapy (CBT) for adult depression

Adult Mental Health: Depression


Program Description: Cognitive-behavioral therapies include various components, such as cognitive restructuring, behavioral activation, emotion regulation, communication skills, and problem-solving. Treatment is goal-oriented and generally of limited duration. Most commonly, treatments in this review provided 10-20 therapeutic hours per client in an individual or group modality.

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<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
</tbody>
</table>

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<table>
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<th>Detailed Monetary Benefit Estimates Per Participant</th>
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</thead>
<tbody>
<tr>
<td>Benefits from changes to:</td>
</tr>
<tr>
<td>Labor market earnings associated with major depression</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Health care associated with major depression</td>
</tr>
<tr>
<td>Mortality associated with depression</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

1In 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.

<table>
<thead>
<tr>
<th>Detailed Annual Cost Estimates Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual cost</td>
</tr>
<tr>
<td>Program costs</td>
</tr>
<tr>
<td>Comparison costs</td>
</tr>
</tbody>
</table>

This therapy typically takes place over 10 to 20 weekly sessions. Per-participant costs are based on therapist time as reported in the studies, multiplied by DSHS reimbursement rates reported in Mercer (2013) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2014.

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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>39</td>
<td>64</td>
<td>1489</td>
<td>-0.481</td>
<td>0.044</td>
</tr>
</tbody>
</table>

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

Cognitive behavioral therapy (CBT) for adult depression


Collaborative primary care for depression (general adult population)

Adult Mental Health: Depression


**Program Description:** Collaborative primary care for depression integrates behavioral health into the primary care setting to treat adult patients with major or minor depression, dysthymia, or subthreshold depression. In the collaborative care model, a care manager coordinates with a primary care provider and behavioral health care providers to develop and implement measurement-based treatment plans for individual patients. Care managers can be mental health providers (e.g. psychologists) or non-behavioral health specialists (e.g. registered nurses or social workers). Programs included in this review were intended for adult populations, age 18 and over. All programs were implemented in primary care settings, where patients received collaborative care for 3 to 36 months.

We report separate results for collaborative primary care programs for depression among older adults.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
</tbody>
</table>

Net program cost: $(867)

Benefits minus cost: $10,169

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.

<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from changes to:</td>
</tr>
<tr>
<td>Labor market earnings associated with major depression</td>
</tr>
<tr>
<td>Health care associated with major depression</td>
</tr>
<tr>
<td>Mortality associated with depression</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

^1In 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

<table>
<thead>
<tr>
<th></th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$834</td>
<td>2016</td>
<td>Present value of net program costs (in 2018 dollars) (867)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2016</td>
<td>Cost range (+ or -) 15%</td>
</tr>
</tbody>
</table>


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.

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

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<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
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<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>47</td>
<td>25</td>
<td>4094</td>
<td>-0.258</td>
<td>0.058</td>
</tr>
</tbody>
</table>

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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


Collaborative primary care for depression with comorbid medical conditions
(general adult population)
Adult Mental Health: Depression


Program Description: Collaborative primary care integrates behavioral health into the primary care setting to treat adult patients with all levels of depression (i.e. major or minor depression or dysthymia) and comorbid health conditions including diabetes, heart disease, acute coronary syndrome, hypertension, or stroke. In the collaborative care model, a care manager coordinates with a primary care provider and behavioral health care providers to develop and implement measurement-based treatment plans for individual patients. Care managers can be mental health providers (e.g. psychologists) or non-behavioral health specialists (e.g. registered nurses or social workers). Programs included in this review were intended for adult populations, age 18 and over. All programs were implemented in primary care settings, where patients received collaborative care for 3 to 12 months.

We report separate results for collaborative primary care programs for depression among older adults with comorbid medical conditions.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
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</thead>
<tbody>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>$2,411</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>$3,807</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>$926</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>$169</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>$7,313</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>($975)</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
<tr>
<td>$6,339</td>
</tr>
<tr>
<td>Benefit to cost ratio</td>
</tr>
<tr>
<td>$7.50</td>
</tr>
<tr>
<td>Benefits minus costs</td>
</tr>
<tr>
<td>$6,339</td>
</tr>
<tr>
<td>Chance the program will produce benefits greater than the costs</td>
</tr>
<tr>
<td>100 %</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
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<tbody>
<tr>
<td>Benefits from changes to:1</td>
</tr>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Others2</td>
</tr>
<tr>
<td>Indirect3</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Labor market earnings associated with major depression</td>
</tr>
<tr>
<td>$3,551</td>
</tr>
<tr>
<td>$1,512</td>
</tr>
<tr>
<td>$926</td>
</tr>
<tr>
<td>($487)</td>
</tr>
<tr>
<td>Health care associated with major depression</td>
</tr>
<tr>
<td>$254</td>
</tr>
<tr>
<td>$898</td>
</tr>
<tr>
<td>$449</td>
</tr>
<tr>
<td>$2,527</td>
</tr>
<tr>
<td>Mortality associated with depression</td>
</tr>
<tr>
<td>$3</td>
</tr>
<tr>
<td>$1</td>
</tr>
<tr>
<td>$207</td>
</tr>
<tr>
<td>$212</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$169</td>
</tr>
<tr>
<td>($487)</td>
</tr>
<tr>
<td>Totals</td>
</tr>
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Treatment cost estimates for this program reflect costs beyond treatment as usual. When available, we use the average cost of the program reported by the studies, weighted by treatment sample sizes. Average program costs were obtained from Davidson et al. (2013), El et al. (2010), Katon et al. (2010), and Katon et al. (2004).

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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Blood sugar (HbA1c)^+</td>
<td>58</td>
<td>2</td>
<td>242</td>
<td>-0.151</td>
<td>0.163</td>
</tr>
<tr>
<td>Global functioning^</td>
<td>58</td>
<td>3</td>
<td>684</td>
<td>-0.157</td>
<td>0.084</td>
</tr>
<tr>
<td>LDL cholesterol^</td>
<td>58</td>
<td>1</td>
<td>98</td>
<td>-0.185</td>
<td>0.220</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>58</td>
<td>12</td>
<td>1616</td>
<td>-0.357</td>
<td>0.050</td>
</tr>
<tr>
<td>Systolic blood pressure^</td>
<td>58</td>
<td>2</td>
<td>133</td>
<td>-0.274</td>
<td>0.178</td>
</tr>
</tbody>
</table>

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

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### Citations Used in the Meta-Analysis


Collaborative primary care for depression with comorbid medical conditions (older adult population)

Adult Mental Health: Depression


Program Description: Collaborative primary care integrates behavioral health into the primary care setting to treat older adult patients, age 50 and over, with all levels of depression (i.e. major or minor depression or dysthymia) and comorbid health conditions including diabetes and hypertension. In the collaborative care model, a care manager coordinates with a primary care provider and behavioral health care providers to develop and implement measurement-based treatment plans for individual patients. Care managers can be mental health providers (e.g. psychologists) or non-behavioral health specialists (e.g. registered nurses or social workers). Programs included in this review were intended for older adult populations. All programs were implemented in primary care settings, where patients received collaborative care for 1 to 12 months.

We report separate results for collaborative primary care programs for depression among adults with comorbid medical conditions.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Taxpayers</th>
<th>Participants</th>
<th>Others</th>
<th>Indirect $</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$843</td>
<td>$238</td>
<td>$870</td>
<td>$298</td>
<td>$2,249</td>
</tr>
<tr>
<td>Benefit to cost ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$3.76</td>
</tr>
<tr>
<td>Benefits minus costs</td>
<td></td>
<td></td>
<td></td>
<td>$1,651</td>
<td>$1,651</td>
</tr>
<tr>
<td>Chance the program will produce benefits greater than the costs</td>
<td>$176</td>
<td>$176</td>
<td>$(299)</td>
<td>$(299)</td>
<td>84 %</td>
</tr>
<tr>
<td>Total benefits</td>
<td>$2,249</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($598)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>$1,651</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Detailed Monetary Benefit Estimates Per Participant

<table>
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<tr>
<th>Benefits from changes to:</th>
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<th>Indirect $</th>
<th>Total $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care associated with major depression</td>
<td>$238</td>
<td>$843</td>
<td>$870</td>
<td>$298</td>
<td>$2,249</td>
</tr>
<tr>
<td>Mortality associated with depression</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$176</td>
<td>$176</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$(299)</td>
<td>$(299)</td>
</tr>
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<td>Totals</td>
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<thead>
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<th></th>
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<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$576</td>
<td>2016</td>
<td>Present value of net program costs (in 2018 dollars) $598</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2016</td>
<td>Cost range (+ or -) 20%</td>
</tr>
</tbody>
</table>

Treatment cost estimates for this program reflect costs beyond treatment as usual. Costs are based on a weighted average of per-participant costs for included studies. Based on Blanchard et al. (1995), Chew-Graham et al. (2007), and McCusker et al. (2008), we estimate provider hours, apply the mean hourly wage estimate for Washington State reported by the Bureau of Labor Statistics (September 2016) for the appropriate provider, and increase wages by a factor of 1.441 to account for the cost of employee benefits. These studies average 6.5 behavioral health nurse hours per participant. We use reported per-participant costs from Unutzer et al. (2002).

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<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood sugar (HbA1c)</td>
<td>68</td>
<td>1</td>
<td>128</td>
<td>ES SE Age</td>
<td>ES p-value</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>68</td>
<td>3</td>
<td>262</td>
<td>-0.020 0.162 69 n/a</td>
<td>-0.020 0.902</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.483 0.110 69 -0.251 0.135 n/a</td>
<td>-0.483 0.001</td>
</tr>
</tbody>
</table>

^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.

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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**


Collaborative primary care for depression (older adult population)

Adult Mental Health: Depression


Program Description: Collaborative primary care for depression integrates behavioral health into the primary care setting to treat older adult patients, aged 60 or over, with major or minor depression, dysthymia, or subthreshold depression. In the collaborative care model, a care manager coordinates with a primary care provider and behavioral health care providers to develop and implement measurement-based treatment plans for individual patients. Care managers can be mental health providers (e.g. psychologists) or non-behavioral health specialists (e.g. registered nurses or social workers). All programs were implemented in primary care settings, where older adult patients received collaborative care for 3 to 12 months.

We report separate results for collaborative primary care programs for depression among adults.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
<td></td>
</tr>
<tr>
<td>Taxpayers</td>
<td>$582</td>
</tr>
<tr>
<td>Participants</td>
<td>$165</td>
</tr>
<tr>
<td>Others</td>
<td>$601</td>
</tr>
<tr>
<td>Indirect</td>
<td>$110</td>
</tr>
<tr>
<td>Total benefits</td>
<td>$1,458</td>
</tr>
<tr>
<td>Net program cost</td>
<td>($600)</td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>$858</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from changes to:</td>
<td></td>
</tr>
<tr>
<td>Health care associated with major depression</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>$165</td>
</tr>
<tr>
<td>Taxpayers</td>
<td>$582</td>
</tr>
<tr>
<td>Others</td>
<td>$601</td>
</tr>
<tr>
<td>Total</td>
<td>$1,639</td>
</tr>
<tr>
<td>Mortality associated with depression</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>$0</td>
</tr>
<tr>
<td>Taxpayers</td>
<td>$0</td>
</tr>
<tr>
<td>Others</td>
<td>$0</td>
</tr>
<tr>
<td>Total</td>
<td>$119</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>$0</td>
</tr>
<tr>
<td>Taxpayers</td>
<td>$0</td>
</tr>
<tr>
<td>Others</td>
<td>$0</td>
</tr>
<tr>
<td>Total</td>
<td>($300)</td>
</tr>
<tr>
<td>Totals</td>
<td>$1,458</td>
</tr>
</tbody>
</table>

1In 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**

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<tr>
<th>Program costs</th>
<th>Annual cost</th>
<th>Year</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$577</td>
<td>2016</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
</tbody>
</table>

| Comparison costs | $0 | 2016 | Cost range (+ or -) | 15 % |

Treatment cost estimates for this program reflect costs beyond treatment as usual. Costs are based on a weighted average of per-participant costs for included studies. We use reported per-participant costs from Unutzer et al., 2002. For the other studies (Blanchard et al., 1995; Chew-Graham et al., 2007; and McCusker et al. 2008), we estimate provider hours, apply the mean hourly wage estimate for Washington State reported by the Bureau of Labor Statistics (September 2016) for the appropriate provider, and increase wages by a factor of 1.441 to account for the cost of employee benefits. These studies average 6.5 behavioral health nurse hours per participant.

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.

---

**Meta-Analysis of Program Effects**

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<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major depressive disorder</td>
<td>72</td>
<td>5</td>
<td>1358</td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>72</td>
<td>2</td>
<td>1154</td>
<td>-0.379</td>
<td>0.056</td>
</tr>
</tbody>
</table>

WSIPP’s benefit-cost model does not monetize this outcome.
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Citations Used in the Meta-Analysis


Cognitive behavioral therapy (CBT) for adult posttraumatic stress disorder (PTSD)

Adult Mental Health: Trauma


Program Description: Treatments in this review include several components, such as psycho-education about posttraumatic stress disorder (PTSD), relaxation and other techniques for managing physiological and emotional stress, exposure (the gradual desensitization to memories of the traumatic event), and cognitive restructuring of inaccurate or unhelpful thoughts. The studies in this review employed a number of trauma-specific treatment models including Prolonged Exposure Therapy (PE), Narrative Exposure Therapy (NET), and Cognitive Processing Therapy (CPT). In the studies in this review, treatments provided between 1-45 therapeutic hours per client in individual or group settings. Studies were conducted on all continents and subjects had experienced one of a variety of types of trauma including terrorism, sexual or physical assault, domestic violence, war, political detention, and automobile accidents.

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<th>Benefit-Cost Summary Statistics Per Participant</th>
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<tr>
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</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
<tr>
<td>Benefit to cost ratio</td>
</tr>
<tr>
<td>Benefits minus costs</td>
</tr>
<tr>
<td>Chance the program will produce benefits greater than the costs</td>
</tr>
</tbody>
</table>

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<table>
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<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
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<tbody>
<tr>
<td>Benefits from changes to:¹</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Labor market earnings associated with PTSD</td>
</tr>
<tr>
<td>Health care associated with PTSD</td>
</tr>
<tr>
<td>Mortality associated with depression</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
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<td>Totals</td>
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These therapies can take place over 1-45 weekly sessions; total length of treatment is less than one year. The per-participant cost of treatment by modality (group/individual) was weighted by the treatment Ns reported in the studies. Cost per session is $40.04/session for group and $122.25 for individual therapy (2015 dollars). This rate is based on actuarial tables reported in Mercer (2014) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2015. The comparison group costs are from the average Medicaid expenditures for PTSD treatment in Washington in 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.

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### Detailed Annual Cost Estimates Per Participant

<table>
<thead>
<tr>
<th></th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$1,444</td>
<td>2014</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$814</td>
<td>2008</td>
<td>Cost range (+ or -)</td>
</tr>
</tbody>
</table>

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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.
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<table>
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<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
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<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>39</td>
<td>17</td>
<td>355</td>
<td>-0.620</td>
<td>0.087</td>
</tr>
<tr>
<td>Employment^^</td>
<td>39</td>
<td>1</td>
<td>12</td>
<td>0.348</td>
<td>0.530</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>39</td>
<td>49</td>
<td>1389</td>
<td>-0.433</td>
<td>0.046</td>
</tr>
<tr>
<td>Post-traumatic stress</td>
<td>39</td>
<td>70</td>
<td>2361</td>
<td>-0.539</td>
<td>0.047</td>
</tr>
<tr>
<td>Substance use disorder^</td>
<td>39</td>
<td>1</td>
<td>55</td>
<td>-0.164</td>
<td>0.366</td>
</tr>
</tbody>
</table>

^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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### Citations Used in the Meta-Analysis


Eye Movement Desensitization and Reprocessing (EMDR) for adult posttraumatic stress disorder (PTSD)

Adult Mental Health: Trauma


Program Description: Eye Movement Desensitization and Reprocessing (EMDR) is a psychological treatment commonly used to treat posttraumatic stress disorder. During treatment, clients focus on the traumatic memory for 30 seconds at a time while the therapist provides a stimulus. For most clients, the therapist moves a hand slowly back and forth in front of the client (eye movement) but other stimuli may be used. Clients report on what thoughts come up and are guided to refocus on that thought in the next stimulus session. During therapy visits, clients report the level of distress they feel. In later phases, a positive thought is emphasized during the stimulus sessions. Afterward, clients are asked to focus on residual physical tensions they may feel in order to enhance relaxation. A more complete description of this therapy is available at: http://www.emdrnetwork.org/description.html

We evaluated studies where EMDR was used in the treatment of PTSD confirmed by a diagnosis using the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM). Studies consisted of patients with a variety of traumatic experiences, including combat, sexual abuse or assault, physical or emotional abuse, accidents, and war or disaster experiences. We only included studies where EMDR was compared to a control condition receiving treatment as usual, which consisted of standard care or a wait list for care. One study was included in which patients had comorbid psychosis disorder. Patients in the studies received between two and twelve total sessions of EMDR.

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<td>Indirect</td>
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<tr>
<td>Total benefits</td>
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<td>Benefits minus cost</td>
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Per-participant costs for EMDR are estimated based on the average hours of therapy reported in the studies (7.96) and the rate for individual therapy for non-disabled adults reported in Mercer (2013) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2014. The comparison group costs are from the average Medicaid expenditures for PTSD treatment in Washington in 2014.

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<tr>
<td>Anxiety disorder</td>
<td>40</td>
<td>4</td>
<td>72</td>
<td>-0.305</td>
<td>0.207</td>
</tr>
<tr>
<td>Global functioning^</td>
<td>40</td>
<td>2</td>
<td>42</td>
<td>0.201</td>
<td>0.281</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>40</td>
<td>6</td>
<td>111</td>
<td>-0.333</td>
<td>0.157</td>
</tr>
<tr>
<td>Post-traumatic stress</td>
<td>40</td>
<td>11</td>
<td>224</td>
<td>-0.460</td>
<td>0.134</td>
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Citations Used in the Meta-Analysis


Posttraumatic stress disorder (PTSD) prevention following trauma
Adult Mental Health: Trauma

Program Description: The studies in this review examined Cognitive Behavior Therapy (CBT) treatment for persons in the first weeks and months following trauma but before a diagnosis of PTSD could be made. Treatments in the studies in this review involved five to ten hours of individual therapy that combined education on effects of trauma, relaxation, and exposure.

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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.
This intervention takes place over five to ten weekly sessions. The per-participant cost of treatment by modality (group/individual) was weighted by the treatment Ns reported in the studies. Cost per session is $33.63/session for group and $96.63 for individual therapy (2009 dollars). This is based on actuarial tables reported in Mercer (2009) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2010. In this set of studies, we assume a comparison cost of $0 because typically, this group of people would not receive treatment.

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.
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Citations Used in the Meta-Analysis


Cognitive behavioral therapy (CBT) for schizophrenia/psychosis

Adult Mental Health: Serious Mental Illness


Program Description: Cognitive behavioral therapy for psychosis (CBTp) includes the application of cognitive strategies focused on changing thoughts to improve feelings and behaviors as well as behavioral techniques most often used to address negative symptoms. CBTp involves teaching patients methods of coping with their symptoms and training in problem solving, social skills and strategies to reduce risk of relapse. In this collection of studies, CBTp was provided in addition to antipsychotic medication.

Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>$8,610</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>$1,041</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>$1,831</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>$3,366</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>$14,848</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($1,511)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>$13,337</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Benefits to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Participants</td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>$1,580</td>
</tr>
<tr>
<td>associated with major</td>
<td></td>
</tr>
<tr>
<td>depression</td>
<td></td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>($646)</td>
</tr>
<tr>
<td>associated with anxiety</td>
<td></td>
</tr>
<tr>
<td>disorder</td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>($7)</td>
</tr>
<tr>
<td>with anxiety disorder</td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>$112</td>
</tr>
<tr>
<td>with psychiatric</td>
<td></td>
</tr>
<tr>
<td>hospitalization</td>
<td></td>
</tr>
<tr>
<td>Mortality associated</td>
<td>$1</td>
</tr>
<tr>
<td>with depression</td>
<td></td>
</tr>
<tr>
<td>Adjustment for</td>
<td>$0</td>
</tr>
<tr>
<td>deadweight cost of</td>
<td></td>
</tr>
<tr>
<td>program</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>$1,041</td>
</tr>
</tbody>
</table>

1In 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.
Per-participant cost of treatment by modality (group/individual) was weighted by treatment Ns reported in the studies. Cost per-session per-person was $37.91/session for group and $120.90 for individual therapy (2014 dollars), based on actuarial tables reported for disabled adults in Mercer (2013) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2014.

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.

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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>36</td>
<td>7</td>
<td>267</td>
<td>0.017</td>
<td>0.103</td>
</tr>
<tr>
<td>Global functioning</td>
<td>36</td>
<td>18</td>
<td>721</td>
<td>0.231</td>
<td>0.069</td>
</tr>
<tr>
<td>Hope</td>
<td>36</td>
<td>3</td>
<td>92</td>
<td>0.300</td>
<td>0.249</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>36</td>
<td>16</td>
<td>832</td>
<td>-0.124</td>
<td>0.106</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>36</td>
<td>15</td>
<td>727</td>
<td>-0.123</td>
<td>0.070</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>36</td>
<td>2</td>
<td>75</td>
<td>-0.011</td>
<td>0.195</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>36</td>
<td>25</td>
<td>1172</td>
<td>-0.148</td>
<td>0.101</td>
</tr>
<tr>
<td>Psychosis symptoms (negative)</td>
<td>36</td>
<td>25</td>
<td>1143</td>
<td>-0.170</td>
<td>0.069</td>
</tr>
<tr>
<td>Psychosis symptoms (positive)</td>
<td>36</td>
<td>33</td>
<td>1477</td>
<td>-0.178</td>
<td>0.059</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>36</td>
<td>2</td>
<td>115</td>
<td>-0.174</td>
<td>0.331</td>
</tr>
</tbody>
</table>

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

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Citations Used in the Meta-Analysis


**Individual Placement and Support (IPS) for individuals with serious mental illness**

*Adult Mental Health: Serious Mental Illness*

**Benefit-cost estimates updated December 2019. Literature review updated May 2014.**

**Program Description:** These studies assess the Individual Placement and Support (IPS) model of supported employment compared with typical vocational services for individuals with serious mental illness. The IPS model focuses on competitive employment, client interests, rapid job placement, and ongoing support by employment specialists. In contrast, the comparison groups typically received vocational services that focused on building job skills before employment placement.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th></th>
<th>Benefit to cost ratio</th>
<th>$7.77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>$2,069</td>
<td>Benefits minus costs</td>
<td>$5,662</td>
</tr>
<tr>
<td>Participants</td>
<td>$4,842</td>
<td>Chance the program will produce benefits greater than the costs</td>
<td>80 %</td>
</tr>
<tr>
<td>Others</td>
<td>$2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>($414)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total benefits</strong></td>
<td><strong>$6,498</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net program cost</strong></td>
<td><strong>($837)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Benefits minus cost</strong></td>
<td><strong>$5,662</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor market earnings</td>
<td>$4,842</td>
<td>$2,061</td>
<td>$0</td>
<td>$0</td>
<td>$6,903</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
<td>$0</td>
<td>$8</td>
<td>$2</td>
<td>$4</td>
<td>$14</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($418)</td>
<td>($418)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$4,842</strong></td>
<td><strong>$2,061</strong></td>
<td><strong>$2</strong></td>
<td>($414)</td>
<td><strong>$6,498</strong></td>
</tr>
</tbody>
</table>

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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The per-participant cost of IPS is based on the average annual cost found by Latimer et al., 2004. The cost of the comparison group is a weighted average of the costs to provide the services that the comparison group received in the studies we reviewed. Comparison group participants in these studies received enhanced vocational rehabilitation, traditional “train and place” vocational services or Clubhouse services. The ratio of the cost of enhanced vocational rehabilitation and traditional train and place vocational services compared to IPS was reported by Dixon et al., 2002 and the cost of Clubhouse vocational services was reported by Macias, 2001. Dixon et al., (2002). Cost-effectiveness of two vocational rehabilitation programs for persons with severe mental illness. Psychiatric Services, 53(9), 1118-1124. Latimer et al., (2004). The cost of high-fidelity supported employment programs for people with severe mental illness. Psychiatric Services, 55(4), 401-406. Macias, C. (2001). Massachusetts employment Intervention Demonstration Project: An experimental comparison of PACT and Clubhouse (Final Report). Retrieved from: http://www.massclubs.org/Docs/ComparisonPACandClubhouseModels2.pdf

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<table>
<thead>
<tr>
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<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Competitive employment^</td>
<td>40</td>
<td>13</td>
<td>963</td>
<td>1.075</td>
<td>0.105</td>
</tr>
<tr>
<td>Earnings^^</td>
<td>40</td>
<td>6</td>
<td>417</td>
<td>0.385</td>
<td>0.123</td>
</tr>
<tr>
<td>Employment</td>
<td>40</td>
<td>5</td>
<td>403</td>
<td>0.358</td>
<td>0.283</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>40</td>
<td>2</td>
<td>222</td>
<td>-0.003</td>
<td>0.288</td>
</tr>
<tr>
<td>Hours worked^</td>
<td>40</td>
<td>4</td>
<td>347</td>
<td>0.303</td>
<td>0.196</td>
</tr>
<tr>
<td>Psychiatric symptoms^</td>
<td>40</td>
<td>1</td>
<td>74</td>
<td>-0.136</td>
<td>0.164</td>
</tr>
</tbody>
</table>

^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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**Citations Used in the Meta-Analysis**


Peer support: Addition of a peer specialist to the treatment team
Adult Mental Health: Serious Mental Illness

Program Description: The programs examined in this analysis compared treatment teams with a peer specialist to treatment teams without a peer specialist. The treatment teams in this analysis provided services to individuals with serious mental illness or individuals receiving VA services for a psychiatric diagnosis.

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Taxpayers</th>
<th>Benefit to cost ratio</th>
<th>Participants</th>
<th>Benefits minus costs</th>
<th>Others</th>
<th>Chance the program will produce benefits greater than the costs</th>
<th>Indirect</th>
<th>Total benefits</th>
<th>Net program cost</th>
<th>Benefits minus cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>$2,445</td>
<td></td>
<td>$5,406</td>
<td></td>
<td>$32</td>
<td></td>
<td>$(1,752)</td>
<td>$6,132</td>
<td>$(3,647)</td>
<td>$2,485</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Benefits from changes to:¹</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others²</th>
<th>Indirect³</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor market earnings</td>
<td>$5,404</td>
<td>$2,301</td>
<td>$0</td>
<td>$0</td>
<td>$7,705</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
<td>$2</td>
<td>$144</td>
<td>$32</td>
<td>$72</td>
<td>$250</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$(1,824)</td>
<td>$(1,824)</td>
</tr>
</tbody>
</table>

Totals | $5,406 | $2,445 | $32 | $(1,752) | $6,132 |

¹In 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

<table>
<thead>
<tr>
<th>Program costs</th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
<th>Cost range (+ or -)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$1,842</td>
<td>2011</td>
<td>Present value of net program costs (in 2018 dollars)</td>
<td>($3,647)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2011</td>
<td>Cost range (+ or -)</td>
<td>10 %</td>
</tr>
</tbody>
</table>

The cost of treatment is the weighted average cost of peer services provided in the studies included in this analysis. The average number of service hours is estimated from Eisen et al., 2012, Felton et al., 1995, and Sledge et al., 2011 is higher than the average number of encounters with a peer specialist in Washington State as reported in Mercer (2013). The cost per encounter was estimated using the peer specialist reimbursement cost reported in Mercer, (2013).

Eisen et al., (2012). Outcome of a randomized study of a mental health peer education and support group in the VA. Psychiatric Services, 63(12), 1243-1246.

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Technical Documentation.

to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our unadjusted effect size 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 first time ES is estimated.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we 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


Primary care in integrated settings (Veteran's Administration, Kaiser Permanente)

**Adult Mental Health: Serious Mental Illness**


**Program Description:** Behavioral health settings (mental health and substance abuse treatment centers) provide primary care for patients on site or nearby. This collection of studies was conducted at Veterans Administration facilities or facilities of Kaiser Permanente where patients might have more ready access to primary care than community-based treatment centers.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Taxpayers</th>
<th>Benefit to cost ratio</th>
<th>Participants</th>
<th>Benefits minus costs</th>
<th>Others</th>
<th>Chance the program will produce benefits greater than the costs</th>
<th>Indirect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>$471</td>
<td></td>
<td>Participants</td>
<td>$116</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>$221</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>$343</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>$1,151</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($239)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>$912</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Benefits to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td></td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Property loss associated with alcohol abuse or dependence</td>
<td></td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Labor market earnings associated with illicit drug abuse or dependence</td>
<td></td>
<td>$72</td>
<td>$31</td>
<td>$0</td>
<td>$0</td>
<td>$103</td>
</tr>
<tr>
<td>Health care associated with general hospitalization</td>
<td></td>
<td>$3</td>
<td>$80</td>
<td>$79</td>
<td>$40</td>
<td>$202</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
<td></td>
<td>$4</td>
<td>$300</td>
<td>$68</td>
<td>$150</td>
<td>$522</td>
</tr>
<tr>
<td>Health care associated with emergency department visits</td>
<td></td>
<td>$14</td>
<td>$50</td>
<td>$74</td>
<td>$25</td>
<td>$163</td>
</tr>
<tr>
<td>Mortality associated with illicit drugs</td>
<td></td>
<td>$23</td>
<td>$10</td>
<td>$0</td>
<td>$247</td>
<td>$280</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td></td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($120)</td>
<td>($120)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>$116</strong></td>
<td><strong>$471</strong></td>
<td><strong>$221</strong></td>
<td><strong>$343</strong></td>
<td><strong>$1,151</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Annual cost</th>
<th>Year</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$228</td>
<td>2014</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2014</td>
<td>Cost range (+ or -)</td>
</tr>
</tbody>
</table>

According to Saxon et al., (2006). Randomized trial of onsite versus referral primary medical care for veterans in addictions treatment. Medical Care, 44(4), 334-342, patients in the clinics with co-located primary care had an average of 1.1 more primary care visits than the comparison group in 12 months. We estimated additional cost of the program by multiplying 1.1 visits by the Medicaid enhanced payment rate for the longest primary care visit. See http://www.hca.wa.gov/medicaid/pages/aca_rates.aspx.

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.

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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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Alcohol use disorder</td>
<td>40</td>
<td>3</td>
<td>684</td>
<td>-0.001</td>
<td>0.124</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>40</td>
<td>1</td>
<td>751</td>
<td>-0.168</td>
<td>0.071</td>
</tr>
<tr>
<td>Blood sugar (HbA1c)</td>
<td>40</td>
<td>1</td>
<td>751</td>
<td>0.225</td>
<td>0.105</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>40</td>
<td>1</td>
<td>751</td>
<td>0.071</td>
<td>0.122</td>
</tr>
<tr>
<td>Death</td>
<td>40</td>
<td>2</td>
<td>98</td>
<td>-0.077</td>
<td>0.160</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>40</td>
<td>3</td>
<td>753</td>
<td>-0.090</td>
<td>0.105</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>40</td>
<td>5</td>
<td>10449</td>
<td>-0.050</td>
<td>0.105</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>40</td>
<td>1</td>
<td>59</td>
<td>-0.068</td>
<td>0.293</td>
</tr>
<tr>
<td>Illicit drug use disorder</td>
<td>40</td>
<td>2</td>
<td>643</td>
<td>-0.016</td>
<td>0.081</td>
</tr>
<tr>
<td>Primary care visits</td>
<td>40</td>
<td>2</td>
<td>417</td>
<td>0.0531</td>
<td>0.188</td>
</tr>
</tbody>
</table>

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**


**Acceptance and Commitment Therapy for schizophrenia/psychosis**  
**Adult Mental Health: Serious Mental Illness**


**Program Description:** Acceptance and Commitment Therapy for schizophrenia/psychosis aims to increase client acceptance of psychotic symptoms (such as hallucinations and delusions) and reduce the negative behavioral impact of psychosis. Acceptance and Commitment Therapy relies on six core processes of change: 1) acceptance; 2) learning to view thoughts as hypotheses rather than facts; 3) being present; 4) viewing the self as context for experience; 5) identifying core values; and 6) acting based on those values. These core principles are applied through various exercises and through homework.

Treatment groups received 2 to 16 hours of individual acceptance and commitment therapy. Treatments in this review provided acceptance and commitment therapy as an addition to usual treatment; comparison groups received usual treatment. This review excludes studies of acceptance and commitment therapy for other disorders.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benefits to:</strong></td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td><strong>Total benefits</strong></td>
</tr>
<tr>
<td><strong>Net program cost</strong></td>
</tr>
<tr>
<td><strong>Benefits minus cost</strong></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
</tr>
</thead>
</table>
| **Benefits from changes to:**  
| Health care associated with psychiatric hospitalization | Participants | Taxpayers | Others | Indirect | Total |
| $13 | $936 | $211 | $468 | $1,628 |
| Adjustment for deadweight cost of program | $0 | $0 | $0 | ($364) | ($364) |
| **Totals** | $13 | $936 | $211 | $104 | $1,264 |

1In 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.
These therapies took place over 2-12 weekly or bi-weekly sessions; total length of treatment was 6 weeks on average. The per-participant cost of treatment was weighted by the treatment Ns reported in the studies. Cost per session is $122.25/session (2015 dollars). This rate is based on actuarial tables reported in Mercer (2014) Behavioral Health Data Book for the State of Washington For Rates Effective January 1, 2015.

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.

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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Global functioning</td>
<td>40</td>
<td>2</td>
<td>39</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>40</td>
<td>3</td>
<td>64</td>
<td>-0.596</td>
<td>0.245</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>40</td>
<td>1</td>
<td>35</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>40</td>
<td>2</td>
<td>39</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Psychosis symptoms (negative)</td>
<td>40</td>
<td>3</td>
<td>53</td>
<td>-0.433</td>
<td>0.209</td>
</tr>
<tr>
<td>Psychosis symptoms (positive)</td>
<td>40</td>
<td>3</td>
<td>53</td>
<td>-0.230</td>
<td>0.198</td>
</tr>
</tbody>
</table>

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

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Citations Used in the Meta-Analysis


**Mobile crisis response**
**Adult Mental Health: Serious Mental Illness**

**Program Description:** Mobile crisis interventions dispatch teams with mental health training (rather than the standard police response) to stabilize patients who are experiencing a psychiatric emergency. Two types of mobile crisis interventions were included in this analysis (1) an interdisciplinary team who was dispatched after individuals called a mental health hotline and (2) a 911 response team staffed by police and psychiatric nurses.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from changes to:¹</td>
</tr>
<tr>
<td>Crime</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

¹In 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

<table>
<thead>
<tr>
<th>Summary</th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Present value of net program costs (in 2018 dollars)</th>
<th>Cost range (+ or -)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$1,124</td>
<td>2011</td>
<td>($1,239)</td>
<td>10 %</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2011</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Per-participant staffing costs were computed by dividing the number of hours that psychiatric nurses staffed the response teams in Scott (2000) by the number of clients served by the response team. We multiplied those hours by the hourly rate of a psychiatric nurse, estimated using the individual adult treatment rate in Mercer, (2013). Behavioral health data book for the state of Washington for rates effective January 1, 2014.


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<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Crime</td>
<td>36</td>
<td>1</td>
<td>73</td>
<td>-0.468</td>
<td>0.363</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>36</td>
<td>2</td>
<td>1173</td>
<td>-0.420</td>
<td>0.216</td>
</tr>
</tbody>
</table>
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Citations Used in the Meta-Analysis


Primary care in behavioral health settings
Adult Mental Health: Serious Mental Illness


Program Description: These studies evaluated co-location of primary care in behavioral health settings (mental health and substance abuse treatment centers). That is, the primary care provider was located at, or adjacent to, the behavioral health facility. Of 11 studies, six were conducted in Veterans’ Administration health facilities; two were conducted at Kaiser Permanente addiction centers; and three were conducted at other community addiction treatment centers.

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.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Amount</th>
<th>Benefit to cost ratio</th>
<th>Benefits minus costs</th>
<th>Chance the program will produce benefits greater than the costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>$168</td>
<td></td>
<td>$1.50</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>($68)</td>
<td></td>
<td>($114)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>$91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>$151</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>$342</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($229)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>$114</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The detailed monetary benefit estimates per participant are shown below:

### Detailed Monetary Benefit Estimates Per Participant

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>($137)</td>
<td>($58)</td>
<td>$0</td>
<td>$0</td>
<td>($195)</td>
</tr>
<tr>
<td>Health care associated</td>
<td>($5)</td>
<td>($16)</td>
<td>($17)</td>
<td>($8)</td>
<td>($46)</td>
</tr>
<tr>
<td>Property loss associated</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>$49</td>
<td>$21</td>
<td>$0</td>
<td>$0</td>
<td>$69</td>
</tr>
<tr>
<td>Health care associated</td>
<td>$2</td>
<td>$42</td>
<td>$42</td>
<td>$21</td>
<td>$107</td>
</tr>
<tr>
<td>Health care associated</td>
<td>$2</td>
<td>$152</td>
<td>$34</td>
<td>$76</td>
<td>$264</td>
</tr>
<tr>
<td>Health care associated</td>
<td>$6</td>
<td>$22</td>
<td>$32</td>
<td>$11</td>
<td>$70</td>
</tr>
<tr>
<td>Mortality associated</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($4)</td>
<td>($5)</td>
</tr>
<tr>
<td>Mortality associated</td>
<td>$15</td>
<td>$6</td>
<td>$0</td>
<td>$169</td>
<td>$191</td>
</tr>
<tr>
<td>Adjustment for deadweight</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($114)</td>
<td>($114)</td>
</tr>
<tr>
<td>Totals</td>
<td>($68)</td>
<td>$168</td>
<td>$91</td>
<td>$151</td>
<td>$342</td>
</tr>
</tbody>
</table>

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.
According to Saxon et al., (2006), patients in the clinics co-located at Veterans’ Administration centers had an average of 1.1 more primary care visits than the comparison group in 12 months. Samet, et al. (2003) found those in a community clinic used 1.0 more primary care visits than the comparison group. For this combination location, assume an average of 1.05 visits per patient. We estimate additional cost of the program by multiplying 1.05 visits by the Medicaid enhanced payment rate for the longest primary care visit. See http://www.hca.wa.gov/medicaid/pages/aca_rates.aspx.


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.
### Meta-Analysis of Program Effects

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Alcohol use disorder</td>
<td>41</td>
<td>3</td>
<td>684</td>
<td>-0.001</td>
<td>0.124</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>41</td>
<td>2</td>
<td>1192</td>
<td>-0.151</td>
<td>0.067</td>
</tr>
<tr>
<td>Blood sugar (HbA1c)</td>
<td>41</td>
<td>2</td>
<td>1072</td>
<td>0.164</td>
<td>0.104</td>
</tr>
<tr>
<td>Cholesterol*</td>
<td>41</td>
<td>2</td>
<td>1515</td>
<td>-0.013</td>
<td>0.121</td>
</tr>
<tr>
<td>Death</td>
<td>41</td>
<td>2</td>
<td>98</td>
<td>-0.077</td>
<td>0.160</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>41</td>
<td>9</td>
<td>7320</td>
<td>-0.077</td>
<td>0.043</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>41</td>
<td>9</td>
<td>11301</td>
<td>-0.052</td>
<td>0.044</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>41</td>
<td>1</td>
<td>59</td>
<td>-0.068</td>
<td>0.293</td>
</tr>
<tr>
<td>Illicit drug use disorder</td>
<td>41</td>
<td>2</td>
<td>643</td>
<td>-0.016</td>
<td>0.081</td>
</tr>
<tr>
<td>Obesity</td>
<td>41</td>
<td>1</td>
<td>435</td>
<td>-0.002</td>
<td>0.194</td>
</tr>
<tr>
<td>Primary care visits*</td>
<td>41</td>
<td>7</td>
<td>1361</td>
<td>0.235</td>
<td>0.157</td>
</tr>
<tr>
<td>Regular smoking</td>
<td>41</td>
<td>1</td>
<td>453</td>
<td>0.116</td>
<td>0.194</td>
</tr>
</tbody>
</table>

*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.

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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


Primary care in behavioral health settings (community-based settings)

Adult Mental Health: Serious Mental Illness


Program Description: Behavioral health settings (mental health and substance abuse treatment centers) provide primary care for patients on site or nearby. This collection of studies evaluate this practice at community-based treatment centers.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>($132)</td>
<td>($9)</td>
<td>$58</td>
<td>($122)</td>
<td>($205)</td>
</tr>
<tr>
<td>Participants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>($132)</td>
<td>($9)</td>
<td>$58</td>
<td>($122)</td>
<td>($205)</td>
</tr>
<tr>
<td>Net program cost</td>
<td>($284)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>($284)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor market earnings</td>
<td>($137)</td>
<td>($58)</td>
<td>$0</td>
<td>$0</td>
<td>($195)</td>
</tr>
<tr>
<td>associated with smoking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>($5)</td>
<td>($16)</td>
<td>($17)</td>
<td>($8)</td>
<td>($46)</td>
</tr>
<tr>
<td>with smoking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>$2</td>
<td>$42</td>
<td>$41</td>
<td>$21</td>
<td>$106</td>
</tr>
<tr>
<td>with general hospitalization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>$6</td>
<td>$23</td>
<td>$33</td>
<td>$11</td>
<td>$74</td>
</tr>
<tr>
<td>with emergency department</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>visits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>$1</td>
<td>$1</td>
<td>$0</td>
<td>$0</td>
<td>$2</td>
</tr>
<tr>
<td>associated with obesity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality associated with</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>smoking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality associated with</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>obesity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustment for deadweight</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($142)</td>
<td>($142)</td>
</tr>
<tr>
<td>cost of program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>($132)</td>
<td>($9)</td>
<td>$58</td>
<td>($122)</td>
<td>($205)</td>
</tr>
</tbody>
</table>

1In 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.
According to Samet et al. (2003). Linking alcohol- and drug-dependent adults to primary medical care; A randomized controlled trial of a multi-disciplinary health intervention in a detoxification unit. Addiction, 98(4), 509-516, patients in the treatment group received an average of 1 more primary care visit in 12 months than did those in the comparison group. The average visit cost for primary care visit at Navos in Seattle (an example of a community-based treatment center) is $270 (per email from Paul Tagenfeldt to M. Miller, April 25, 2014).

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.
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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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


---

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Blood pressure^</td>
<td>41</td>
<td>1</td>
<td>441</td>
<td>-0.022</td>
<td>0.194</td>
</tr>
<tr>
<td>Blood sugar (HbA1c)^</td>
<td>41</td>
<td>1</td>
<td>321</td>
<td>-0.015</td>
<td>0.198</td>
</tr>
<tr>
<td>Cholesterol^</td>
<td>41</td>
<td>1</td>
<td>370</td>
<td>-0.188</td>
<td>0.196</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>41</td>
<td>6</td>
<td>6585</td>
<td>-0.081</td>
<td>0.051</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>41</td>
<td>4</td>
<td>852</td>
<td>-0.052</td>
<td>0.092</td>
</tr>
<tr>
<td>Obesity</td>
<td>41</td>
<td>1</td>
<td>435</td>
<td>-0.002</td>
<td>0.194</td>
</tr>
<tr>
<td>Primary care visits^</td>
<td>41</td>
<td>5</td>
<td>944</td>
<td>0.111</td>
<td>0.197</td>
</tr>
<tr>
<td>Regular smoking</td>
<td>41</td>
<td>1</td>
<td>453</td>
<td>0.116</td>
<td>0.194</td>
</tr>
</tbody>
</table>

^WSIPP’s benefit-cost model does not monetize this outcome.
Illness Management and Recovery (IMR)
Adult Mental Health: Serious Mental Illness


**Program Description:** Illness Management and Recovery (IMR) is a 40-hour curriculum for individuals with severe mental illness which addresses recovery strategies and information about serious mental illness. The intervention is typically delivered in group format.

**Benefit-Cost Summary Statistics Per Participant**

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>$320</th>
<th>Benefit to cost ratio</th>
<th>($0.17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>$4</td>
<td>Benefits minus costs</td>
<td>($1,970)</td>
</tr>
<tr>
<td>Others</td>
<td>$72</td>
<td>Chance the program will produce benefits greater than the costs</td>
<td>41 %</td>
</tr>
<tr>
<td>Indirect</td>
<td>($682)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>($285)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($1,685)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>($1,970)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
<td>$4</td>
<td>$320</td>
<td>$72</td>
<td>$160</td>
<td>$557</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($842)</td>
<td>($842)</td>
</tr>
<tr>
<td>Totals</td>
<td>$4</td>
<td>$320</td>
<td>$72</td>
<td>($682)</td>
<td>($285)</td>
</tr>
</tbody>
</table>

1In 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**

<table>
<thead>
<tr>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$1,602</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>Cost range (+ or -)</td>
</tr>
</tbody>
</table>

This program consists of a 40-hour treatment curriculum. The per-participant cost of treatment is the number of group IMR sessions provided in the studies included in the analysis multiplied by the group treatment reimbursement rates as reported in Mercer, (2013). Behavioral health data book for the state of Washington for rates effective January 1, 2014. The comparison cost is assumed to be zero because IMR was added to treatment as usual.

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.
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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment N</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Emergency department visits ^</td>
<td>49</td>
<td>1</td>
<td>44</td>
<td>0.228</td>
<td>0.254</td>
</tr>
<tr>
<td>Employment ^</td>
<td>49</td>
<td>1</td>
<td>44</td>
<td>0.325</td>
<td>0.456</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>49</td>
<td>3</td>
<td>107</td>
<td>-0.073</td>
<td>0.286</td>
</tr>
<tr>
<td>Psychiatric symptoms ^</td>
<td>49</td>
<td>3</td>
<td>107</td>
<td>-0.260</td>
<td>0.302</td>
</tr>
<tr>
<td>Suicidal ideation ^</td>
<td>49</td>
<td>2</td>
<td>63</td>
<td>-0.517</td>
<td>0.665</td>
</tr>
</tbody>
</table>

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

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**Citations Used in the Meta-Analysis**


Peer support: Substitution of a peer specialist for a non-peer on the treatment team

Adult Mental Health: Serious Mental Illness


Program Description: The programs examined in this analysis compared treatment teams with a peer specialist to treatment teams with a non-peer in a similar role. The treatment teams in this analysis provided services to individuals with severe mental illness, major depression or individuals receiving Veterans’ Administration services for a psychiatric diagnosis.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Taxpayers</td>
</tr>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Detailed Monetary Benefit Estimates Per Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from changes to:¹</td>
</tr>
<tr>
<td>Benefits to:</td>
</tr>
<tr>
<td>Crime</td>
</tr>
<tr>
<td>$0</td>
</tr>
<tr>
<td>Labor market earnings</td>
</tr>
<tr>
<td>Health care associated with alcohol abuse or</td>
</tr>
<tr>
<td>dependence</td>
</tr>
<tr>
<td>Property loss associated with alcohol abuse or</td>
</tr>
<tr>
<td>dependence</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
</tr>
<tr>
<td>Health care associated with emergency department</td>
</tr>
<tr>
<td>visits</td>
</tr>
<tr>
<td>Mortality associated with alcohol</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

¹In 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.

³Indirect benefits includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.
In all studies the peer specialists and non-peer staff had similar roles. Therefore, we did not impute a greater or lesser cost to peer support versus other providers—the net per-participant cost is zero.

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.

<table>
<thead>
<tr>
<th></th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$0</td>
<td>2012</td>
<td>Present value of net program costs (in 2018 dollars)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2012</td>
<td>Cost range (+ or -)</td>
</tr>
</tbody>
</table>

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 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


Critical Time Intervention for serious mental illness
Adult Mental Health: Serious Mental Illness


Program Description: Critical time intervention is a short-term program which supports particularly vulnerable patients transitioning from inpatient psychiatric treatment to outpatient care. This is done by providing them with a social worker, peer mentor or other system of support to help them at the beginning of the integration process. Critical time intervention is provided in conjunction with other kinds of treatment and is designed to increase treatment adherence and reduce recidivism, homelessness, and re-hospitalization. Critical Time Intervention has been used to treat a wide variety of vulnerable patients; however, we explore the impact of Critical Time Intervention on treatment of subjects with severe psychosis.

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<tr>
<td>Participants</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Indirect</td>
</tr>
<tr>
<td>Total benefits</td>
</tr>
<tr>
<td>Net program cost</td>
</tr>
<tr>
<td>Benefits minus cost</td>
</tr>
</tbody>
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<tr>
<td>Benefits from changes to:</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
</tr>
<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

1In 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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**Meta-Analysis of Program Effects**

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Homelessness ♦</td>
<td>38</td>
<td>2</td>
<td>125</td>
<td>-1.059</td>
<td>0.249</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>38</td>
<td>1</td>
<td>77</td>
<td>-1.331</td>
<td>0.670</td>
</tr>
<tr>
<td>Psychiatric symptoms ♦</td>
<td>38</td>
<td>1</td>
<td>38</td>
<td>-0.320</td>
<td>0.231</td>
</tr>
<tr>
<td>Psychosis symptoms (negative) ♦</td>
<td>38</td>
<td>1</td>
<td>38</td>
<td>-0.572</td>
<td>0.234</td>
</tr>
<tr>
<td>Psychosis symptoms (positive) ♦</td>
<td>38</td>
<td>1</td>
<td>38</td>
<td>0.091</td>
<td>0.230</td>
</tr>
</tbody>
</table>

♦ 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.

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**Citations Used in the Meta-Analysis**


Program Description: Forensic Assertive Community Treatment (FACT) is an adaptation of Assertive Community Treatment (ACT) for individuals with involvement in the criminal justice system. In this analysis the study population included individuals with serious mental illness who were identified as candidates for FACT in jail.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>Taxpayers</th>
<th>Participants</th>
<th>Others</th>
<th>Indirect</th>
<th>Total benefits</th>
<th>Net program cost</th>
<th>Benefits minus costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total benefits</td>
<td>$577</td>
<td>$6</td>
<td>$378</td>
<td>($6,409)</td>
<td>($5,447)</td>
<td>($13,395)</td>
<td>($18,842)</td>
</tr>
<tr>
<td>Taxpayers</td>
<td>$577</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>($0.41)</td>
</tr>
<tr>
<td>Participants</td>
<td>$6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>($18,842)</td>
</tr>
<tr>
<td>Others</td>
<td>$378</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 %</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td>$0</td>
<td>$149</td>
<td>$282</td>
<td>$75</td>
<td>$506</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
<td>$6</td>
<td>$428</td>
<td>$96</td>
<td>$214</td>
<td>$744</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($6,697)</td>
<td>($6,697)</td>
</tr>
<tr>
<td>Totals</td>
<td>$6</td>
<td>$577</td>
<td>$378</td>
<td>($6,409)</td>
<td>($5,447)</td>
</tr>
</tbody>
</table>

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Detailed Annual Cost Estimates Per Participant

<table>
<thead>
<tr>
<th>Program costs</th>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>$14,000</td>
<td>2013</td>
<td>Present value of net program costs (in 2018 dollars) $(13,395)</td>
<td></td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$4,482</td>
<td>2013</td>
<td>Cost range (+ or -) 10%</td>
</tr>
</tbody>
</table>

Specific cost data are not available for FACT. We estimated the cost of FACT using the annual per-patient costs of ACT in Washington State (Washington State Department of Social & Health Services, 2013). We also assumed that the comparison group in the FACT study would have similar costs to the comparison group in the ACT studies that we reviewed. The cost of the comparison group in these studies was estimated by reducing the cost of the ACT intervention by a factor of 3.12 because the comparison group caseloads were higher than ACT caseloads by this factor in the ACT studies that we reviewed. Washington State Department of Social & Health Services. (2013). 2013 program description, Washington Program for Assertive Community Treatment. Retrieved from https://fortress.wa.gov/dshs/adsaapps/about/programs/MH%20Program%20for%20Assertive%20Community%20Treatment.docx.

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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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment age</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Crime</td>
<td>41</td>
<td>1</td>
<td>72</td>
<td>-0.111</td>
<td>0.173</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>41</td>
<td>1</td>
<td>72</td>
<td>-0.211</td>
<td>0.174</td>
</tr>
</tbody>
</table>
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


**Supported housing for chronically homeless adults**

**Adult Mental Health: Serious Mental Illness**


**Program Description:** These programs provide permanent supportive housing to chronically homeless single adults. Most of the studies reviewed here used the Housing First model which provides independent apartments with no specific requirements for abstinence or treatment. Programs typically provide intensive case management and services. Housing is in independent apartments—participants hold the lease but receive subsidies to pay rent. Supported housing is associated with significant reductions in homelessness which we are unable to monetize at this time. To test the sensitivity of our benefit-cost results to this known limitation of our model, we examined a recent comprehensive benefit-cost study of housing vouchers (Carlson et al., 2011). Our benefit-cost results would not change significantly if we had included the benefits of providing housing estimated by this study. Carlson, D., Haveman, R., Kaplan, T., & Wolfe, B. (2011). The benefits and costs of the Section 8 housing subsidy program: A framework and estimates of firstyear effects. *Journal of Policy Analysis and Management, 30* (2), 233-255.

### Benefit-Cost Summary Statistics Per Participant

<table>
<thead>
<tr>
<th>Benefits to:</th>
<th>$</th>
<th>Benefit to cost ratio</th>
<th>($0.18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxpayers</td>
<td>1,597</td>
<td>Benefits minus costs</td>
<td>($18,996)</td>
</tr>
<tr>
<td>Participants</td>
<td>3,125</td>
<td>Chance the program will produce benefits greater than the costs</td>
<td>0 %</td>
</tr>
<tr>
<td>Others</td>
<td>193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>($7,878)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total benefits</td>
<td>($2,964)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net program cost</td>
<td>($16,033)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>($18,996)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td>$0</td>
<td>$0</td>
<td>$1</td>
<td>$0</td>
<td>$1</td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>$3,106</td>
<td>$1,322</td>
<td>$0</td>
<td>$0</td>
<td>$4,429</td>
</tr>
<tr>
<td>Property loss associated with alcohol abuse or dependence</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Health care associated with illicit drug abuse or dependence</td>
<td>($1)</td>
<td>($3)</td>
<td>($4)</td>
<td>($2)</td>
<td>($9)</td>
</tr>
<tr>
<td>Health care associated with general hospitalization</td>
<td>$4</td>
<td>$101</td>
<td>$99</td>
<td>$50</td>
<td>$255</td>
</tr>
<tr>
<td>Health care associated with psychiatric hospitalization</td>
<td>$2</td>
<td>$131</td>
<td>$30</td>
<td>$66</td>
<td>$228</td>
</tr>
<tr>
<td>Health care associated with emergency department visits</td>
<td>$12</td>
<td>$45</td>
<td>$67</td>
<td>$23</td>
<td>$147</td>
</tr>
<tr>
<td>Mortality associated with illicit drugs</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Mortality associated with alcohol</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$1</td>
<td>$1</td>
</tr>
<tr>
<td>Adjustment for deadweight cost of program</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>(8,016)</td>
<td>(8,016)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$3,125</strong></td>
<td><strong>$1,597</strong></td>
<td><strong>$193</strong></td>
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<td><strong>($2,964)</strong></td>
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<tr>
<td>Program costs</td>
<td>$13,950</td>
<td>2009</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$0</td>
<td>2009</td>
</tr>
</tbody>
</table>

Per-participant costs are based on the annual cost of a program in Seattle described in Srebnik et al. (2013). Analysis of supported housing in New York (Culhane et al., 2002) indicated the average length of stay was nine months, so we multiply the annual cost of the Seattle program by 0.75.


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.
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<th>No. of effect sizes</th>
<th>Treatment N</th>
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<th>Unadjusted effect size (random effects model)</th>
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</thead>
<tbody>
<tr>
<td>Alcohol use disorder</td>
<td>40</td>
<td>2</td>
<td>478</td>
<td>First time ES is estimated: ES = -0.051, SE = 0.144, Age = 40</td>
<td>Second time ES is estimated: ES = 0.000, SE = 0.000, Age = 41</td>
</tr>
<tr>
<td>Crime</td>
<td>40</td>
<td>8</td>
<td>3833</td>
<td>First time ES is estimated: ES = -0.083, SE = 0.047, Age = 40</td>
<td>Second time ES is estimated: ES = 0.000, SE = 0.000, Age = 41</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>40</td>
<td>5</td>
<td>570</td>
<td>First time ES is estimated: ES = -0.164, SE = 0.064, Age = 40</td>
<td>Second time ES is estimated: ES = 0.000, SE = 0.000, Age = 41</td>
</tr>
<tr>
<td>Employment</td>
<td>40</td>
<td>3</td>
<td>514</td>
<td>First time ES is estimated: ES = 0.179, SE = 0.111, Age = 40</td>
<td>Second time ES is estimated: ES = 0.000, SE = 0.000, Age = 41</td>
</tr>
<tr>
<td>Homelessness^</td>
<td>40</td>
<td>10</td>
<td>4467</td>
<td>First time ES is estimated: ES = -0.505, SE = 0.023, Age = 40</td>
<td>Unadjusted effect size = -0.505, p-value = 0.001</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>40</td>
<td>7</td>
<td>2490</td>
<td>First time ES is estimated: ES = -0.129, SE = 0.054, Age = 40</td>
<td>Unadjusted effect size = -0.129, p-value = 0.016</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>40</td>
<td>4</td>
<td>2727</td>
<td>First time ES is estimated: ES = -0.058, SE = 0.028, Age = 40</td>
<td>Unadjusted effect size = -0.058, p-value = 0.036</td>
</tr>
<tr>
<td>Illicit drug use disorder</td>
<td>40</td>
<td>3</td>
<td>332</td>
<td>First time ES is estimated: ES = 0.062, SE = 0.105, Age = 40</td>
<td>Unadjusted effect size = 0.062, p-value = 0.553</td>
</tr>
<tr>
<td>Primary care visits^</td>
<td>40</td>
<td>3</td>
<td>733</td>
<td>First time ES is estimated: ES = 0.157, SE = 0.052, Age = 40</td>
<td>Unadjusted effect size = 0.157, p-value = 0.003</td>
</tr>
</tbody>
</table>

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### Citations Used in the Meta-Analysis

**Program Description:** Assertive community treatment (ACT) is a treatment and case management approach that includes the following key elements: a multidisciplinary team that includes a medication prescriber, direct service provided by team members, caseloads that are shared between team members, services provided in locations convenient for the patient, and low patient-to-staff ratios. The studies reviewed in this analysis compared ACT to treatment as usual or other forms of case management. ACT is associated with significant reductions in homelessness, for which the current WSIPP benefit-cost model does not estimate monetary benefits. To test the sensitivity of our benefit-cost results to this known limitation, we examined a recent comprehensive benefit-cost study of housing vouchers (Carlson et al., 2011). Our benefit-cost results would not change significantly if we had included the benefits of providing housing estimated by this study. Carlson, D., Haveman, R., Kaplan, T., & Wolfe, B. (2011). The benefits and costs of the Section 8 housing subsidy program: A framework and estimates of first-year effects. *Journal of Policy Analysis and Management, 30* (2), 233-255.

<table>
<thead>
<tr>
<th>Benefit-Cost Summary Statistics Per Participant</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to:</td>
<td></td>
</tr>
<tr>
<td>Taxpayers</td>
<td>$997</td>
</tr>
<tr>
<td>Participants</td>
<td>($577)</td>
</tr>
<tr>
<td>Others</td>
<td>$509</td>
</tr>
<tr>
<td>Indirect</td>
<td>($8,837)</td>
</tr>
<tr>
<td>Total benefits</td>
<td>($7,908)</td>
</tr>
<tr>
<td>Net program cost</td>
<td>($18,909)</td>
</tr>
<tr>
<td>Benefits minus cost</td>
<td>($26,817)</td>
</tr>
<tr>
<td>Benefit to cost ratio</td>
<td>($0.42)</td>
</tr>
<tr>
<td>Benefits minus costs</td>
<td>($26,817)</td>
</tr>
<tr>
<td>Chance the program will produce benefits</td>
<td>12 %</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benefits from changes to:</th>
<th>Participants</th>
<th>Taxpayers</th>
<th>Others</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td>$0</td>
<td>$99</td>
<td>$185</td>
<td>$50</td>
<td>$334</td>
</tr>
<tr>
<td>Labor market earnings</td>
<td>($600)</td>
<td>($256)</td>
<td>$0</td>
<td>$0</td>
<td>($856)</td>
</tr>
<tr>
<td>associated with alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>abuse or dependence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>($1)</td>
<td>($6)</td>
<td>($6)</td>
<td>($3)</td>
<td>($16)</td>
</tr>
<tr>
<td>with alcohol abuse or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dependence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property loss associated</td>
<td>($1)</td>
<td>$0</td>
<td>($1)</td>
<td>$0</td>
<td>($2)</td>
</tr>
<tr>
<td>with alcohol abuse or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dependence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>$1</td>
<td>$35</td>
<td>$34</td>
<td>$17</td>
<td>$87</td>
</tr>
<tr>
<td>with general hospitaliza</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tion</td>
<td>$15</td>
<td>$1,089</td>
<td>$245</td>
<td>$545</td>
<td>$1,894</td>
</tr>
<tr>
<td>Health care associated</td>
<td>$10</td>
<td>$36</td>
<td>$52</td>
<td>$18</td>
<td>$116</td>
</tr>
<tr>
<td>with psychiatric</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hospitalization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care associated</td>
<td>($1)</td>
<td>$0</td>
<td>$0</td>
<td>($8)</td>
<td>($9)</td>
</tr>
<tr>
<td>with emergency department</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>visits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality associated</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($9,455)</td>
<td>($9,455)</td>
</tr>
<tr>
<td>with alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustment for deadweight</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>($9,455)</td>
<td>($9,455)</td>
</tr>
<tr>
<td>cost of program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Totals                   | ($577)       | $997      | $509   | ($8,837) | ($7,908) |

1In 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

<table>
<thead>
<tr>
<th>Annual cost</th>
<th>Year dollars</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program costs</td>
<td>$14,000</td>
<td>Present value of net program costs (in 2018 dollars) ($18,909)</td>
</tr>
<tr>
<td>Comparison costs</td>
<td>$4,482</td>
<td>Cost range (+ or -) 10 %</td>
</tr>
</tbody>
</table>

The annual per-patient cost of ACT in Washington State was used to approximate the program costs (Washington State Department of Social & Health Services, 2013). Since the comparison groups in the included studies had an average caseload that was 3.12 times as high as the ACT caseload, we estimated the costs of the comparison group by reducing the ACT costs by this factor. Washington State Department of Social & Health Services. (2013). 2013 program description, Washington Program for Assertive Community Treatment.

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.
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

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>Treatment N</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect sizes and standard errors used in the benefit-cost analysis</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First time ES is estimated</td>
<td>Second time ES is estimated</td>
</tr>
<tr>
<td>Alcohol use disorder</td>
<td>40</td>
<td>4</td>
<td>272</td>
<td>0.103</td>
<td>0.108</td>
</tr>
<tr>
<td>Crime</td>
<td>40</td>
<td>7</td>
<td>810</td>
<td>-0.026</td>
<td>0.065</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>40</td>
<td>3</td>
<td>555</td>
<td>-0.043</td>
<td>0.218</td>
</tr>
<tr>
<td>Global functioning^</td>
<td>40</td>
<td>5</td>
<td>237</td>
<td>0.142</td>
<td>0.096</td>
</tr>
<tr>
<td>Homelessness^</td>
<td>40</td>
<td>8</td>
<td>638</td>
<td>-0.228</td>
<td>0.098</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>40</td>
<td>4</td>
<td>598</td>
<td>-0.014</td>
<td>0.110</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>40</td>
<td>22</td>
<td>2294</td>
<td>-0.178</td>
<td>0.074</td>
</tr>
<tr>
<td>Illicit drug use disorder</td>
<td>40</td>
<td>4</td>
<td>249</td>
<td>0.048</td>
<td>0.108</td>
</tr>
<tr>
<td>Psychiatric symptoms^</td>
<td>40</td>
<td>11</td>
<td>582</td>
<td>0.050</td>
<td>0.061</td>
</tr>
</tbody>
</table>

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---

**Citations Used in the Meta-Analysis**


Medicaid Health Homes
Adult Mental Health
Literature review updated December 2014.

Program Description: A Medicaid health home offers coordinated care to individuals with multiple chronic health conditions, including mental health and substance use disorders. The health home builds linkages to community supports and resources as well as enhances coordination and integration of primary and behavioral healthcare to better meet the needs of people with multiple chronic illnesses. The model aims to improve healthcare quality while also reducing costs. Health homes provide comprehensive case management, care coordination, health promotion, and transitional care when moving from inpatient to other settings (SAMHSA Health Home Fact Sheet, http://www.integration.samhsa.gov/integrated-care-models/Health_Homes_Fact_Sheet_FINAL.pdf).

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<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
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<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Emergency department visits</td>
<td>1</td>
<td>205</td>
<td>-0.073</td>
<td>0.099</td>
</tr>
<tr>
<td>Global functioning</td>
<td>1</td>
<td>27</td>
<td>0.340</td>
<td>0.265</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>1</td>
<td>205</td>
<td>-0.220</td>
<td>0.099</td>
</tr>
<tr>
<td>Primary care visits</td>
<td>1</td>
<td>205</td>
<td>0.472</td>
<td>0.127</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>1</td>
<td>27</td>
<td>0.173</td>
<td>0.264</td>
</tr>
</tbody>
</table>

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### Citations Used in the Meta-Analysis


**Program Description:** Assisted outpatient treatment (AOT) is a legal alternative to involuntary inpatient commitment whereby the court may order the patient to participate in outpatient care. In the studies of AOT included in our analysis, patients could receive an AOT order if there was evidence that the person might not follow up with community outpatient care. In some locations, the AOT order allowed early release from the psychiatric hospital.

### Meta-Analysis of Program Effects

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect size and standard error</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Crime</td>
<td>1</td>
<td>172</td>
<td>0.013</td>
<td>0.169</td>
</tr>
<tr>
<td>Global functioning</td>
<td>1</td>
<td>166</td>
<td>-0.056</td>
<td>0.110</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>6</td>
<td>9547</td>
<td>0.044</td>
<td>0.013</td>
</tr>
<tr>
<td>Psychiatric emergency services</td>
<td>1</td>
<td>78</td>
<td>0.181</td>
<td>0.164</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>2</td>
<td>242</td>
<td>-0.004</td>
<td>0.088</td>
</tr>
</tbody>
</table>

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### Citations Used in the Meta-Analysis

**Program Description:** Collaborative primary care for older adults with dementia integrates primary care with specialist and community services to treat patients with diagnosed or probable dementia, including Alzheimer’s disease. A multidisciplinary team that includes at least a care manager and primary care physician—but may integrate other specialists or community providers—conducts an initial assessment and administers an individualized, measurement-based treatment plan. Care managers may be health care professionals (e.g., nurse practitioners) or non-medical staff (e.g., social workers). Treatment may take place in the home, in primary care or specialist clinics, virtually, or in a combination of such settings. Interventions may include components for caregivers, but primary outcomes concern older adults with dementia. Interventions are typically 12 to 18 months in duration.

---

### Meta-Analysis of Program Effects

<table>
<thead>
<tr>
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<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect size and standard error</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Treatment N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Cognitive functioning</td>
<td>1</td>
<td>84</td>
<td>-0.029</td>
<td>0.168</td>
</tr>
<tr>
<td>Death</td>
<td>1</td>
<td>84</td>
<td>-0.028</td>
<td>0.223</td>
</tr>
<tr>
<td>Health care costs*</td>
<td>1</td>
<td>202</td>
<td>0.053</td>
<td>0.360</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>1</td>
<td>170</td>
<td>-0.152</td>
<td>0.202</td>
</tr>
</tbody>
</table>

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

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### Citations Used in the Meta-Analysis


Integrated Dual Disorder Treatment (IDDT)
Adult Mental Health
Literature review updated September 2018.

Program Description: Integrated Dual Disorder Treatment (IDDT) is a specific, integrated approach to treating individuals diagnosed with both serious mental illness and a substance use disorder. This particular model involves multidisciplinary teams composed of case managers, psychologists, psychiatrists or other professionals to manage medication, and a substance abuse counselor. The treatment is provided in an outpatient mental health treatment setting and consists of assertive outreach and a staged approach dependent on the client’s readiness to change. The intervention is designed to be of indefinite duration. Among studies included in this analysis, all participants had a diagnosed substance use disorder and severe mental illness. In two of the included studies, participants were also homeless.

More information on this intervention is available at: http://store.samhsa.gov/product/Integrated-Treatment-for-Co-Occurring-Disorders-Evidence-Based-Practices-EBP-KIT/SMA08-4367.

Meta-Analysis of Program Effects

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect size and standard error</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Age</td>
<td>ES</td>
</tr>
<tr>
<td>Alcohol use disorder</td>
<td>1</td>
<td>75</td>
<td>0.165</td>
<td>0.246</td>
</tr>
<tr>
<td>Crime</td>
<td>1</td>
<td>123</td>
<td>-0.140</td>
<td>0.138</td>
</tr>
<tr>
<td>Health care costs*</td>
<td>1</td>
<td>46</td>
<td>-0.146</td>
<td>0.144</td>
</tr>
<tr>
<td>Homelessness</td>
<td>1</td>
<td>46</td>
<td>-0.106</td>
<td>0.205</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>1</td>
<td>123</td>
<td>-0.622</td>
<td>0.141</td>
</tr>
<tr>
<td>Illicit drug use disorder</td>
<td>1</td>
<td>45</td>
<td>-0.207</td>
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</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>2</td>
<td>151</td>
<td>0.049</td>
<td>0.136</td>
</tr>
<tr>
<td>Substance use disorder</td>
<td>2</td>
<td>105</td>
<td>-0.033</td>
<td>0.345</td>
</tr>
</tbody>
</table>

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

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Citations Used in the Meta-Analysis


Motivational interviewing to enhance treatment engagement for serious mental illness

Adult Mental Health

Literature review updated September 2016.

Program Description: Motivational interviewing is a brief, several-session treatment given prior to another form of psychotherapy in order to increase treatment effectiveness. Motivational interviewing seeks to resolve subject ambivalence to treatment and increase the likelihood that the subject will adhere to the treatment plan by positively engaging the subject through exploratory questioning. Motivational interviewing has been used with a variety of populations; however, in this review we examine the impact of motivational interviewing on treatment of subjects with severe psychosis.

### Meta-Analysis of Program Effects

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>1</td>
<td>25</td>
<td>-0.656</td>
<td>0.357</td>
</tr>
<tr>
<td>Engagement/Retention</td>
<td>2</td>
<td>89</td>
<td>0.767</td>
<td>0.202</td>
</tr>
<tr>
<td>Global functioning</td>
<td>1</td>
<td>39</td>
<td>0.235</td>
<td>0.390</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>1</td>
<td>39</td>
<td>-0.242</td>
<td>0.390</td>
</tr>
</tbody>
</table>

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### Citations Used in the Meta-Analysis


Integrated treatment for first-episode psychosis
Adult Mental Health

Literature review updated September 2016.

Program Description: Studies in this review examined integrated treatment approaches for adolescents and young adults experiencing a first episode of psychosis. Intervention periods lasted between 9 and 24 months. Integrated treatment typically included making 3-4 of the following components available to patients: Assertive community treatment and case management, cognitive behavioral therapy for psychosis, social skills training, and family support/psychoeducation. Both treatment and comparison groups were offered anti-psychotic medication as indicated. In this review, integrative treatment is compared with treatment as usual through community mental health clinics.

### Meta-Analysis of Program Effects

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<thead>
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<th>Outcomes measured</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Global functioning</td>
<td>4</td>
<td>737</td>
<td>0.034</td>
<td>0.154</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>4</td>
<td>654</td>
<td>-0.230</td>
<td>0.134</td>
</tr>
<tr>
<td>Mental health recovery</td>
<td>1</td>
<td>66</td>
<td>0.468</td>
<td>0.275</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>3</td>
<td>498</td>
<td>-0.298</td>
<td>0.085</td>
</tr>
<tr>
<td>Psychosis symptoms (negative)</td>
<td>3</td>
<td>498</td>
<td>-0.168</td>
<td>0.084</td>
</tr>
<tr>
<td>Psychosis symptoms (positive)</td>
<td>3</td>
<td>498</td>
<td>-0.292</td>
<td>0.148</td>
</tr>
</tbody>
</table>

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### Citations Used in the Meta-Analysis


Integrated treatment for prodromal psychosis

Literature review updated September 2016.

Program Description: Studies in this review examined integrated treatment approaches for help-seeking adolescents and young adults identified as being prodromal, or at high-risk for developing psychosis. The primary purpose of treatment was to prevent or delay onset of psychosis. Integrated treatment lasted between 12 and 24 months. Treatment approaches included several of the following components: assertive community treatment, cognitive behavioral therapy, social skills training, family group psychoeducation, and computer-based cognitive remediation. In this review, integrated treatment is compared with non-specific supportive therapy.

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect size and standard error</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychosis onset</td>
<td>2</td>
<td>105</td>
<td>-0.595 0.276 26</td>
<td>-0.595 0.031</td>
</tr>
</tbody>
</table>

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Citations Used in the Meta-Analysis


Program Description: We reviewed studies of the effectiveness of telemedicine for the treatment of depression in primary care settings. Our analysis included studies that evaluated outcomes for individuals randomly assigned to telemedicine for behavioral health or usual care, which typically included in-person psychiatric treatment. Subjects in reviewed studies received behavioral health services through a remote link while present in a clinical setting, which does not include home-based communication.

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect size and standard error</th>
<th>Unadjusted effect size (random effects model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major depressive disorder</td>
<td>3</td>
<td>153</td>
<td>-0.444, 0.159, 43</td>
<td>-0.460, 0.005</td>
</tr>
</tbody>
</table>

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Citations Used in the Meta-Analysis


Telemedicine for posttraumatic stress disorder (PTSD) in primary care
Adult Mental Health
Literature review updated December 2016.

Program Description: We reviewed studies of the effectiveness of telemedicine for the treatment of posttraumatic stress disorder (PTSD) in primary care settings. Our analysis included studies that evaluated outcomes for individuals randomly assigned to telemedicine for behavioral health or usual care, which typically included in-person psychiatric treatment. Subjects in reviewed studies received behavioral health services through a remote link while present in a clinical setting, which does not include home-based communication.

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Post-traumatic stress</td>
<td>4</td>
<td>272</td>
<td>-0.253</td>
<td>0.086</td>
</tr>
</tbody>
</table>

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Citations Used in the Meta-Analysis


Wellness Recovery Action Plan (WRAP)
Adult Mental Health
Literature review updated December 2014.

**Program Description:** Wellness Recovery Action Plan is a group-based intervention for persons with mental illness, delivered weekly for eight to ten weeks. The program teaches participants to focus on key elements of recovery (hope, self-advocacy, support) in daily life and teaches participants to organize a list of activities to use to help them feel better when they are experiencing mental health difficulties.

### Meta-Analysis of Program Effects

<table>
<thead>
<tr>
<th>Outcomes measured</th>
<th>No. of effect sizes</th>
<th>Treatment N</th>
<th>Adjusted effect size and standard error</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>1</td>
<td>251</td>
<td>-0.070</td>
<td>0.088</td>
</tr>
<tr>
<td>Hope</td>
<td>1</td>
<td>309</td>
<td>0.139</td>
<td>0.176</td>
</tr>
<tr>
<td>Mental health recovery</td>
<td>3</td>
<td>381</td>
<td>0.072</td>
<td>0.076</td>
</tr>
<tr>
<td>Patient self-advocacy</td>
<td>1</td>
<td>251</td>
<td>0.090</td>
<td>0.143</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>3</td>
<td>381</td>
<td>-0.141</td>
<td>0.121</td>
</tr>
</tbody>
</table>

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### Citations Used in the Meta-Analysis


Individual Placement and Support for first episode psychosis
Adult Mental Health: Serious Mental Illness
Literature review updated August 2017.

Program Description: Individual Placement and Support (IPS) has been used with adults with serious mental illness to assist clients in obtaining competitive employment. In recent years IPS has been modified for persons experiencing their first episode of psychosis and, depending on the person’s preference, the program focuses on employment or return to school.

<table>
<thead>
<tr>
<th>Meta-Analysis of Program Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcomes measured</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Labor market activity</td>
</tr>
</tbody>
</table>

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Citations Used in the Meta-Analysis

Program Description: Studies in this review examined cognitive behavioral therapy in help-seeking adolescents and young adults identified as being prodromal, or at high-risk for developing psychosis. The primary purpose of treatment was to prevent or delay onset of psychosis. Treatments typically involved offering six months of weekly individual therapy, and focused on stress management, helping patients understand and cope with symptoms, and crisis management. In this review, cognitive behavioral therapy is compared with either assessment and monitoring only, or non-specific supportive therapy.

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<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ES</td>
<td>SE</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>2</td>
<td>101</td>
<td>-0.195</td>
<td>0.246</td>
</tr>
<tr>
<td>Global functioning</td>
<td>3</td>
<td>142</td>
<td>0.121</td>
<td>0.229</td>
</tr>
<tr>
<td>Hospitalization (psychiatric)</td>
<td>1</td>
<td>59</td>
<td>-0.326</td>
<td>0.397</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>2</td>
<td>116</td>
<td>0.101</td>
<td>0.663</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>3</td>
<td>180</td>
<td>-0.287</td>
<td>0.172</td>
</tr>
<tr>
<td>Psychosis onset</td>
<td>5</td>
<td>344</td>
<td>-0.653</td>
<td>0.275</td>
</tr>
<tr>
<td>Psychosis symptoms (negative)</td>
<td>2</td>
<td>46</td>
<td>0.165</td>
<td>0.290</td>
</tr>
<tr>
<td>Psychosis symptoms (positive)</td>
<td>2</td>
<td>54</td>
<td>-0.311</td>
<td>0.294</td>
</tr>
</tbody>
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